

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 14

CHICAGO, ILLINOIS

OCTOBER 6, 1934

THE ETIOLOGY OF LYMPHOBLASTOMA

CHAIRMAN'S ADDRESS

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It may seem presumptuous for a mere radiologist to venture into the field of clinical medicine. The clinician's idea of a radiologist sometimes is that of a queer being who inhabits dark places, sees curious things, and talks a strange language compounded of wavelenghts designated by Greek letters that remind one of college fraternities, of roentgens, and of the relative radiosensitiveness of different varieties of cells. It so happens that, when they undertook to acquire the extra knowledge essential for the sound practice of radiology, some radiologists were perverse enough to retain an interest in clinical medicine. I happen to be one of them. It is perhaps unfortunate that a larger proportion of those who have adopted this specialty have not seen fit to follow this example.

In my own case, the circumstances of life have given me an exceptional opportunity to see and to examine a large number of patients with lymphoblastoma, and, being mildly curious by nature, I have not been able to avoid taking what might be regarded as a morbid interest in this form of physical morbidity. During the past fourteen years, I have been called on to examine and to treat between 500 and 600 patients suffering from Hodgkin's disease or lymphosarcoma, and such an experience, naturally, could hardly fail to give rise to thoughts and queries that would not be likely to arise under different circumstances.

The precise character of the pathologic conditions collectively designated by the term lymphoblastoma still eludes the physician. Although these conditions have been the object of extensive study, pathologists still are far from agreement on the essential and differential characteristics of Hodgkin's disease and lymphosarcoma. Some regard these conditions as essentially malignant and as different phases of the same process, while others insist that Hodgkin's disease is an entity quite distinct from lymphosarcoma. Suffice it to say that, among pathologists, confusion reigns and will probably continue to reign for some time. As far as the leukemias are concerned, divergences of opinion still exist, but these relate mainly to details.

To judge by present-day writings, the etiologic factors responsible for Hodgkin's disease and lymphosarcoma are still as vague and uncertain as they have been for years. At different times in the past the idea

that these conditions might have an infectious basis has been advanced. At one time it was held that these usually fatal disturbances of the lymphoid structures were due to an antecedent tuberculous infection; this idea probably emanated from the observation of undoubted lymphoblastoma occurring in patients who previously had been known to suffer from some tuberculous lesion. Later, other writers attempted to incriminate different micro-organisms which, having been found in lymphoid tissue affected by lymphoblastoma, were regarded as specific etiologic agents. Unfortunately for the protagonists of the etiologic significance of this or that variety of bacteria, their observations or conclusions have not been supported by subsequent investigations, and it now appears established that lymphoblastoma is not invariably due to any one micro-organism.

Extended observation of a large number of cases has led me to note certain features which, from the standpoint of etiology, have struck me as inescapably significant. So much so, indeed, that in my own mind the etiology of lymphoblastoma no longer seems uncertain.

First of all it is essential to consider the immediate cause. On two previous occasions I¹ have intimated that the factor immediately responsible for lymphoblastomatous hyperplasia of the lymphoid structures is chronic infection of any kind. This may be tuberculous, pyogenic or even syphilitic; in fact, the variety of infection is of little consequence, provided the infectious element has been present for a sufficiently long time. The duration of infection may vary considerably in different patients. If the history of the patient's physical ailments is carefully and persistently inquired into, evidence of infection of long standing will be obtained in the majority of cases. However, if the historical inquiry is to yield the desired information it must be pursued with method. In this particular, indeed, it is because of lack of method that so many physicians in the past have failed to elicit clues strongly suggestive of a clear relationship between chronic infection and lymphoblastoma.

For example, after the patient has described the sequence of events connected with his present illness, it is not sufficient to ask the stereotyped question "What other illnesses have you had?" Usually this question would receive an unhesitatingly negative answer. By the average patient such a question is taken to mean what other serious, incapacitating or bed-impelling illness he may have had. While being careful to avoid suggestive or leading interrogations, one should explain to the patient that the medical inquirer is interested not

¹ From the Section on Therapeutic Radiology, the Mayo Clinic.
Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Desjardins, A. U.: Radiotherapy for Hodgkin's Disease and Lymphosarcoma, *J. A. M. A.* 99: 1231-1235 (Oct. 8) 1932; Roentgen Therapy in. Mock, H. E.; Pemberton, Ralph, and Coulter, J. S.: Principles and Practice of Physical Therapy, Hagerstown, Md., W. F. Prior Company, 1932, volume 3, chapter 6, p. 40.

so much in illnesses that may have forced the patient to interrupt his activities and go to bed as in less severe and more prosaic and annoying disturbances. After this explanation, the following questions should be asked: During the past ten years, or at any time in your life, have you had trouble with your teeth? As a child, or since, have you been subject to sore throat or tonsillitis? Have you had any trouble from sinusitis? Have you had repeated earache? Have you had frequent bronchial colds? The interrogation should be continued systematically so as to elicit information concerning the gallbladder and other parts of the gastro-intestinal and genito-urinary tracts. If the questioning is well done and if the wording of the questions is adjusted to the intelligence and social status of the patient, evidence of chronic infection will be obtained in a large proportion of patients.

Still more significant, however, the chronic infection invariably has affected a part of the body drained by the group of lymph nodes that first gave indications of lymphoblastomatous hyperplasia. If information to indicate this is not obtained, the questioning should be resumed, because such inconsistency points to a lapse in the chain of evidence. The practically constant association of infection and primary lymphadenopathy in the same region and on the same side of the body can hardly be regarded as a coincidence. If this were a result of chance, the anatomic relationship would not be so consistent. Quite naturally, one at first is tempted to think that, since so few relatively healthy persons have not had some form of infection at some time during their lives, the assumption that lymphoblastoma depends on infection should be accurate in approximately half of the cases. Actually, the frequency of such relationship in related regions is so much greater than this that the conclusion of an etiologic relationship is inescapable.

But a definite and unquestionable history of chronic infection in a region drained by the nodes first affected with lymphoblastoma cannot always be obtained. Failure in this respect is especially prone to occur in dealing with any of three groups of patients: patients who are farmers or laborers and who, being obliged to work hard and steadily to maintain the family, give little attention to comparatively minor ailments and continue their labors when others would be inclined to seek relief; patients of limited intelligence, and patients whose initial or only manifestations of lymphoblastoma have been confined to the abdomen. Unless fairly pronounced, infection of abdominal structures, such as cholecystitis, ureteritis or pyelonephritis, may not attract the attention of the patient. Chronic gonorrheal or pyogenic infection of the prostate gland or oviducts may lead to secondary lymphadenitis and lymphoblastoma in the retroperitoneal, para-aortic nodes, without the patient being aware of what is going on. Many men may for years have had chronic bronchitis which they have attributed to smoking, and this assumption may have been entirely warranted; but the bronchitis, whatever may have been its cause, may also lead to lymphoblastoma, first in the mediastinal nodes but later spreading to groups of nodes in other parts of the body.

Besides the groups mentioned, a clear history of chronic infection cannot be obtained from a small proportion of other, quite intelligent, patients, probably because the factor of infection has been obscure.

In a small proportion of cases (less than 10 per cent) also more or less clear indications of an antecedent

tuberculous process may be noted, but in the majority of patients tuberculosis does not appear to play an etiologic part.

Chronic infection of any kind, therefore, appears to be the immediate cause of Hodgkin's disease and lymphosarcoma, as it probably is also of the various forms of leukemia. But even if this etiologic relationship is undeniable, a predisposing factor also is required to provide a suitable background for the immediate cause. Otherwise, how could one account for the fact that so many persons may harbor chronic infection for months or years and never suffer from lymphoblastoma? This additional and essential element is probably to be found in a hereditary predisposition or tendency, transmitted from generation to generation, of the lymphoid tissue to react in a certain way to various noxious influences. Since each human being is bound to inherit tissues that, from the cellular, physiologic and pathologic points of view, are a composite of the tissues of his ancestors, it is logical to assume that if, among the patient's immediate or remote progenitors, there has been a tendency to disturbances of the lymphoid system, such a tendency is almost certain to reappear among the descendants. Moreover, evidence to substantiate this assumption is not lacking. As an example, the tendency to adenoid and tonsillar hyperplasia among the children of certain families is well known. Among patients suffering from lymphoblastoma it is not a rare experience to encounter the disease affecting two or more members of a family. Instances of this kind have been reported from time to time and, in my own experience of more than 500 cases, several patients have told me of brothers, sisters or other relatives who had succumbed to the same disease. Within one month I saw a young woman with Hodgkin's disease, who, when I asked why she was so exceptionally concerned about her condition, admitted that only six years before her only brother had died of the same thing.

In order to illustrate the frequency with which the theme of chronic infection appears in cases of Hodgkin's disease and lymphosarcoma, I take the liberty of giving briefly a few reports of cases encountered within a limited period. Were space available, the number of such cases could be increased ad infinitum.

CASE 1.—A man, aged 32, first had noticed enlargement of the left inguinal nodes in July 1933, of the left axillary and right inguinal nodes two weeks later, and of the right cervical nodes still one month later. When the patient was questioned, he revealed that he had contracted syphilis (chancre) three years previously and had had left inguinal adenitis at the time. He also stated that he had had chronic appendicitis (the appendix had been removed in 1927, without relief), and this was followed by "stomach trouble." The first impression was that the rather general lymphadenopathy might be syphilitic. Microscopic examination of sections of a node removed from the neck gave evidence of "chronic inflammation." Roentgen irradiation of all enlarged nodes was followed by such rapid regression that the clinical assumption of syphilitic lymphadenopathy had to be discarded in favor of lymphoblastoma on a syphilitic background.

CASE 2.—A man, aged 47, had noticed enlargement of the right tonsil in 1930. The tonsil had been removed in July 1930, and enlarged cervical lymph nodes on the right side of neck had been removed elsewhere in November 1930. Since 1907 he had had repeated infections of the throat. In February 1933 he had had an attack of severe pain in the midthoracic region; the pain had extended to the left shoulder and had continued for two days. Since then he had been short of breath. In March 1933 the patient had had a second attack of pain around

the left shoulder and left side of the abdomen. He had been unable to take a full meal because of pain in the epigastrium.

On examination, a large, nodular mass was found in the upper part of the abdomen, on the left side. Microscopic examination of sections of a cervical node, previously removed elsewhere, gave evidence of Hodgkin's disease.

CASE 3.—A man, aged 37, had had influenza, with marked nasopharyngeal inflammation, in October 1932. Shortly afterward, the right postauricular nodes had swelled. He had contracted influenza a second time in the spring of 1933. The left postauricular and cervical nodes on both sides had enlarged, and the hyperplastic enlargement had continued. In July 1933 the mediastinal nodes had enlarged. Roentgen irradiation had been followed by typical lymphoblastomatous regression, with rapid but temporary improvement. Since then the disease had been kept under control by occasional irradiation.

CASE 4.—A girl, aged 15 years, had been aware for six weeks of enlarged left cervical nodes, and for three weeks of enlarged right cervical nodes. The lymphadenopathy had continued to increase and, on examination, the mediastinal and retroperitoneal nodes also were found to be enlarged. Biopsy gave evidence of Hodgkin's disease. Further inquiry into the patient's physical antecedents revealed that, between the ages of 4 and 9 years, she had had repeated attacks of tonsillitis. The tonsils had not been removed.

CASE 5.—A man, aged 40, three months before he came to the clinic first had become aware of an enlarged left axillary node, the diameter of which had increased to about 9 cm. Microscopic examination of the excised mass of left axillary nodes gave evidence of lymphosarcoma. Shortly thereafter the left axillary, then the right axillary and inguinal, nodes also became enlarged. Although the patient himself was not conscious of abdominal lymphadenopathy, he complained that for some time he had been distressed by increasing constipation, which had disappeared after roentgen irradiation of the abdomen. The enlarged nodes in other regions also had retrogressed. On further inquiry it was found that for some years the patient had suffered from dental sepsis and from biliary disturbances, which had been regarded as manifestations of cholecystitis. In this case the sequence of events and the low grade of intelligence of the patient made it impossible to determine clearly whether the lymphoblastoma had originated in the cervical or in the abdominal nodes. Chronic infection had been present in both regions.

CASE 6.—A woman, aged 44, had become aware, about July 1933, of general pruritus, and lymph nodes on the left side of neck had become enlarged. Apparently thinking that these symptoms were related to the menopause, a physician had prescribed ovarian extract for two months. The face and neck rapidly had become puffy, and dyspnea had developed. Later the skin and subcutaneous tissues over the left breast and anterior aspect of the thorax had become infiltrated. Examination disclosed marked bilateral enlargement of the cervical lymph nodes, with engorgement of the superficial veins of the face and neck; moderate enlargement of the axillary nodes on both sides; mediastinal lymphadenopathy with moderate, bilateral hydrothorax; marked cutaneous and subcutaneous infiltration of the left breast and anterior part of the thorax, with distended and tortuous veins; and enlarged retroperitoneal nodes, with general pruritus (excoriations from scratching).

Inquiry revealed that the woman had had extensive dental infection for some time prior to the onset of her illness and that seven teeth had been extracted on this account in May 1933. The remainder of the infected teeth were to be extracted later.

CASE 7.—A woman, aged 56, for at least two years had been aware of enlarged submaxillary and cervical nodes and later of enlarged axillary and inguinal nodes. The lymphadenopathy had begun on the left side of the neck. The mediastinal and other regions were found free from enlarged nodes, as far as could be determined. The left tonsil was abnormally large, extended almost to the median line of the pharynx, and had been large for a long time. Some of the lower teeth on the left side harbored chronic infection.

CASE 8.—A girl, aged 8 years, during the winter of 1932-1933 had had three attacks of tonsillitis, and two additional bouts

of tonsillar infection had occurred in September and October 1933. The last attack had continued for about two weeks. Instead of returning to normal size, as did the tonsil on the left side, the right tonsil had continued to enlarge. A biopsy in January 1934 disclosed severe inflammation akin to that which accompanies Vincent's infection. By this time the lymphoid hyperplasia had extended to the right cervical nodes, which, in the upper part of the neck on the right side, now formed a mass measuring 5 by 3 cm. The right tonsil had been removed elsewhere, but in spite of this the right cervical lymphadenopathy steadily had increased until in April 1934 a mass measuring approximately 15 by 10 cm. had been found. Under treatment by roentgen rays the size of the mass diminished 50 per cent in four days and completely disappeared during the ensuing two weeks. The child's general condition improved correspondingly. Then she began to complain of abdominal discomfort and her respiration became visibly embarrassed. Both the abdominal pain and dyspnea increased rapidly and, when she was examined one week later, a large, firm mass could be palpated in the lower part of the abdomen; besides this, roentgenographic examination revealed mediastinal lymphadenopathy. It is evident that the disease is extending rapidly, as it so often does in children.

CASE 9.—Late in December 1932 or early in January 1933 a woman, aged 37, had become conscious of pain around the right hip, and the pain had extended down the right thigh and leg. She also had had a sense of pressure in the back (lumbar region) and around the rectum. The pain around the right hip had been accompanied by urticaria. A gynecologist whom she had consulted had inserted a pessary, which she still wore when she came to the clinic but from which she did not derive any relief. Another physician had injected varicose veins at the anterior part of the right thigh, also without relief. During the latter part of January 1933 a third physician had found a mass in the epigastrium, and exploratory laparotomy had been advised. At operation (elsewhere) a mass infiltrating the upper part of the mesentery, and inoperable, had been found; microscopic examination of sections from this mass gave evidence of lymphosarcoma.

Review of the woman's medical antecedents disclosed that in 1925 and 1926 she had had repeated attacks of right ureterolithiasis and had continued to suffer from this afterward. At one time during this period she had been in bed for three months. Repeatedly she had been subjected to cystoscopic examination. In September 1926 a stone had been removed surgically from the right ureter. In 1927 a diagnosis of right pyelonephritis had been made by an eminent urologist.

CASE 10.—In 1922 a woman, aged 57, had had repeated attacks of severe, colicky pain (which she described as "worse than labor pains") in the upper right quadrant of the abdomen. The pain had extended across the abdomen and through to the back. These attacks had recurred about every ten days for two or three months and had not been accompanied by jaundice. The most severe attack had lasted about an hour but, on the average, the other attacks had not extended much beyond thirty minutes. When these attacks had subsided, soreness and tenderness of the anterior abdominal wall had persisted for some time. In the ensuing two years she had had only mild attacks, lasting from fifteen to twenty minutes. The painful seizures had been associated with gaseous distention and bloating. In 1924 she had had a series of similar attacks for a period of about three months. After this the abdominal disturbance had smoldered until February 1933, when pain in the upper left abdominal quadrant, associated with an almost continuous pain in the epigastric region, had developed. Also the patient had recently become conscious of a large, firm mass in the upper left abdominal quadrant.

Palpation of the abdomen disclosed a hard, movable mass occupying the epigastric and left hypochondriac regions. In June 1933 an exploratory laparotomy was performed; the surgeon found a neoplasm involving the entire posterior wall and greater curvature of the stomach, with numerous enlarged retroperitoneal lymph nodes extending along the lesser curvature, upward to the esophagus. Microscopic examination of a piece of tissue from the wall of the stomach gave evidence of lymphosarcoma.

CASE 11.—A woman, aged 66, had noticed in November 1932 a slightly enlarged node on the right side of the neck. In January 1933 she had had a severe infection of the respiratory tract, with much cough and expectoration of mucopurulent material and had continued to cough since that time. Since the end of 1932 also the lymph nodes in the neck, especially on the right side, had progressively enlarged. A biopsy on a node from the right side of the neck gave evidence of Hodgkin's disease. Questioning brought forth the information that, for many years, the patient had suffered from pyorrhea, and twenty-seven teeth had been extracted for this reason in the summer of 1932.

CASE 12.—In the early fall of 1932 a man, aged 42, had begun to suffer from "heartburn" and gastro-intestinal distress, which had come on one or two hours after meals. The symptoms gradually had increased, his weight had unaccountably begun to diminish, and these gastro-intestinal disturbances had been accompanied by belching and increasing constipation. In March 1933 the patient had been ill with influenzal pneumonia for three weeks; during this period he had had a high fever and, even after the infection had subsided, he had not fully recovered his health. Between the onset of his first symptoms in the fall of 1932 and his registration at the Mayo Clinic in July 1933 his weight had diminished from 230 to 167 pounds (from 104 to 76 Kg.). During the month preceding his examination, dyspnea had developed and he had passed tarry stools. Examination disclosed a large, irregular mass in the upper left quadrant of the abdomen, and bilateral enlargement of the mediastinal lymph nodes. Under roentgen irradiation the markedly enlarged abdominal and mediastinal nodes rapidly diminished in size, and all the patient's symptoms abated as promptly. Further investigation disclosed that the patient had suffered from marked pyorrhea for years.

In this case it seems likely that, by feeding infectious material to the gastro-intestinal tract over a long period, the pyorrhea probably had initiated the lymphoblastomatous process in the abdominal nodes, and later it had extended upward to the mediastinal nodes.

If chronic infection as the immediate cause of lymphoblastoma is as significant as it appears to be, it behooves the physician actively to combat infection wherever it may appear and, by every means in his power, to prevent such infection from becoming endemic, so to speak. Patients should not be allowed to harbor indefinitely teeth, tonsils, a gallbladder or other structures that are known to be infected. The importance of this conclusion is all the greater when the ancestors of the patient have been known to suffer from lymphoid disturbances. But, since few patients possess definite and reliable knowledge about the cause of death of even their parents and relatives of the first degree, certainly their knowledge of the morbid tendencies of distant relatives must be even more limited and less dependable. Under these circumstances the duty of the physician is plain.

The Deficiency Diseases.—One of the most notable contributions that has been made to medicine during the last quarter of a century is the discovery of the accessory food factors, the vitamins. With a comprehension of the significance of the vitamins has come an increasing interest in the subject of malnutrition in its broadest sense. As a result of innumerable investigations the tendency has grown within recent years to gather into one group a number of disease states that have been defined somewhat loosely as the deficiency diseases. The deficiency which is common to all of them is an inadequate amount of some substance in the food which is necessary to the body for its proper nutrition, or the inability of the body to absorb, or to prepare for absorption, these necessary substances even though the diet contains sufficient quantities of them.—Longcope, W. T.: The Importance of Disturbances in Nutrition in Edematous States, *New England J. Med.* **210**:1243 (June 14) 1934.

PULSATING EXOPHTHALMOS DUE TO INTERNAL CAROTID-JUGULAR ANEURYSM

THE USE OF THORIUM DIOXIDE SOL
IN LOCALIZATION

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Pulsating exophthalmos is usually the result of an abnormal arteriovenous communication in or just behind the orbit.¹ The pressure in the vein or in the venous sinus is raised so that it approaches the pressure in the artery. As a result, all anastomoses of these vessels and their capillary beds are greatly altered. Reid² states that abnormal arteriovenous communications give the greatest stimulus to establishment of collateral circulation. There is an actual increase in the number of capillaries, and all anastomoses to surrounding channels are increased in size. The veins are distended into varicosities (fig. 1).

This, of course, holds true especially in the orbit, since the orbital veins connect with both the external and the internal jugular vein. The increase in volume of the orbital content is produced by the increased volume of blood in the vascular bed and by the edema resulting from the distention of vessels. Arterial pulsation is also carried over into the veins and is transmitted to the eye. Pulsation of the eye is not always obvious and it is sometimes necessary to apply pressure to the globe in order to elicit the pulsation.³

Usually the paired venous sinuses of the skull communicate freely with one another and with tributaries to the external jugular veins. The important communications are between the cavernous sinuses by means of the anterior and the posterior intercavernous sinuses; between the straight sinus, usually on the left, and the transverse sinus, usually on the right, by the "confluens sinuum"; between the jugular bulbs by the occipital sinuses, and between the intracranial sinuses and the tributaries of the external jugular vein by emissary veins, by the pterygoid plexus, and indirectly by the angular vein (fig. 2). Thus the increased venous pressure caused by an arteriovenous aneurysm between the internal carotid artery and the internal jugular vein should be well distributed to all the venous sinuses of the skull, through them to the opposite internal jugular vein and to both external jugulars.⁴

With such a widespread distribution of the back pressure one would not usually expect to find enough effect on the cavernous sinus of the same side to produce a pulsating exophthalmos. The superior sagittal sinus usually terminates by emptying into the right transverse sinus, but it may empty into the left trans-

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Read before the Section on Ophthalmology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

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3. Wheeler, J. M.: Pulsating Exophthalmos, *Atlantic M. J.* **31**:812 (Aug.) 1928.

4. Cunningham, D. J.: *Textbook of Anatomy*, ed. 5, New York, William Wood & Co., 1923, pp. 964-977.

verse sinus or it may even bifurcate and empty into both transverse sinuses. Edwards⁵ has found marked variations in the outgoing venous sinuses of the skull. De Schweinitz and Holloway¹ found that pulsating exophthalmos became bilateral in seven of the sixty-nine cases they analyzed. They say: "Following the venous distention on one side, there is an extension of the process by the transverse and the circular sinus to the venous channels of the opposite side. There is not a simultaneous development of pulsating exophthalmos in the two eyes." An unusually wide communication between the paired sinuses is a logical explanation for these cases that become bilateral.

So far as we can ascertain, the following is the only reported case of pulsating exophthalmos due to an arteriovenous aneurysm in the neck:

REPORT OF CASE

History.—A man, aged 38, awakened at 3 a. m. with a sharp pain in the right temporal region. Ten grains (0.65 Gm.) of acetylsalicylic acid gave no relief. The patient continued his work as a hod carrier for some three days, when the discomfort became so unbearable that he sought relief from his physician. Local applications of heat and some pills were given him. The patient was relieved by the treatment sufficiently to resume his work. However, about three weeks later he noticed a "swishing" sound in his right ear, which was regular but which became more rapid with increased activity. He became dizzy after exertion. He also noted some vertical diplopia, which soon disappeared. The dizziness and the murmur became so intense that the patient could not work. He came to the eye clinic of the Massachusetts Eye and Ear Infirmary four weeks after the onset of his symptoms.

The patient was hit on the vertex of the head with an ax about twenty years previously. Several stitches had to be taken to close the wound. The injury did not render the patient unconscious and he had an uneventful recovery. The patient reported to us that he was hit on the right temporal region by a piece of falling timber about two months before. He considered this accident just a "scratch" and of no significance.

Examination.—There was a small but definite exophthalmos of the right eye. The difference in prominence of the two eyes was 4 mm. as measured by the Hertel exophthalmometer. Careful inspection showed a pulsation of the eye. The pulsation was approximately synchronous with the radial pulse. The superficial veins on the right side of the neck were prominent.

A loud murmur of a shrill musical type, seemingly continuous but greatly accentuated during systole, was heard over the right eye, in the right temporal region and over the internal carotid artery in the neck. It was loudest in the upper part of the neck. A compression of the carotid artery low in the neck immediately stopped the murmur but had no visible effect on the exophthalmos.

Diplopia was not present. The vision in each eye was 20/20. There was 1.5 prism diopters of right hyperphoria. The visual fields and blind spots were normal.

The conjunctival vessels of the right eye were increased in size and were very tortuous. This was particularly evident temporally. In the right fundus the retinal veins were moderately dilated and somewhat more tortuous than usual, though the departure from normal was not striking. The retinal arteries appeared normal in size and distribution. There were no retinal hemorrhages and no signs of retinal edema. The left fundus was quite normal. The pupillary responses were normal in both eyes.

X-ray films of the skull showed no increased density in the orbit. Both optic canals were normal in size and shape. There was no evidence of fracture.

The Wassermann reaction was negative. Neurologic and medical examinations at the Massachusetts General Hospital were essentially negative.

The facts that the exophthalmos was of such a small amount that the murmur was heard loudest in the neck and, that the

superficial cervical veins were prominent were opposed to the assumption that the aneurysm was located in or just behind the orbit. It was thought best to determine, if possible, the location of the aneurysm in order to devise the best method of surgical approach.

The internal carotid artery was cut down on and 25 cc. of thorium dioxide sol was injected into the artery. A series of x-ray films was taken at intervals during and after injections. They showed a somewhat triangular shadow with its base approximately at the site of the injection. The base was wide enough to represent the total width of the internal carotid artery and the internal jugular vein. The apex of the triangle was just below the jugular bulb (fig. 3). None of the thorium entered the skull. There had been very little leakage of the thorium into the soft tissues of the neck. This was shown by an x-ray film taken after sufficient time had elapsed for the thorium in the vessels to be carried off and diluted by the circulation (fig. 4). This roentgenographic evidence was proof that an abnormal arteriovenous fistula existed between the internal carotid artery and the internal jugular vein in the upper part of the neck.

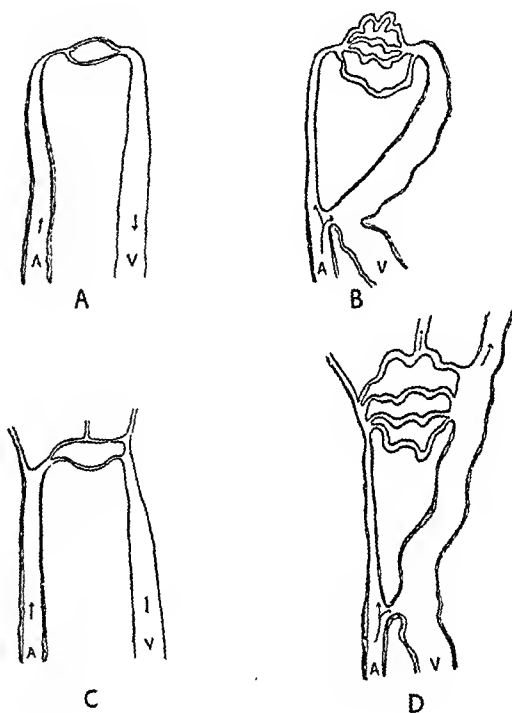


Fig. 1.—Schematic representation of the circulatory changes in arteriovenous aneurysms: A, a simple vascular bed of artery, vein and capillaries. B, effect of the aneurysm in a simple vascular bed, with decrease in size and thickness of the wall of the artery peripheral to the aneurysm, thickened wall and dilatation of the vein both peripherally and centrally, and increase in size and in number of the capillaries. C, normal vascular bed with anastomoses of arteries, veins and capillaries with vessels of neighboring vascular beds. D, aneurysm in the vascular bed; the changes mentioned in B are present and in addition the anastomoses to neighboring vascular beds take part in the pathologic changes; in other words, the collateral circulation has been greatly increased.

Operation (described by Dr. Myself).—Ten days after the thorium dioxide sol had been injected, the patient was taken to the operating room and the wound was reopened under general anesthesia. The internal jugular vein was dissected free and on picking up the vein with forceps one could see whirlpools and eddies of arterial blood within the vein. The jugular and lingual veins were ligated between two ligatures, the common facial vein having been ligated at the time of the injection of the thorium.

The region of the bifurcation and the internal carotid artery for $1\frac{1}{4}$ inches above the bifurcation were found to be infiltrated and boggy, evidently because of the injection of the thorium. For this reason, and also to prevent the back "swish" from the external carotid, the common carotid was ligated first. The incision was then carried farther up the neck and the internal carotid artery was exposed well above the part infiltrated by the thorium and was ligated at this point.

5. Edwards, E. A.: Anatomic Variations of the Cranial Venous Sinuses, Arch. Neurol. & Psychiat. 26: 801 (Oct.) 1931.

The following day the pulsation of the eyeball, the constant tinnitus, the temporal headache, and the bruit over the eyeball and neck had disappeared.

The patient remained in the throat service for two weeks following the carotid and jugular ligations. During this period he complained of slight vertigo only in the morning, when getting out of bed; otherwise his convalescence was uneventful, no cerebral complication developing.

Postoperative Course.—Two days after the operation the intern in the throat service found the right fundus to be pale. Seventeen days after operation the fundus showed a marked pallor but the retinal veins were markedly distended. There was no cherry red spot in the macula. The pallor of the retina was considered to be due to edema. Near the macula were several small somewhat irregular whitish spots, which were considered to be exudate. The vision was reduced to fingers at 4 feet. The confrontation fields were normal. The dizziness on exertion had diminished. Twenty-one days after the operation no changes were observed in the eye. Forty-nine days

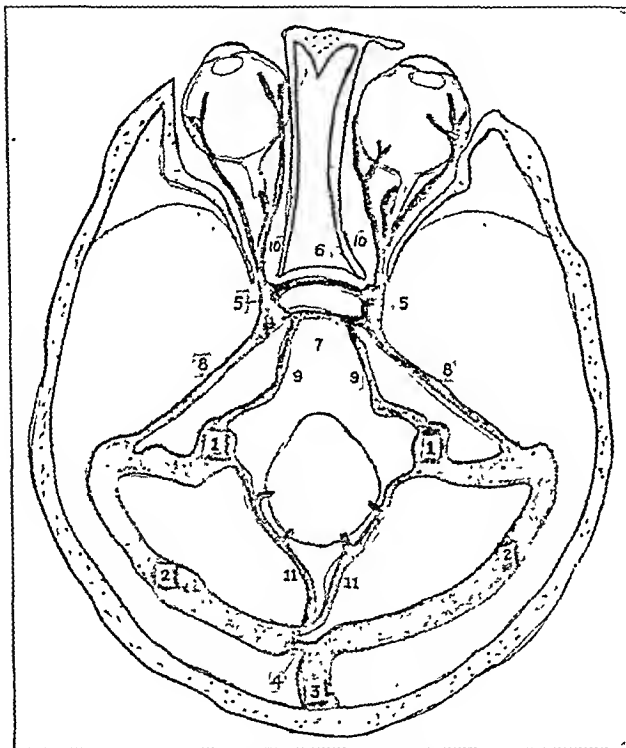


Fig. 2.—Composite drawing made by aid of illustrations in Cunningham's Textbook of Anatomy and Spalteholz's Human Anatomy. This shows the venous sinuses of the skull and their usual communications. 1, jugular bulb; 2, transverse sinus; 3, superior sagittal sinus; 4, confluent sinus; 5, cavernous sinus; 6 and 7, anterior and posterior intercavernous sinuses; 8 and 9, superior and inferior petrosal sinuses; 10, ophthalmic vein; 11, occipital sinus. No attempt has been made to show the connections between the tributaries of the internal and external jugular veins. A very important connection is between the ophthalmic vein and the angular vein. The latter, though it is a tributary to the internal jugular vein, has a large connection with the external jugular vein. Very small or absent connections between the paired venous sinuses of the skull at 6 and 7 and at 4 could easily account for a pulsating exophthalmos as a result of an arteriovenous aneurysm between the internal carotid artery and the internal jugular vein.

after the operation the retinal pallor had almost completely disappeared. The vision had improved to 20/70. Five months after the operation the dizziness on exertion had entirely disappeared. The vision was still 20/70. The retinal pallor and the whitish spots had entirely disappeared. There was an irregular indistinct dark spot in the fovea. The venous distention in the retina had disappeared. The exophthalmos was still present.

In 1930 Radt⁶ developed a technic of intravenous injection of thorium dioxide sol to visualize the spleen

and liver. From 10 to 15 cc. of the drug is injected daily until the total dose of from 50 to 75 cc. has been given. In about four days the drug is taken up by the reticulo-endothelial system so that the liver and the spleen are visible as very dense organs in x-ray films. This drug is considered to be dangerous. It is toxic in large doses. It may possibly be radioactive. It is held in the reticulo-endothelial system for years. The Council on Pharmacy and Chemistry of the American Medical Association refused to approve it in 1932.⁷ The report of the council lists the dangers of the drug and raises objections to the use of the term thorotrast (Hayden).

Allen and Camp⁸ had used thorium dioxide sol to visualize arteries in the extremities. They found that a dose of 25 cc. was sufficient. This is not enough to give an x-ray shadow of the liver and spleen. Certainly such small doses should be of much less danger. Moniz⁹ has used thorium dioxide sol to demonstrate the cerebral vessels. The drug has been used by many others for various purposes.

In 1920 Callander¹⁰ collected nine cases of arteriovenous aneurysms between the internal jugular vein and the internal carotid artery. However, Winslow,¹¹ in a more recent review, collected 106 cases of extracranial aneurysms of the internal carotid artery. Of this number nineteen were of the arteriovenous type. Since Winslow's communication I have found in the literature three additional cases of fistula between the internal carotid and the jugular.¹² There is one case of arteriovenous aneurysm between the internal carotid artery and the jugular bulb.¹³ There are five cases¹⁴ of abnormal arteriovenous communication between the common carotid artery and the internal jugular vein. With the exception of the case of Worms and Germain,¹² in which there was a nonpulsating exophthalmos, none of these cases showed any ocular changes.

By far the most interesting paper on arteriovenous aneurysms is by Reid.² He found that the abnormal communications were congenital in six cases out of thirty-three. Reid considers cirroid aneurysms and simple angiomas to be congenital abnormal arteriovenous communications.

Smith¹³ discusses the embryologic basis for congenital arteriovenous aneurysms. In the embryo certain vessels may be arteries for a time and later become veins, and vice versa. He quotes Sabin as stating that the circulatory systems of pig embryos of from 14 to 15 mm. length may still show slender connections

7. Thorotrast, Report of Council of Pharmacy and Chemistry, J. A. M. A. 99: 2183 (Dec. 24) 1932.

8. Allen, E. V., and Camp, J. D.: Roentgenography of the Arteries of the Extremities, Proc. Staff Meet., Mayo Clin. 7: 657 (Nov. 16) 1932.

9. Moniz, Egas: Cerebral Angiography with Thorotrast, Arch. Neurol. & Psychiat. 29: 1318 (June) 1933.

10. Callander, C. L.: Study of Arteriovenous Fistula with an Analysis of 447 Cases, Ann. Surg. 71: 428 (April) 1920.

11. Winslow, Nathan: Extracranial Aneurysm of Internal Carotid Artery, Arch. Surg. 13: 689 (Nov.) 1926.

12. Worms and Germain: Exophthalmie non pulsantile due à un aneurysme carotido-jugulaire interne d'origine traumatique, Bull. Soc. d'ophth. de Paris, December 1931, p. 761. McIntyre, D. R.: Arteriovenous Fistula of Left Internal Carotid Artery and Jugular Vein, J. A. M. A. 101: 278 (July 22) 1933. Gallo, A. G., and Spota, B. B.: Arteriovenous Aneurysm Between the Internal Jugular Vein and Internal Carotid Artery with Radicular Paralysis, Prensa méd. argent. 17: 604 (Sept. 20) 1930.

13. Smith, Ferris: Congenital Arteriovenous Fistula in Tympanum, Arch. Otolaryng. 10: 32 (July) 1929.

14. Tcharugin, A. V.: Complete Absence of Left Internal Jugular Vein with Arteriovenous Aneurysm of the Common Carotid and the Right Internal Jugular Vein, Odessky M. J. 3: 82 (Feb.) 1928. Usade, L. W.: Spontaneous Cure of an Arteriovenous Aneurysm Between the Common Carotid Artery and Internal Jugular Vein, Chirurg. 2: 555 (June 15) 1931. Moore, A. W.: A Case of Arteriovenous Aneurysm of the Neck, Lancet 2: 1186 (Dec. 1) 1923. Knaggs, R. L.: Vascular Aneurysm with Spontaneous Cure, Brit. J. Surg. 8: 167 (Oct.) 1920. Koltes, F. X.: Arteriovenous Aneurysm of Common Carotid Artery and Internal Jugular Vein, U. S. Nav. M. Bull. 25: 630 (July) 1927.

6. Radt, Paul: Eine Methode zur röntgenologischen Kontrastdarstellung vom Nolz und Leber, Klin. Wchnschr. 8: 2128 (Nov. 12) 1929.

between the middle segment of the internal jugular vein and the internal carotid artery.

Certainly no congenital basis is needed to explain the occurrence of an aneurysm following a perforating wound of an artery and a vein as a result of injury by a sharp cutting instrument, by gunshot wounds, or by spicules or sharp edges of a fractured bone. In those cases, on the other hand, that result from trauma in the nature of a contusion, most assuredly the presence of a diseased vessel wall would play a very important part in the formation of the aneurysm. This may explain to a great extent why aneurysms arise in only a few of the people who sustain practically identical contusions. Reid² reported cases in which trauma to a cirroid aneurysm or even to an angioma produced enlargement and pulsation of the lesion.

COMMENT

It is impossible to be sure that the patient herein discussed did not have more than one arteriovenous communication. Such another fistula intracranially placed would produce the signs and symptoms and would have been cured probably by the same operative procedure. However, it is possible to explain all the conditions on the basis of one lesion.

It is difficult to surmise that an arteriovenous communication of the internal carotid artery and the internal jugular vein could produce pulsating exophthalmos unless there was a very poor or a completely absent communication between the paired sinuses. Edwards⁵ has shown that many types of variations do occur in the venous sinuses of the skull. Probably a faulty communication between the paired sinuses could have been demonstrated in the present case by further injection of thorium dioxide sol on the left side, but the possible remote dangers arising from the accumula-

the arteriovenous aneurysm in this patient. It seems that this aneurysm was spontaneous and most probably of congenital origin.

Reid² points out that there are marked changes in the peripheral parts when an abnormal arteriovenous communication is eliminated. The temperature of the

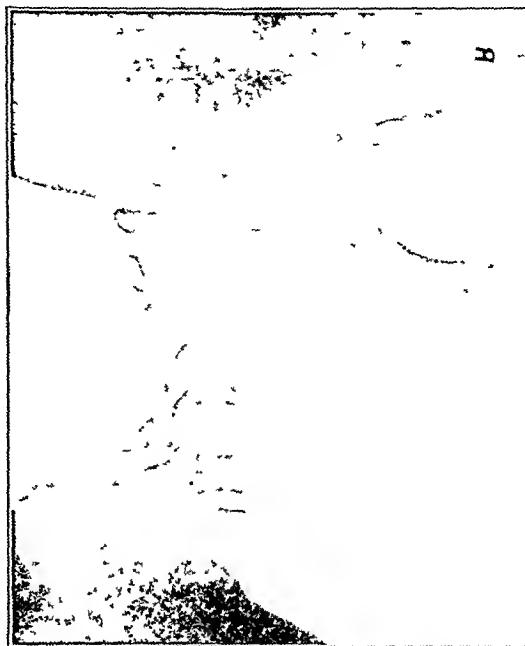


Fig. 4—Appearance a considerable time after the injection of thorium dioxide sol. The shadow in the neck shows the small amount of thorium dioxide sol that leaked into the soft tissues at the time of the injection.

part is elevated from 1 to 2 degrees. This is due to sudden changes of the circulatory condition. Some time must elapse before a normal equilibrium is reestablished.

Tying the carotid artery is a dangerous operation. If the patient does not die, there is the possibility of hemiplegia.¹⁵ The danger is no doubt lessened by the fact that the aneurysm has increased the collateral circulation. Unless hemorrhage or cardiac symptoms make an early operation advisable, Reid² feels that it is preferable to wait six months before operating on the usual abnormal arteriovenous communication so that the collateral circulation may be fully established. However, in the case of pulsating exophthalmos he feels that an early operation is preferred because the vision may be endangered by increased protusion of the eye.

Tying the internal jugular vein also occasions some disturbance to the eye. It may produce papilledema, distention of the retinal veins, edema of the retina, and even retinal hemorrhages. Reid² feels that it is advisable to tie the accompanying vein when the artery is tied in cases of arteriovenous fistula. Failure to tie the vein leaves the region with an abnormally large venous drainage. Walcker¹⁶ as well as other authors stresses the desirability of ligating the internal jugular vein whenever the carotid artery is tied.

In an attempt to understand the changes in the eye following the operation, several factors must be considered: Ligation of the carotid artery would tend to produce an anemia of the retina, ligation of the internal

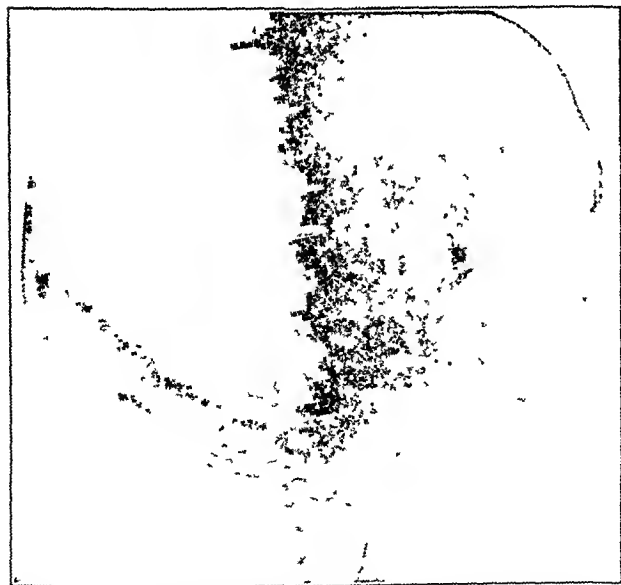


Fig. 3—Appearance immediately after the injection of thorium dioxide sol, which is in the artery and the vein. The arteriovenous fistula is located approximately at the apex of the triangular shadow produced by the thorium dioxide sol.

tion of thorium in the system makes one hesitate to use such measures when no value to the patient would result.

It is highly improbable that the severe injury to the head twenty years previously or the more recent slight head injury or the combination of the two produced

15. Sahnger, Samuel, and Pearlman, S. J. Hemorrhage from Pharyngeal and Peritonsillar Abscesses, *Arch. Otolaryng.* 15: 464 (Oct) 1933.
16. Walcker, F. *Arch. f. Klin. Chir.* 130: 736, 1924 (quoted by Sahnger and Pearlman¹⁵).

jugular vein would tend to produce a passive congestion of the retina, and elimination of the aneurysm would tend to improve the circulation. A combination of these factors in their indeterminable proportions did produce an edema of the retina and a distention of the retinal veins. The cause of the irregular indistinct dark spot in the fovea is not clear. It might be due to a small choroidal hemorrhage, to proliferation of pigment epithelium of the retina or to the processes of repair following a small flat separation of the retina at this location. Though embolism of choroidal vessels is not generally recognized, it is possible that the operative trauma to the neck vessels might have freed a minute thrombus.

De Schweinitz and Holloway¹ state that "tumors of the brain which have broken into the orbit, as well as tumors of the orbit itself, or protruding into it from the neighboring sinuses, can cause symptoms which are analogous to those furnished by the typical pulsating exophthalmos." The differentiation is usually easily made by roentgenographic means and by the presence or absence of a murmur. However, there are other additional methods of differentiation. Brown¹⁷ calls attention to Branham's sign¹⁸ and to determination of the oxygen content of the venous blood. To determine the oxygen content of the venous blood Brown collects two samples, one from the vein near the fistula and the other from a vein somewhere else in the body. The samples have to be collected under oil. The Van Slyke gasometric method of analysis is done.

The question may arise as to whether the duration of an arteriovenous fistula can be determined. In a case of pulsating exophthalmos in my own practice this question arose, from a medicolegal point of view. Strong evidence for a long duration is furnished by the extent to which the heart has hypertrophied. The heart hypertrophies after a time; the effect on the heart has been compared to that of aortic regurgitation.

CONCLUSIONS

1. An abnormal arteriovenous communication between the internal carotid artery and the internal jugular vein rarely affects the eye.
2. Such an aneurysm produced pulsating exophthalmos in the case herein reported.
3. The exophthalmos probably was due to insufficient communication between the paired cranial sinuses.
4. Thorium dioxide sol is of aid in locating the site of arteriovenous aneurysm.

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ABSTRACT OF DISCUSSION

DR. ADOLPH O. PFINGST, Louisville, Ky.: More than 600 cases have been reported since the condition was first described by Benjamin Travers in 1809. Travers was of the impression that his case was one of cirroid aneurysm of the orbit. He was the first to ligate the common carotid artery for its relief. Autopsy established that many of the cases of pulsating exophthalmos are not of orbital but of intracranial origin and that most of them are brought about by arteriovenous communication. In 1907 de Schweinitz and Holloway, in their classic treatise on pulsating exophthalmos, pointed out that the majority of cases are due to communication between the internal carotid artery and the cavernous sinus. This is especially true of the traumatic cases, which represent about 77 per cent of all arteriovenous aneurysms. Of the spontaneous type of pulsating

exophthalmos, only a little more than half the cases can be attributed to arteriovenous communication, the cause of the other half being about equally divided between orbital tumors and simple aneurysm, either of the internal carotid or of the ophthalmic artery. The author has stated that quite a few cases of exophthalmos have their cause in extracranial arteriovenous communication and that most of them due to fistulous communication between the internal carotid and the internal jugular in the neck are not associated with exophthalmos. His case represents the only one ever reported in which internal carotid-jugular aneurysm was associated with a pulsating exophthalmos. In the intracranial arteriovenous variety of aneurysm the pulsation of the eye can readily be explained by the fact that the anastomosis of the artery and vein brings about a rise of pressure in the vein and thus carries the arterial pulse to the vein of the eye. The increased volume of the orbital contents, the result of increase in blood throughout the orbital vessels, and the edema resulting from the distended vessels are also a potent factor in the transmission of the pulse beat to the eyeball. The interpretation of the cause of the pulse beat in their case by Drs. Terry and Myself, that it was probably due to a poor communication between the paired cranial sinuses and a consequent disturbed collateral flow of blood, seems a theory worthy of consideration when one subscribes to the view that the rare cases of bilateral pulsating exophthalmos are due to a wide communication between the paired sinuses. The mechanism of the production of arteriovenous communications has not been satisfactorily explained.

DR. MONT R. REID, Cincinnati: The problem of dealing with intracranial or subcranial arteriovenous communications is complicated by the dangerous procedure of ligating a large artery proximal to the point or points of communication. The procedure is attended by much more serious complications than the ligation of an artery for arterial aneurysm. Ligations in the cases of intracranial arteriovenous communications lead to a high incidence of cerebral complications. To obviate the dangers of proximal ligation of an artery for pulsating exophthalmos, various methods have been tried. As pointed out by the author, the ligation of a vein to prevent too rapid shunting of blood back to the heart has been advocated. Brooks advocated opening the internal carotid artery and inserting an embolus of muscle, which would go up and block the fistula. De Schweinitz and others have cured many cases by ligating the large supra-orbital vein. Recently a small instrument has been developed consisting of a brush on a flexible probe, which can be inserted back toward the fistula, after division of the supra-orbital vein, in order to traumatize the intima of the vein. The cures reported by ligation of the supra-orbital vein have undoubtedly been due to a retrograde thrombosis. As pointed out by Dr. Terry, pulsating exophthalmos may result from abnormal extracranial arteriovenous communications. His case seems certainly to be of this type. It is most interesting that the condition apparently developed in his patient without any definite injury. One wonders whether the condition was not congenital or at least preceded by a long-standing deep angioma, which, as the result of some stress or strain, developed the characteristics of a cirroid aneurysm exhibiting a thrill and bruit. The occurrence of just one spontaneous communication between large arteries is extremely rare, except in the case of thoracic aneurysms, which may rupture into the vena cava. If his case developed on the basis of an angioma or cirroid aneurysm or is congenital, the chances are that the ligation of the carotid artery will serve only to ameliorate the condition and that the symptoms will recur. This was true in the case in which Halsted operated on a girl 11 years of age for an extracranial cirroid aneurysm situated apparently in about the same position as in the case of Dr. Terry's patient. He ligated the external carotid artery and excised one rather large fistula. Seven years later she had the same symptoms associated with slight exophthalmos, bruit and thrill. At that time I excised a fistula and a very large ascending pharyngeal artery. This relieved the patient for a considerable period but then the bruit and thrill returned.

DR. T. L. TERRY, Boston: Though the case here reported was apparently cured of the pulsating exophthalmos, macular vision in the involved eye was lost. It might have been

17. Brown, G. E.: Abnormal Arteriovenous Communications Diagnosed from the Oxygen Content of the Blood of Regional Veins, *Arch. Surg.* 18: 807 (March) 1929.

18. Branham's sign is the sharp slowing of the pulse with closure of the fistula.

possible to cure the aneurysm without loss of central vision if some other type of operation had been done. The operation as described was apparently the best substitute of operative means available when it was found impossible to perform a so-called quadrilateral ligature with removal of the arteriovenous fistula. Ligation of the veins as suggested by Dr. Reid might have been a more successful procedure. In a paper read last Monday before the Association for Research in Ophthalmology by Dr. George M. Dorrance it was shown that operative obstruction of the common carotid artery would reduce the circulation through the internal carotid artery by 50 per cent. Ligation of the superior thyroid artery along with the common carotid would reduce the flow in the internal carotid by 75 per cent. This operative procedure Dr. Dorrance finds is not nearly so apt to produce cerebral complications. The operation as suggested by Dr. Dorrance might also have cured the aneurysm in the case I have reported without destroying macular vision. Since meningocele extending into the orbit and angioma of the orbit can produce pulsating exophthalmos, it is important to use thorium dioxide and gasometric determination of the oxygen content of the blood from the internal jugular vein to prove conclusively that the pulsating exophthalmos is due to an arteriovenous fistula. However, the presence or absence of a murmur in the involved region would be of great importance in this differentiation.

FORENSIC APPLICATION OF SEROLOGIC INDIVIDUALITY TESTS

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Serologic methods were applied in forensic medicine shortly after the discovery of immunologic species characteristics. The specific precipitin reaction made it possible to differentiate human from animal blood even in minute stains, a task beyond the reach of ordinary chemical methods. To go still further and attempt to distinguish bloods of various human individuals from one another seemed almost hopeless at that time. In part this problem was solved by the observation that there exist several types of human blood which can be identified by a very simple reaction, normal human serums being used as reagents.

I presume that the properties of the human blood groups are known well enough to make a repetition unnecessary. Because of the regularity of the blood group scheme it was obvious from the outset that the underlying blood properties are constitutional and, following the rediscovery of Mendel's laws by de Vries, Correns and Tschermak, these individual blood properties were shown to be hereditary and subject to the mendelian rules.¹ Accordingly, the blood group reactions can be resorted to forensically in cases of disputed parentage. I propose to discuss first this application of the blood group tests, which is more common than the differentiation of human blood stains.

Two major theories on the inheritance of the blood groups have been put forward. Since the theory of von Dungern and Hirschfeld, which seemed satisfactory at the outset, has been disproved, it will suffice to present the theory of Bernstein, now generally accepted. One should emphasize, however, that there was never any controversy about the facts most essential for the practical application of the tests and furthermore that with regard to these facts both theories are in agreement.

The theory of Bernstein assumes three allelomorphous genes, A, B and O (or R), one of which is present in each member of a certain pair of chromosomes, genes A and B being dominant over O. Since each somatic cell possesses two of these genes, one derived from either parent, there are six possible genotypes, whose correlation with the four blood groups is given in table 1. The mode of inheritance may be illustrated

TABLE 1.—Correlation of Genotypes with Blood Groups

Genotype	Group (Phenotype)
OO	O
AA } AO }	A
BB } BO }	B
AB	AB

by an example of a mating. Assuming one parent of the genotype AO and the other of the genotype BO, the germ cells of the former contain either the gene A or O and likewise the germ cells of the latter either B or O. Thus there result four possible genotypes in the offspring; namely, AB, AO, OB, OO. In this case, therefore, children of all four groups are possible.

In a like manner the offspring arising from any sort of mating can be derived (table 2). It is evident that the tests cannot be used to prove parentage; on the other hand, an exclusion of paternity can be made not infrequently. These cases fall under two headings. First, the dominant agglutinogens A and B cannot appear in the offspring unless they are present in one or both parents (table 2, lines 1-6); secondly, a parent O cannot have a child AB, and a parent AB cannot have a child of group O (table 2, lines 7-10). The first rule (dominance rule), is common to the two theories mentioned, whereas the second is peculiar to Bernstein's theory.

From the foregoing it follows that a decision as to nonpaternity can be made only in a certain percentage

TABLE 2.—Derivation of Offspring

Groups of Parents	Groups of Children	Exclusion Cases
O × O	O	A, B, AB
O × A	O, A	B, AB
O × B	O, B	A, AB
A × A	O, A	B, AB
A × B	O, A, B, AB	
B × B	O, B	A, AB
O × AB	A, B	O, AB
A × AB	A, B, AB	O
B × AB	A, B, AB	O
AB × AB	A, B, AB	O

of cases, since children of the same group can result from matings with men of different groups, and at any rate the falsely accused man and the true father may belong to the same group. The average chance of excluding paternity is about 1/7,² as can be calculated on the basis of the theory of inheritance from the frequencies of the four groups in the population. A point of practical interest is that the chances vary for men of different groups; the figures, as calculated by Hooker and Boyd, are, for group O, one in five; for group A, one in seventeen; for group B, one in seven; for group AB, one in two. Of course, if one knows the group of the child and of the mother, other figures are

Read before the Section on Miscellaneous Topics, Session on Forensic Medicine, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
1. von Dungern and Hirschfeld, Ottenberg.

2. Hooker, S. B., and Boyd, W. C.: *J. Immunol.* 16: 451 (May) 1929. Wiener, A. S.: *J. Immunol.* 24: 443 (June) 1933. For the population of Germany the figure is somewhat higher; namely, about 1/6.

The results of family investigations carried out by several independent workers are summarized in table 5. As is seen from the table, the observed frequencies agree satisfactorily with the calculated values and there are only a few apparent exceptions to the theory, such as must be expected on account of illegitimacy. That this assumption is correct is supported by the fact that in seven of the eight cases the incompatibility certainly involves the father and not the mother. Most likely the same holds true for the remaining case.

A convincing argument is afforded by a study of the properties M and N in mothers and children. This

TABLE 4.—Type of Children from Six Matings

Types of Parents	Per Cent Children of Types		
	M	N	MN
M × M.....	100	0	0
N × N.....	0	100	0
M × N.....	0	0	100
M × MN.....	50	0	50
N × MN.....	0	50	50
MN × MN.....	25	25	50

test for the accuracy of the inheritance theory is based on the second rule, according to which incompatibility can be recognized when the type of only one parent is known. In fact, in the data thus far collected, including more than 6,000 children and their mothers, there is no case of a mother of type M having a child of type N or a mother N with a child M. Additional evidence was provided by the examination of twins, who, when identical, always agree with regard to the properties M and N and belong to the same blood group.

Further confirmation was obtained by a statistical method similar to that which led Bernstein to his "three gene" theory of the heredity of the blood groups. If the relative frequencies of the genes M and N in a population are designated by the letters m and n, respectively, then, a priori, $m + n = 100$ per cent. Since type M, corresponding to genotype MM, possesses two genes M, its frequency in a homogeneous population is m^2 . Hence $m = \sqrt{M}$, where M represents the observed frequency of type M in the population. Similarly, $n = \sqrt{N}$, so that $\sqrt{M} + \sqrt{N} = 100$ per cent.

In fact, in all trustworthy investigations on the distribution of the properties M and N in various populations it was found that, if one adds the square root of the frequency of the types M and N, the sum is approximately equal to 100 per cent. As a striking example, Schiff's figures obtained by the examination of 1,420 inhabitants of Berlin may be cited; namely: M 0.301, N 0.208; MN 0.49; in this case $\sqrt{M} + \sqrt{N} = \sqrt{0.301} + \sqrt{0.208} = 0.549 + 0.457 = 1.006$.

On the basis of the studies discussed, European authors concur in advocating the tests for M and N as evidence in affiliation cases, and these tests have actually been applied in Germany, Denmark and Sweden in several hundred lawsuits. The chances of excluding paternity are considerably increased by the use of this method, so that when, in addition to blood grouping, tests are made for M and N, one out of three wrongly accused men will be exonerated. Likewise, the chances for detecting interchange of new-born infants in hospitals are raised to about 70 per cent. It must be emphasized, however, that great caution should be employed in the performance and in the interpretation of the tests, particularly those for the property N, and that there are questions concerning the technic of these

tests which still require thorough study in order to exclude possible mistakes.⁷

To turn now to the second forensic application of blood grouping, namely, the examination of blood stains,⁸ it may be said that these tests, though not often required, prove to be of considerable consequence in certain criminal court proceedings. After having established by chemical tests that the stain contains blood and by means of the precipitin reaction that it is of human origin, one may use two methods, the examination for iso-agglutinins and that for agglutinogens. The test for agglutinins consists in adding a trace of the dried blood or a fragment of the stain or an extract of it to suspensions of bloods of the groups A and B. If possible, the tests should include the blood of the victim and the accused person. Precautions must be taken in order to avoid errors due chiefly to the presence of agglutinating substances other than iso-agglutinins or to pseudo-agglutination. For this reason control tests with blood of group O are essential.

As a rule, the iso-agglutinins are still active in dried blood after many months or even a longer interval, but they may deteriorate sooner and consequently no conclusions can be drawn from negative reactions. The iso-agglutinable substances of the cells are more resistant than the iso-agglutinins and may be demonstrable when the other method fails. After drying, the red cells cannot be used for agglutination tests; but they still are capable of combining with the corresponding agglutinins. Hence, if on adding serum of group A and of group B severally, or a mixture of both to the material to be examined, iso-agglutinins are absorbed, it is possible in this way to determine the group of the dried blood.

Cases that prove the value of the group diagnosis of blood stains have been reported by several authors, especially Lattes⁹ and Popoff.¹⁰ In some instances it was established that a blood stain found on the clothes or an implement of the suspected individual did not

TABLE 5.—Summary of the Studies of Landsteiner-Levine, Wiener-Vaisberg, Schiff, Thomsen, Clausen, Lattes, Blaurock and Crome

Types of Parents	Number of Children of Types			
	M	N	MN	Totals
M × M.....	219	0	1	220
N × N.....	0	110	0	110
M × N.....	0	2	216	218
M × MN.....	330	3	376	709
N × MN.....	2	251	274	527
MN × MN.....	153	139	341	633
Totals.....	704	535	1,208	2,447

originate from the victim, whereupon the accused was discharged; in other cases the testimony offered by the defendant was shown to be false. It has been justly advised, therefore, by Merkel, that whenever an autopsy is made on the victim of an assault the blood group of the body should be determined for possible future use.

The reactions for M and N have thus far been utilized for the examination of blood stains in only a few legal cases,¹¹ but a more general application may be expected as the methods are improved.

7. Compare Koller: *Ztschr. f. Rassenphysiol.* 5: 102, 1932.

8. Landsteiner and Richter (1902, 1903); Lattes.⁹

9. Lattes, L.: *Deutsche Ztschr. f. d. ges. gerichtl. Med.* 9: 402 (March 10) 1927.

10. Popoff, N. W.: *Deutsche Ztschr. f. d. ges. gerichtl. Med.* 9: 411 (March 10) 1927.

11. Lauer, A.: *Deutsche Ztschr. f. d. ges. gerichtl. Med.* 22: 86 (Oct. 18) 1933.

An extension of the blood group tests was made possible when it was found by several authors that the properties A and B are detectable by suitable technic not only in blood and organs but also in secretions such as saliva, seminal fluid, mucus and sweat. Thus, in some cases the blood group could be determined in traces of seminal fluid and in the small quantity of dried saliva on the edge of an envelop or on cigaret stubs. On the other hand, the presence of group specific substances in secretions renders it necessary to take precautions in the examination of blood stains; that is, to test in addition to the stains other parts of the material not soiled by blood.

It is of interest that, depending on the presence or absence of group specific substances in urine and saliva, two types of individuals can be sharply distinguished, for these substances are practically lacking in the secretions of from 20 to 30 per cent of all individuals. Still more remarkably, the ability to secrete the group substances is inherited as a mendelian dominant.¹²

Attempts to demonstrate the agglutinogens M and N in secretions and organs have not been successful.

It is not practicable here to enter into the question of technic and in regard to this I must refer to the treatises and papers on the subject. Suffice it to say that particularly the tests for M and N and the examination of blood stains are of a delicate nature and require a worker with considerable experience and acquainted with the pertinent literature. As to the prospects of the forensic application of the blood tests in this country it will, of course, depend on whether the available evidence will satisfy the legal authorities as it has the European courts.

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ABSTRACT OF DISCUSSION

DR. ALEXANDER S. WIENER, Brooklyn: In my studies on the heredity of the agglutinogens of human blood, specimens of the blood of 1,334 mothers and their 1,462 children were examined for the properties A and B, and a series of 461 mothers with 495 children for the properties M and N. In addition, the simultaneous heredity of the four agglutinogens A, B, M and N was also studied in 131 complete families with 642 children. The results of these investigations have convinced me firmly of the reliability of the tests. The method cannot be applied in every case, since it exonerates only one out of three falsely accused men. Another opportunity for applying the method arises when two new-born infants are interchanged, as happened in a Chicago hospital in 1930. In this case the tangle was straightened out with the aid of the classic blood groups, since, whereas neither child's blood group matched, in accordance with the laws of heredity, with the blood groups of the parents to whom they had been assigned, the bloods matched satisfactorily when the children were exchanged. If only the four Landsteiner blood groups are tested for, the accused man has one chance in six or seven of establishing his innocence. The discovery by Landsteiner and Levine of the properties M and N and their mode of heredity is a very important advance, since it has doubled the number of cases in which a definite decision can be made. Perhaps the most convincing demonstration of the value of the blood grouping tests is afforded by the reaction of the mother when confronted with the results of the examination. Thus, in a case tried before the court of common pleas of New Haven, Conn., a woman accused a certain man of the paternity of her illegitimate child. I examined the blood of the individuals involved and found that the woman belonged to group O, the man to group A, and the child to group B, so that the accused man could not possibly have been the father of

the child. When the mother was confronted with the results of the examination, she withdrew her charge and the man was acquitted. In many cases of disputed paternity, the use of blood grouping tests is in the child's interest. Thus, the husband may be appeased if the exclusion of the other man by these tests proves that his suspicions are unwarranted; or the accused man in a bastardy case may be induced to marry the mother of the child, if he is not excluded by the blood tests. An important legal question is whether the court has the power to order the individuals involved in a filiation case to submit to a blood test. Lee states that "in this country the right to have a physical examination includes the right to have a drop of blood where it is material." And in reply to the argument that the medical examination is a violation of the privilege of refusing to testify on the ground of self incrimination, Lee remarks, "What is required of the witness is not testimony but physical inspection, something in the nature of real evidence."

DR. KARL LANDSTEINER, New York: I want to emphasize once more the difficulty of the technic and the danger of faulty results, and especially that one should refrain from giving a definite opinion if the results of the tests are not clear cut.

THE TONSILS, THEIR FUNCTION AND INDICATIONS FOR THEIR REMOVAL

L. W. DEAN, M.D.

ST. LOUIS

A study of the tonsil problem requires a consideration of all the lymphoid tissue in the pharynx. The palatine tonsils are, on a clinical basis, the most important of the lymphoid structures in the throat. However, the other lymphoid masses may be and usually are involved in throat infection. They must be given serious consideration if the influence on systemic disease of infection about the throat is to be eradicated. Certainly in removing the conditions about the throat that have a deleterious influence on such diseases as rheumatic fever, heart disease, Still's disease, chorea and hemorrhagic nephritis, it is impossible to get the most satisfactory result by confining the attention to the palatine tonsils or to these structures plus the pharyngeal tonsil. If in this class of cases following the removal of the pharyngeal and palatine tonsils the children suffer from acute exacerbations of their systemic disease, and if, as is usually the case, the acute exacerbations are preceded by acute upsets in the upper respiratory tract, one must realize that there is some condition about the throat, nasal sinuses or ears that is responsible for these acute disturbances of the upper respiratory tract.

It is a common thing for the pediatrician to say "When you removed the faueial and pharyngeal tonsils from this child with a heart lesion, you did not eradicate all the foci of infection because the child is suffering from acute upper respiratory upsets. Further, these attacks are having a deleterious effect on the heart."

In every case in which a tonsil is removed for the purpose of benefiting a systemic condition, my associates and I make a note in the chart to the effect that we have done what should meet the exigencies of the situation but that it is not certain that all chronic infection has been removed. Further, we request that the patient be returned for reexamination in the event that

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Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

12. Schiff, F., and Sasaki, H.: *Klin. Wchnschr.* 11: 1426 (Aug. 20) 1932.

the clinical course of the disease suggests that there is something left in the upper respiratory tract which has a deleterious influence on the patient.

It is usual for children to be returned for further study. They may be returned several times. We get the best results by adding our supervision to that of the pediatrician for from eighteen months to two years. It is only by this thorough cooperation that the best results can be secured. It is irritating sometimes to have the pediatrician insist that a condition has been left in the regions of the upper respiratory tract which if removed will benefit the child. My experience has been that his judgment was correct. The opinion of the internist or pediatrician is of greatest importance in deciding the type of operation, if any, that should be done on the lymphoid tissues of the throat.

The most important part of the treatment of heart disease, rheumatic fever, arthritis or chorea in children is the eradication of chronic infection about the upper respiratory tract. It is axiomatic that the lymphoid masses in the throat, other than the palatine and pharyngeal tonsils, may be infected and consequently must receive attention in the control of the infection about the throat. It is also true that one cannot possibly remove from the pharynx every vestige of infected lymphoid tissue, but much more can be done than the removal of the faucial and pharyngeal tonsils. The course of the systemic response is an important factor in determining how thorough one's work has been.

The tonsils and other lymphoid structures of the throat are not lymphatic glands. Neither is their structure the same as that of the lymphoid tissue of the spleen and bone. They are a part of the subepithelial lymphoid tissue of the body. The lymphoid structures of the pharynx are integral parts of the pharyngeal mucous membrane. This lymphoid tissue is laid down in the mucous membrane of the pharynx as it develops. Even the palatine tonsils are first folds of pharyngeal mucous membrane. These appear early in embryonic life, the lymphoid tissue making its appearance in the fold at a later date. The tonsils consist of reticulo-endothelial supporting tissue and lymphoid tissue with and without germ centers. It is no different from the lymphoid tissue in the alimentary tract. The tonsils differ from the lymphoid glands in at least one outstanding feature; namely, they possess no afferent lymphatic vessels, and consequently the lymph stream must always flow from the periphery of the mass.

In addition to the palatine tonsils the other lymphoid structures of the pharynx that have clinical significance are the pharyngeal tonsil, the lingual tonsil, the so-called infratonsillar nodes, which lie just below the palatine tonsils, and the macroscopic lymph masses in the mucous membrane.

In simple hypertrophy without infection, the pharyngeal tonsil is of greater clinical significance than the palatine tonsils, because of its location. Its enlargement may easily interfere with nasal respiration.

The palatine tonsils are the outstanding sources of infection. Their crypts are long and bifurcated. They are often constricted at the opening into the pharynx. No mucous glands open into the bottom of these crypts. Anatomically they are particularly well fitted for the retention of debris such as desquamated epithelial cells and bacteria. The crypts in the lingual tonsil are short and wide and their openings are funnel shaped. They do not easily become harborers of debris. The pharyn-

geal tonsil and the infratonsillar nodes also contain crypts which become impacted with debris more readily than those of the lingual tonsil and much less easily than those of the palatine tonsil. So far as I know the follicles on the wall of the mucous membrane do not contain true crypts. They do contain the same type of lymphoid tissue as is found in the palatine tonsil; namely, the germinal centers and lymphoid tissue without germinal centers. Because of these structural characteristics the lymph follicles and the lingual tonsil are less often the focus of infection, while the palatine tonsils are the greatest offenders. Nevertheless, in my lifetime I have seen many cases of diseases such as arthritis and glomerular nephritis, which were controlled only by the eradication of infection in the lingual tonsil, and there has been an occasional case in which a satisfactory result was secured only by getting rid of the macroscopic lymphoid follicles in the mucous membrane of the pharynx. In rheumatic fever, heart disease and other conditions the patient may be benefited by the removal of the palatine and pharyngeal tonsils, but a satisfactory result is not secured. Under these circumstances one cannot afford to overlook the lingual tonsil, the infratonsillar nodes and other lymphoid masses in the wall of the pharynx. It is only by repeated examinations of the throat and the careful eradication of these minor sources of infection that the best results are obtained.

This contribution does not consider the nasal sinuses and the ears, which are the other sources of infection about the upper respiratory tract.

The infection of the lymphoid masses of the pharynx is not the cause of rheumatic fever, heart disease, chorea or Still's disease. This can be amply demonstrated by the fact that, while the removal of faucial and pharyngeal tonsils may decrease slightly the incidence of rheumatic fever and heart disease, it certainly does not prevent it.

In toxic malnutrition, secondary to infection of the lymphoid masses in the pharynx, the infection is the outstanding cause. Given a case of malnutrition secondary to infection about the throat with such symptoms as emaciation and interference with growth, if this infection is eradicated there is often a miraculous return to the normal. The weight increases, the height progresses and the child soon becomes normal so far as weight and height are concerned. This is not the case in rheumatic fever, heart disease, chorea or Still's disease. In children with these diseases, eradication of all the infection about the upper respiratory tract will be followed by a period of months or perhaps two years before the child returns to normal. Only by eradication of all infection plus dietetic, hygienic and other kinds of treatment is the desired result secured.

A child with rheumatic fever and no infection about the upper respiratory tract may develop fever which can be controlled by the use of salicylates. This is not the case when the fever is the result of infection of the lymphoid tissue. In short, one must be careful not to assume that tonsillar infection causes many of the systemic diseases that are associated with this condition; rather, one should assume that there is a systemic disturbance which is seriously affected by infection of the lymphoid tissue in the pharynx. This does not invalidate in any way the statement, made earlier in this paper, that the primary consideration in the treatment of many of the systemic conditions is the eradication of infection about the upper respiratory tract.

The removal of the larger masses of lymphoid tissue in the pharynx early in childhood does decrease markedly the incidence of scarlet fever, common colds and otitis. It decreases somewhat the incidence of rheumatic fever, chorea and heart disease in children. It is particularly beneficial in reducing the incidence of cervical adenitis. In my experience the removal of these masses has not decreased the susceptibility to diphtheria. However, the absence of pharyngeal and faucial tonsils favorably influences the course of the disease. There has been much discussion of the excellent work done by Kaiser on the increased incidence of laryngitis, bronchitis and pneumonia in tonsillectomized children. After a serious consideration of this investigation extending over a period of several years, I am convinced that the increased incidence of these pulmonary conditions in tonsillectomized children is due to the fact that, at the time the tonsil operation was performed, nasal sinusitis was present and it is this nasal sinusitis which is responsible for the pulmonary disease.

Because of the importance of determining all sources of chronic infection about the upper respiratory tract in children with such diseases as rheumatic fever, chorea, hemorrhagic nephritis and Still's disease, I always make an examination of the nasal sinuses at the time of the tonsil operation in this class of cases. I do this because the work can be done more advantageously in very young children under general anesthesia. It is the rule to find some suppurative sinus disease. Most of these conditions are controlled by dietetic and hygienic treatment following the tonsil operation. However, many of the sinus infections persist and are important factors in the production of pulmonary disease. I think this question can be definitely answered only by studying the incidence of pulmonary disease in a group of children free of nasal sinus disease that are not tonsillectomized and in a second group of children free of nasal sinus disease at the time of the tonsillectomy.

As will be noted later in this contribution, the lymphoid masses of the pharynx have a decidedly important physiologic function. They should not be removed in children unless the deleterious results of the infected tonsils overbalance the good results of the physiologic action of these structures, or, I may add, the physiologic function has been so seriously interfered with by the infection that their defense reaction has been impaired or lost.

Various functions have been given to the tonsils. The tonsillar crypts are said to be tubes, similar to test tubes, in which organisms develop producing toxins which are absorbed and result in autoimmunization. Waldapfel thinks that they are concerned in filtering out particulate matter from the blood stream. They are said to produce lymphocytes and undoubtedly do produce lymphocytes if they are needed. It has been said that they react against stimulants, bacteria and toxins which penetrate into the lymphoid tissue. Certainly they develop after birth and continue to function until after the age of puberty, when involution occurs. They are said to produce hormones and to furnish digestive ferments.

There is no agreement among physiologists as to the function of the tonsils. I do not know what their function is. The lymphoid tissues of the body are all actively functioning in infancy and in early childhood and they continue to function until involution occurs. I do not know the reason for the involution, but I think it may be assumed that before it occurs the tonsils have

performed their main function. In early childhood, very slight infection causes these structures to enlarge. The spleen is easily increased in size, the glands of the neck become hypertrophied easily; it is not unusual at this age to have even the lymph nodes over the mastoid enlarge. Later in life these appear only with pediculosis or with some infection of the scalp or mastoid.

The tonsils as well as other lymphoid structures enlarge easily. Repeated infections, repeated colds, dietary disturbances, endocrine disturbances and toxemias all have a tendency to increase the size of these structures, often without any manifest infection of the lymphoid tissue. There can occur a familial non-inflammatory hypertrophy of these structures, sometimes accompanied by dental caries, both undoubtedly being due to some dietetic or endocrine disturbance. It is not necessary to have infection of the tonsils to get these simple hypertrophies.

To me it is certain that the tonsils in infancy and early childhood are a part of the defense mechanism of the body. They protect the organism against those factors which cause them to become acutely swollen. Repeated irritations with swelling do cause simple hypertrophy of these structures. When the tonsils undergo involution at the age of puberty they lose their function.

Rules cannot be made to determine whether or not tonsils should be removed. Each case presents its own problem. The good judgment of the physician must decide in each case just what should be done. He must take into consideration the local conditions, the condition of neighboring structures and the general condition of the patient. Even then, particularly in adults, it is often a gamble as to the results to be secured by tonsillectomy.

It is my custom to tell adults with chronic systemic diseases that may be favorably influenced by the removal of the tonsils that I cannot definitely predict the result. I am influenced very much by the opinion of the internist and we often decide on the basis of probabilities to take the tonsils out. Naturally we are influenced by anything in the history which connects the tonsils with the systemic disease. The tonsils play a much more important rôle as a source of infection in children than in adults; the average result in children is much more satisfactory than in adults.

In cases in which infection of neighboring structures, as the middle ear, nasal sinuses and glands of the neck, can be traced to infection of the tonsils, removal of the latter is indicated. The infection not only spreads through the lymph vessels draining the tonsils but it spreads along the perivascular lymphatic spaces sometimes contrary to the direction of the blood stream. The jugulodigastric lymph gland, lying on the internal jugular vein where it is crossed by the digastric muscle, is more often swollen in infection of the palatine tonsils than the other glands. Its swelling suggests that microorganisms are entering the lymph stream from the tonsils. However, a carious tooth may produce the same result. Its enlargement when due to tonsillar infection suggests that the tonsil is a menace to the body.

Rarely, quiescent tuberculosis of the tonsils is found. This is much less common in my experience today than it was twenty years ago. Tuberculous glands of the neck may be associated with such tonsils. Other conditions cause tuberculous and pyogenic infections of

the glands of the neck, and the fact that there is present an infected tonsil does not mean that it is the cause of the adenitis.

The fact that a tonsil is chronically inflamed without any evidence of local or systemic disturbance is not sufficient reason for its removal. I grant that I have advised against the removal of such a tonsil and the patient has developed an acute tonsillitis a few months later with acute arthritis. This was his first attack of acute tonsillitis. Naturally if a tonsil is present it can become acutely infected, but that is no reason for removing all tonsils.

I have convinced myself by meticulous observations, each covering a period of years in two large training schools for nurses, that the routine removal of faucial tonsils in probationers is a justifiable procedure. An undergraduate nurse, however, is particularly liable to develop acute tonsillar infections. In spite of all precautions, nurses do get ill at the times when the hospitals are crowded. This results in overwork of the nurse as well as of the doctor; outdoor privileges may be curtailed and the weather may prevent proper exercise at a time when the nurse is exposed to the most virulent infections. In an official report to the governing board of a hospital the statement was made that the routine removal of tonsils in probationers had so decreased the incidence of sickness that the financial aspect of the institution was improved. Doctors, nurses and dentists present more indications for the removal of their tonsils than those not so often exposed and overworked during the periods of epidemics.

Simple hypertrophy of the tonsils may demand their removal in order to get normal breathing. Familial hypertrophy of the lymphoid tissues of the throat may occur without macroscopic evidence of infection. Some of these tonsils show no more evidence of infection on microscopic examination than the most normal tonsils. Sometimes children with this condition have carious teeth, as in a group studied by Dr. McCulloch in our service. Hyperplasia of the tonsils, hyperplasia of the other lymphoid tissues of the body and carious teeth go together. Enlargement of the spleen, carious teeth and simple hypertrophy of the tonsils are found in rickets. Many of the hypertrophied tonsils are not macroscopically inflamed even in the presence of malnutrition and carious teeth. This suggests that they combat infection or at least are very resistant to it. The great improvement in breathing in these children after the removal of faucial and pharyngeal tonsils certainly justifies the interference with the physiologic action of the structures removed. There is no reason to think that the remaining lymphoid tissue in the pharynx does not meet the exigencies of the situation. Tonsillotomy leaves the remaining scarred tonsil tissue a menace to the individual.

The removal of macroscopically normal tonsils and hypertrophied tonsils with no evidence of infection has favorably influenced cases of hemorrhagic nephritis, uveitis or rheumatic fever. A number of pediatricians, internists and otolaryngologists decided that a pair of faucial tonsils appeared to be perfectly normal. It was the unanimous opinion that they should be removed because of a nephritis. They were removed with benefit to the patient. Consequently it is evident that the general condition of the patient has much to do with the decision as whether or not to remove tonsils.

Given a patient with a systemic condition that is often favorably influenced by the removal of infected

tonsils and perfectly normal looking tonsils, I feel that the tonsils should be removed, particularly if the condition refuses to yield to other forms of treatment. To put it more plainly, I think that if a patient has hemorrhagic nephritis, a heart lesion, a rheumatic fever or a uveitis which continues active in spite of every effort to make it quiescent, this condition in itself is an indication for the removal of these lymphoid structures. Certainly by carrying out such a procedure, the cases in which satisfactory results are obtained greatly outnumber the cases in which such results are not secured. The seriousness of the conditions under consideration justify this procedure.

The apparently normal tonsils that we have removed because of a systemic disease have been examined microscopically. In every instance chronic infection involving the epithelium was found deep down in the crypts. The evidence of infection found in the crypts is a leukocytic infiltration of the epithelium and underlying lymphoid tissue with some destruction of the protective epithelium. In some cases in which the tonsils have been removed because of simple noninflammatory hypertrophy such areas have not been found.

If judgment is based on the systemic condition of the patient, one must be careful not to remove the tonsils when the condition has progressed to such a stage that it is impossible for the removal of infected lymphoid tissue to exert a favorable influence. Tonsils should not be removed because of the presence of so-called chronic chorea, in which the contractions are due to an unstable nervous system and are not due to true chorea. In the same way in nephritis, the disease may progress to a stage at which the pathologic changes in the kidney are such that it will not be influenced by the removal of the tonsils. In dealing with chronic arthritis one must be certain that the pathologic condition is such that it will probably be benefited by the eradication of a focus of infection. It is necessary in these cases to have the most intimate cooperation between the pediatrician or the internist and the laryngologist. The determination as to whether or not the tonsils should be removed is often dependent on the ability to prognosticate that a systemic condition will probably be influenced by the eradication of infected lymphoid tissue. Certainly there is need of doing this when the systemic condition is deleteriously influenced even by the mildest acute attacks of pharyngitis.

I cannot say that any tonsil is not the seat of chronic infection except after removal and microscopic study. Study in the laboratory has shown definite evidence of infection in the most innocent looking tonsils. The history of acute tonsillitis is a more reliable indication of chronic infection than the appearance of the tonsil.

I do not like to remove palatine tonsils under the age of 2 years. There are two reasons for this: first, this is the age during which the tonsillar function is most important; second, the operation at this age is more serious than later. If however, there is a definite indication for the removal of the tonsils, it should be done. If an infant suffers from attacks of acute tonsillitis and if with one attack it develops a lobar pneumonia which improves only with an improvement in the throat condition, it would be hazardous to leave the tonsils in. Adenoids blocking the nasopharynx may be removed at any age.

Practically, the removal of tonsils is always a gamble. Even if they are infected it is not necessarily true that they are the focus for systemic disease. In most cases

in which I have urged the removal of the tonsils, except in instances with definite local indications, they were removed on the basis of chance. If the patient thoroughly understands this before the work is done, there will be many fewer complaints regarding the needless removal of tonsils. Excluding the immediate deleterious effects of the tonsil operation such as lung abscess and infection of the cervical glands, in my own service I have yet to encounter the first case in which I or the family felt that there resulted any permanent deleterious effect from the tonsil operation.

Rules cannot be laid down for the practice of medicine. There are a multitude of factors bearing on the question as to whether or not tonsils should be removed. The judgment must rest with the individual after a thorough study of the case. If this is most carefully done, the patient need not worry about having a deleterious result from the removal of these structures.

ABSTRACT OF DISCUSSION

DR. FRANK R. SPENCER, Boulder, Colo.: Some of the indications that are less frequently mentioned are as follows: 1. Impaired hearing made worse by each acute attack of tonsillitis even though the attacks are rather mild and in themselves might not attract attention. I do not believe the impaired hearing is likely to be made normal by the operation, but the progress of the disease may be stopped. 2. Acute or chronic infection of the tonsils in patients with goiter. Dr. Joseph C. Beck was one of the first to call attention to this. 3. Sinusitis in children which doesn't respond to treatment and in children with infection and enlargement of the tonsils which may not be marked enough to demand an early tonsillectomy. I am familiar with the argument that the removal of the tonsils in children with sinus disease is often contraindicated. Perhaps in some patients it is, but I do not entirely agree with this principle. The infection in the tonsils is only another straw added to break the camel's back. Such children may recover from the sinus disease without sinus surgery if the tonsils and adenoids are removed. 4. Chronic suppurative otitis media, especially when aggravated by acute or chronic infection of the tonsils. 5. Bronchiectasis aggravated by acute or chronic tonsillitis. 6. Chorea, often improved by early tonsillectomy before the chorea becomes chronic. I know little about the function of the tonsils. However, I try to avoid removal of the tonsils in children under 4 years of age unless forced to do so by definite indications. The tonsils and adenoids may have some physiologic function as ductless glands in infants and young children up to 4 or 5 years of age. This has not been proved, but it is substantiated by clinical observation. A few of these children change after operation as if suffering from hypothyroidism. The tonsils may have a protective function similar to that of the reticulo-endothelium. Furthermore, after tonsillectomy in children the lymphoid tissue over the lateral pharyngeal wall enlarges sometimes. This enlargement may assume serious proportions and resemble a piece of tonsil. It may harbor infection and call for cauterization or coagulation. Swabs and cultures of the tonsils give little practical information because of the great variety of germs found and the extreme variation in virulence. I pay little attention to the bacterial indications except when the diphtheria bacillus is reported. I approve of Dr. Dean's "follow up" system for two years after operation to determine end results. This gives added authority to his mature conclusions.

DR. EDWARD CLAY MITCHELL, Memphis, Tenn.: In cases in which there are large, diseased tonsils and adenoids productive of difficult breathing their removal is indicated. The hypertrophied tonsil with no history of disease should be left alone. Recurrent tonsillitis is often seen when the first attack would be quite severe, classified probably as class 4; the next attack would be much lighter, the third attack still lighter, and the child probably would have no further tonsillitis, showing perhaps that he had developed some immunity. In discussing the tonsils as a focus of infection, three factors should be thoroughly studied. First, is the tonsil the sole cause of the

condition? Second, will the removal of the diseased tonsil cure the systemic condition? Third, when should the diseased tonsil be removed? Rheumatic fever is one of the most common conditions in which the tonsil is blamed. Other common systemic infections in children when the tonsil is spoken of as the offending factor are kidney conditions such as nephritis, particularly of the acute glomerular type, pyelitis and enuresis. For all these conditions the tonsil is being removed, sometimes with benefit and in many instances with no improvement. There is much controversy as to whether the tonsil should be removed in the acute glomerular nephritis while the upper respiratory condition is still acute, when nephritis does not improve under proper treatment. In my experience many times rapid improvement has been shown when the focus of infection was eradicated even during the acute stage. Of course, I recommend waiting until all the acute symptoms have subsided when possible. In a symposium held by the American Academy of Pediatrics, the statement was made that cyclic vomiting in 50 per cent of the cases was markedly improved by a tonsillectomy. However, it would seem to me that age incidence plays a part. Tonsillectomy has been recommended for dullness and inattention in school, particularly where the adenoid symptom is manifest. In a large series of cases Kaiser found the sedimentation time markedly increased following tonsillectomy. His average patient lost 2 pounds following tonsillectomy. Hemorrhages can largely be prevented by careful consideration and examination of the child before the operation. I should like to ask whether the paranasal sinusitis is more common after tonsillectomy. In the younger child I sometimes find no history of tonsillitis but very large tonsils and enormous adenoids that interfere with breathing. It is often the question as to whether only the adenoids should be removed and the tonsil left. I believe that the healthy tonsil should remain and only the offending adenoid removed. Should small stubs of tonsils left from a former operation be removed? Another type of patient seen is the child who presents himself with definite paranasal sinusitis, likewise diseased tonsils and adenoids. Should the tonsils and adenoids be removed and the sinuses drained at the same time?

DR. VIRGIL J. SCHWARTZ, Minneapolis: Waldapfel finds that when bacteria are introduced, through even slight injury, into one inferior turbinate, they traverse the venous, not the lymphatic, channels of the nose and pharynx to reach the tonsils and are eliminated into the crypts. Scherf finds that pigments such as India ink, after injection into the carotid artery, are excreted through and can be demonstrated in the tonsils. They think, therefore, that the tonsils assist in removing foreign material from the blood stream. Heiberg sponsors a second theory, that the germinal centers of the tonsils destroy lymphocytes while other parts of the tonsil produce lymphocytes. Schmidt believes that these destroyed lymphocytes liberate an endolysin, which may reach the general blood stream to produce a sudden leukopenia. Hoepke thinks that in the normal tonsil the germinal centers produce lymphocytes but that when irritated by toxic or inflammatory substances they produce phagocytosing reticular cells. Kelemen found that, whereas ordinary leukocyte extract promotes the growth of fibroblasts and other cells in culture, tonsil extract prevents their growth. The latter also may inhibit growth in guinea-pigs. Wolffheim proposed a fourth theory, that children's tonsils and other lympho-epithelial structures, including Peyer's patches and the appendix, are the principal site of the occult immunization of the body against infectious organisms that enter the digestive and respiratory tracts. Digby, too, inclines toward this view of continuous autovaccination. Bacteria, he thinks, on or near these lymphoid structures are attracted by positive chemotaxis through the epithelium into the lymphoid nodule. The bacterial attack is usually repelled by the development of a great excess of special lymphocytes, opsonins, bacteriolysins and other immune substances, which enter the general system and so reduce the danger of bacterial infection elsewhere. I am certain that some of the laryngeal and bronchial irritations which appear to be more common after tonsillectomy than before are not inflammations at all but allergic manifestations that were not recognized at the time the tonsillectomy was performed. Tonsil examination should always begin with palpation of the deeper glands of the neck, the anterior of which, lying beneath the

anterior margin of the sternomastoid muscle, may stand alone as incriminating evidence against the tonsil which it drains. The incidence and course of scarlet fever and diphtheria are greatly benefited by tonsillectomy. Children who have pathologic tonsils and develop a contagious disease must combat not only the latter but often also an acute, severe tonsillitis with all its potential complications, such as acute adenitis, or otitis. The latter are the sequelae of the tonsillitis rather than of the contagious disease.

D. L. W. DEAN, St. Louis: In familial hypertrophy the tonsils usually cause trouble by interfering with breathing. With familial hypertrophy of the tonsils there almost always is caries of the teeth. In rickets there are an enlarged spleen, caries of the teeth and noninflammatory hypertrophy of the tonsils. All three conditions are probably due to deficient diet or endocrine disturbance. The fact that in familial hypertrophy of the tonsils there are caries of the teeth and noninflammatory hypertrophy of the tonsils suggests that the lymphoid tissues of the pharynx combat infection. There is usually no history of tonsillitis. It is almost impossible to control the caries of the teeth without getting rid of the tonsils, which are blocking the pharynx. Trimming the tonsils is a bad thing because the crypts are constricted by scar tissue and become a potential focus of infection. Some twelve years ago I made routine observations on all tonsils removed for a period of two years and found that about 2 per cent presented latent tuberculosis. This condition could not be diagnosed except by microscopic examination of the tonsil after the operation. Now I see only about one case or two cases at the most in a year that show microscopic evidence of latent tuberculosis of the tonsils on routine examination. I think this is due to the improved supervision of the milk supply of Saint Louis. In a pharyngeal tonsil that was removed because of phlyctenular conjunctivitis, there were two areas of caseation in the tonsil. Acid fast organisms were scattered throughout the lymphoid tissue of this mass. This pharyngeal tonsil presented, on clinical examination, nothing except the evidences of moderate simple hypertrophy. It was removed because the patient had phlyctenular conjunctivitis. The conjunctivitis did well after the removal of this latent tuberculous lymphoid mass. I do not like to remove palatine tonsils under the age of 2 years, for two reasons: First, this is the time when the tonsil function is more important; second, the operation at this age is more serious than later. If, however, there is a definite indication, they should be removed. If an infant suffers from attacks of acute tonsillitis and if with one attack it develops a lobar pneumonia which improves only with the improvement in the throat condition, it would be hazardous to leave the tonsils in. If this occurs in midwinter and the weather is not favorable for the removal of the tonsils, I fear another attack of tonsillitis and pneumonia. Adenoids blocking the nasopharynx may be removed at any age. Practically, removal of tonsils in an adult for systemic conditions is always a gamble; it is less so in children. Even if in the adult they are infected, it is not necessarily true that they are the focus for systemic disease. In most cases in which I have urged the removal of tonsils, except when there were definite local indications for their removal, they were removed on the basis of chance.

Primary Malignant Tumor of Bone Marrow.—Multiple myeloma may be defined as a primary malignant tumor of bone marrow characterized by multiple foci in long and flat bones of the skeleton and usually associated with anemia, Bence-Jones proteinuria, rare metastasis and a fatal termination. MacIntyre described the condition in 1850, but von Rustizky first recognized it as a specific disease of the bone marrow, and referred to it as myeloma. Kahler, in 1889, called attention to the associated proteinuria, hence the reference in the literature to "Kahler's disease." Geschickter and Copeland, in 1927, reviewed 425 cases from the literature, and stated that multiple myeloma was present in only 0.03 per cent of all malignant conditions. Symmers found only three cases of the condition in the course of 6,000 postmortem examinations performed at Bellevue Hospital, New York City. Thus the rarity of multiple myeloma is evident.—Slavens, J. J.: Multiple Myeloma in a Child, *Am. J. Dis. Child.* 47:821 (April) 1934.

ANTITOXIN VERSUS NO ANTITOXIN IN SCARLET FEVER

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AND

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Much has been written during the past few years on the use of scarlet fever antitoxin in the treatment of this disease. Many prominent physicians, such as Veldee, Stevenson and Mitchell,¹ Winkel,² Lichtenstein,³ and Gordon,⁴ supported by considerable personal experience, proclaim with great emphasis that when scarlet fever antitoxin is administered early and in sufficient quantity there follows a decline in the fever, a reduction in the number of febrile days and a decrease in the incidence of complications. On the other hand, just as many physicians of equal prominence and experience, as Toomey and Dolch,⁵ Gabriel⁶ and Rolleston,⁷ disagree in part or in toto with these observations. Toomey believes that the slight amount of good noticed in the use of this antitoxin is counterbalanced by the ill effects produced in the occurrence of serum disease. We have therefore set out, without any fixed opinion to study a group of 5,377 records of scarlet fever patients admitted to the Philadelphia Hospital for Contagious Diseases during the years 1927, 1928 and 1929. These years were selected only because they represent the first three years of the use of antitoxin at this hospital. We had no part either in the selection of the patient or in the amount of antitoxin to be given. As a matter of fact, antitoxin was given to all patients who were not hypersensitive to this serum. The antitoxin used was purchased from different manufacturers; consequently it varied greatly as to concentration and protein content. Every patient was skin tested for sensitivity to the antitoxin. Those found positive were treated symptomatically. They formed a large number of the control group. Because of the variations in the types of scarlet fever, it was decided to subdivide the patients into groups that would denote the severity of the disease. Accordingly, cases in which the temperature did not exceed 100 F. by mouth were classified as mild; those in which the temperature was over 100 F. but did not exceed 102.5 F. as moderate, and those in which the temperature exceeded 102.5 F. as severe. Thus the 5,377 cases were divided into 1,162, or 21.6 per cent mild; 3,158, or 58.7 per cent moderate, and 1,017, or 18.9 per cent severe.

In view of the controversy that exists on the frequency and virulence of serum disease, this angle was likewise studied. Some of the patients in the serum group received ephedrine, while others received ephedrine and calcium, with the hope that the effect produced on the incidence of serum disease might be noted.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Veldee, M. V.; Stevenson, F. E., and Mitchell, A. G.: Scarlet Fever Streptococcus Antitoxin in Treatment of Scarlet Fever, *Pub. Health Rep.* 46:3023 (Dec. 18) 1931.

2. Winkel, E.: *München. med. Wchnschr.* 79:707 (April 29) 1932.

3. Lichtenstein, A.: *Studies in Scarlet Fever*, *Acta paediat.* 10:549 (June 30) 1931.

4. Gordon, J. F.: *Treatment of Scarlet Fever with Streptococcus Antitoxin*, *J. A. M. A.* 88:382-385 (Feb. 5) 1927.

5. Toomey, J. A., and Dolch, E. G.: *Scarlet Fever*, *Am. J. Dis. Child.* 36:1173-1183 (Dec.) 1928.

6. Gabriel, E.: *Klin. Wchnschr.* 43:1205 (Sept. 25) 1930.

7. Rolleston, J. D.: *Antitoxin Treatment of Scarlet Fever*, *Practitioner* 125:236 (July) 1930.

EFFECT OF ANTITOXIN ON THE DURATION
OF FEVER

In 3,045 cases, antitoxin was administered in doses ranging between 6,000 and 8,000 units. These were divided into 296 mild, 1,949 moderate and 800 severe cases. The average amount of antitoxin in the mild group was 6,870 units; in the moderate, 7,310 units; in the severe, 7,800 units. The smallest dose was 3,000 units; the largest was 20,000 units. It was administered intramuscularly.

Since the diagnosis of scarlet fever depends largely on the onset of the eruption, very few patients were

of febrile days for the mild serum treated cases was 5.15, while for the nonserum group it was 6.82; for the moderate serum treated it was 5.74 and for the nonserum group 7.08; for the severe serum treated it was 6.92 and for the nonserum group 8.80.

EFFECT ON THE INCIDENCE OF COMPLICATIONS

It was definitely noted that the incidence of complications was less in the group of serum treated patients (table 2). The total percentage of complications in the 3,045 serum treated was 18.85, in contrast to 26.13 per cent for the 2,332 nonserum treated. The most

TABLE 1.—Duration of Fever

Day of Disease Antitoxin Given	Mild Group (Maximum Fever Not Exceeding 100 F.)					Moderate Group (Maximum Fever 100-102.5 F.)					Severe Group (Maximum Fever Over 102.5 F.)				
	No Serum		Serum		Difference	No Serum		Serum		Difference	No Serum		Serum		Difference
	Number of Cases	Duration of Fever	Number of Cases	Duration of Fever		Number of Cases	Duration of Fever	Number of Cases	Duration of Fever		Number of Cases	Duration of Fever	Number of Cases	Duration of Fever	
First.....	20	3.44	17	3.42	-0.02	49	4.55	88	4.48	-0.07	0	5.00	33	5.03	+0.03
Second.....	162	4.15	92	3.79	-0.36	309	5.50	700	4.95	-0.55	77	7.31	277	6.02	-1.29
Third.....	158	5.21	71	4.77	-0.44	331	6.28	603	5.59	-0.61	69	8.17	285	7.01	-1.16
Fourth.....	139	6.10	48	5.18	-0.92	274	7.26	364	6.52	-0.74	43	9.28	135	7.56	-1.72
Fourth plus.....	337	9.04	63	6.33	-2.71	246	10.48	194	8.18	-2.30	59	11.75	70	9.38	-2.37
	866	6.82	296	5.15	-1.67	1,209	7.08	1,949	5.74	-1.34	257	8.80	800	6.92	-1.88

admitted within the first twenty-four hours of their illness. Consequently the majority of patients received antitoxin from forty-eight to ninety-six hours after the onset of the disease. Therefore it must be noted that the day on which antitoxin was given corresponds to the day of admission to the hospital. The number of patients who did not receive antitoxin was 2,332; of this number there were 866 mild, 1,209 moderate and 257 severe cases.

TABLE 2.—Percentage of Complications: Comparison of Complication Incidence in Serum and Nonserum Groups—Totals for Three Years

	3,045 Serum		2,332 No Serum	
	Cases	Per Cent	Cases	Per Cent
Otitis media.....	225	7.39	229	0.83
Mastoiditis.....	26	0.85	26	1.16
Adenitis.....	184	6.04	257	11.03
Nephritis.....	39	1.28	20	1.24
Arthritis.....	21	0.69	38	1.63
Furunculosis and abscess.....	22	0.72	4	0.17
Peritonsillar abscess.....	14	0.46	3	0.13
Bronchopneumonia.....	15	0.49	14	0.60
Miscellaneous (empyema, pyelitis, and so on).....	28	0.95	10	0.43
Total percentage.....	575	18.85	610	26.13

It can be seen (table 1) that antitoxin shortens the febrile stage of the disease, irrespective of the severity. Except for the patients who received antitoxin within the first twenty-four hours of their disease, there was noted a definite decline in the temperature and a reduction in the febrile days ranging from 0.02 day to 2.71 days. The later the administration of antitoxin in relation to the day of disease, the longer the duration of fever. The reason for the failure of those cases in which antitoxin was given in the first twenty-four hours to follow the general rule is not clear in our minds. Although the reduction of the febrile days is not outstanding in the mild and moderate serum treated cases, it is nevertheless impressive in the severe group. Here the reduction ranged from 1.16 to 2.37 days and was more constantly observed. The average number

striking decrease in the number of complications was noted in otitis media, adenitis and arthritis groups, which incidentally accounted for 75 per cent of the total number of complications. It may be seen that there is very little difference in the incidence of nephritis and bronchopneumonia in the two groups.

A study of the incidence of complications in relation to the severity of the disease (table 3) shows even more definitely the part played by antitoxin in this respect. As every one suspects, the incidence of complications is in direct proportion to the severity of the disease. In the mild serum treated group the incidence of complications was 11.13 per cent, in comparison to 18.51 per cent in the nonserum treated; moderate serum treated 17.74 per cent and nonserum treated 27.58 per

TABLE 3.—Percentage of Complications in Each Group

	Mild Percentage of Complications in		Moderate Percentage of Complications in		Severe Percentage of Complications in	
	296 Cases With Serum	866 Cases Without Serum	1,949 Cases With Serum	1,209 Cases Without Serum	800 Cases With Serum	257 Cases Without Serum
Otitis media.....	5.07	6.70	6.73	10.42	9.99	18.23
Mastoiditis.....	0.67	1.39	0.87	0.57	1.00	3.50
Adenitis.....	3.72	7.86	5.65	11.64	7.75	18.68
Nephritis.....	0.33	1.27	1.23	1.00	1.50	2.32
Arthritis.....	0.00	0.69	0.72	1.65	0.87	3.84
Furunculosis and abscess.....	0.33	0.24	0.67	0.08	1.00	0.38
Peritonsillar abscess.....	0.00	0.24	0.56	0.08	0.37	0.00
Bronchopneumonia.....	0.00	0.00	0.31	0.57	1.12	2.72
Miscellaneous (empyema, pyelitis, and so on).....	1.00	0.00	0.91	0.57	2.59	1.18
Totals.....	11.13	18.51	17.74	27.58	26.00	52.79

cent; severe serum treated 26 per cent, and nonserum treated 52.79 per cent. Thus it is observed that the influence of antitoxin in the incidence of complications becomes more striking in the more severe forms of the disease.

The death rate in the 3,045 cases in which antitoxin was given was 0.85 per cent (twenty-six), while in the 2,332 cases in which serum was not given the death rate was 0.43 per cent (ten). A greater death rate in

the group in which serum was given may be explained by the treatment of a larger number of more critically ill patients in this group, 30 per cent of whom died within twenty-four hours after admission to this hospital. There were no deaths from anaphylaxis.

SERUM DISEASE

The high frequency of fairly severe serum reactions that followed the use of scarlet fever antitoxin in the early days of its inception is perhaps the chief reason why it is not in more general use today. Investigators report the incidence of serum disease at figures varying from 15 per cent in Doolittle's⁸ series to nearly 100 per cent in Bagley's⁹ experience. Undoubtedly the high incidence and severity of serum disease reported by some investigators is partly due to the insufficient refinement and concentration of the early serums. This was definitely the case at the Philadelphia Hospital for Contagious Diseases. Antitoxin purchased from different manufacturers varied greatly as to concentration, and therefore a greater number of serum reactions occurred in those who received serum of low concentration. Today, this has been practically eliminated.

In our study, 36.3 per cent of 1,106 patients had serum disease (table 4). A few of these reactions were immediate, but most of them were manifested by delayed urticarial lesions accompanied by moderate

TABLE 4.—Incidence of Serum Reactions

	Number	Per Cent
Patients receiving serum.....	3,045	
Patients having serum reactions: 1927.....	313	
1928.....	477	
1929.....	316	
	1,106	36.3
Patients receiving ephedrine (1,028) and having serum reaction.....	339	33.0
Patients receiving capsules (ephedrine and calcium) (338) and having serum reaction.....	123	34.5
Patients receiving nothing (1,659) and having serum reaction.....	644	38.8

fever, generalized adenopathy and arthralgia, which tended to make the patient uncomfortable for three or four days. Less common features were morbilliform or scarlatiniform eruptions, mild or severe febrile reactions.

From time to time it has been attempted to decrease the number and severity of these uncomfortable conditions through the aid of certain drugs. Some of the patients in this series received ephedrine salts in doses of from one-eighth to 1 grain (0.008 to 0.065 Gm.) daily for seven days; others were given one or more capsules containing a similar dose of ephedrine plus calcium. Ephedrine was given to 1,028 patients. In this group the incidence of serum disease was 33 per cent. Ephedrine and calcium was given to 358 patients. In this group the incidence of serum disease was 34.5 per cent, while serum disease occurred in 38.8 per cent of the 1,659 patients who did not receive any drugs.

SUMMARY

1. Of 5,377 cases of scarlet fever studied, scarlet fever antitoxin was administered in 3,045 and was not administered in 2,332.

2. In a comparison of the serum with the nonserum treated cases, a slight decrease in the number of febrile days in the mild and moderate groups was noted, and a substantial reduction in the severe group.

3. The incidence of complications was definitely less in the serum treated cases in comparison with those not so treated. This effect was most prominent in the severe group.

4. Serum reactions occurred in 36.3 per cent of the patients treated with antitoxin. The use of ephedrine compounds had a slight effect on the prevention of serum disease.

CONCLUSION

Antitoxin is indicated in the moderate and severe forms of scarlet fever.

Front and Luzerne streets.

THE SECONDARY CASE OF SCARLET FEVER

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AND

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During the year 1932 certain changes made in the scarlet fever quarantine requirements by the Illinois State Department of Health and the Chicago Board of Health offered an unusual opportunity for a study of the secondary case of scarlet fever and the duration of scarlet fever infectivity. Four series were investigated, in which 4,315 patients were discharged from the Municipal Contagious Disease Hospital under different regulations.

In the first group the quarantine period was four weeks for uncomplicated cases. Patients with abnormal discharges, however, were held in the hospital until they were clinically well, with the stipulation that the maximum period should not exceed ninety days. Under this arrangement, between Jan. 1 and July 6, 1932, there were discharged 1,454 patients, 235 of whom were adults. Among the 1,454 patients, sixty-two, or 4.2 per cent, were responsible for secondary or so-called return cases of scarlet fever. To these sixty-two patients, eighty-two new cases of scarlet fever could be directly traced. The latter number were admitted to the hospital. How many more secondary cases may have occurred is not known, for obviously additional ones may have entered other contagious disease hospitals or have been cared for in their own homes. Adults made up 9.7 per cent of the sixty-two patients responsible for infecting others. This in effect contradicts the inference of Gordon¹ that adults are not an important factor as foci for secondary cases of scarlet fever.

Of the sixty-two patients responsible for secondary cases there were but seven who had had complications of a suppurative nature. On the other hand, the remainder (fifty-five) had at no time suffered from abnormal discharges, although sixteen of these did have either cervical adenitis, nephritis or other nonsuppurative conditions. The remaining thirty-nine (62 per cent) had experienced no complications whatever. Expressed in percentage, it is evident that only .11 per cent of the secondary cases were due to released patients who had suffered from septic processes (chart 1). Thus it is apparent that the very type of released patient that one might regard with the greatest fear from an infec-

From the Municipal Contagious Disease Hospital, Chicago Board of Health.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Gordon, J. E.: Epidemiology of Scarlet Fever, J. A. M. A. 98: 519 (Feb. 13) 1932.

8. Doolittle, S. E.: Northwest Med. 26: 26 (Jan.) 1927.

9. Bagley, H. E.: J. Michigan M. Soc. 26: 48 (March) 1927.

tive standpoint was in reality the least dangerous. Although 342 of the total patients discharged had had complications of a suppurative nature, there were but seven of these who transmitted scarlet fever following their release.

The eighty-two secondary cases of scarlet fever mentioned may be divided as follows: fifty, or 61 per cent, could be traced to thirty-nine uncomplicated cases; twenty-one, or 25.7 per cent, were linked to primary cases which had had cervical adenitis or other nonsuppurative conditions, while the remaining eleven, or 13.3 per cent, were the only ones traceable to primary cases that had experienced any septic process. This demonstrates that the patient who has had uncomplicated scarlet fever is no less likely to transmit infection to others than the patient who has suffered from suppurative processes during the acute attack.

Among the eighty-two secondary cases described, it is interesting to note that suppurative processes developed in 23 per cent, while septic complications had occurred in only 11 per cent of the primary cases. In other words, the rate of suppurative complications among the secondary cases was more than 100 per cent greater than among the primary cases. This indicated that the virulence of the organism is likely to be increased by passage from one sibling to another.

The quarantine regulations in group 2 provided that all uncomplicated cases of scarlet fever be released from the hospital at the end of three weeks. If there were complications, however, it was necessary that the patient be held until clinically well or until two cultures on blood agar from any abnormal discharges taken one week apart were negative. With these quarantine regulations in force, 500 scarlet fever patients were released during the period between July 7 and Nov. 28, 1932. All but thirty-eight were children. Among the total it was definitely established that thirty-five individuals

cent contributed 56 per cent of the secondary cases in this group.

Of the fifty-nine secondary cases, suppurative processes developed in fourteen, or 23 per cent. On the other hand, only 17 per cent of the released patients responsible for secondary cases had had suppurative conditions. As in the preceding group, it is shown that the number of suppurative cases is greater among the

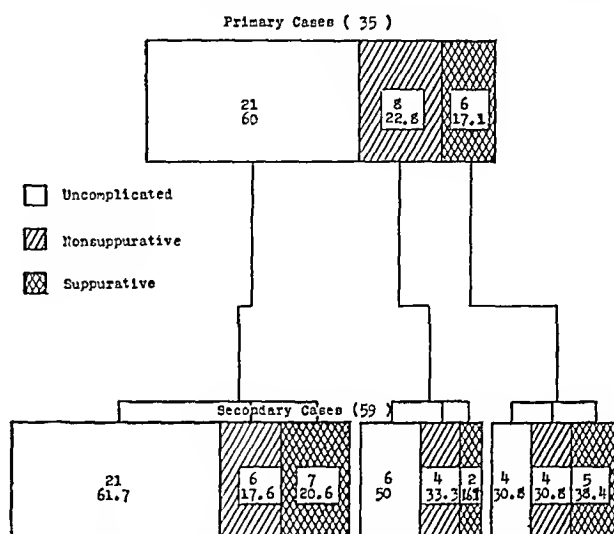


Chart 2.—Three weeks quarantine period without culture.

secondary infections than among the primary infections. Furthermore, in contrast to the 56 per cent of the secondary cases that were traceable to released patients who had suffered from no complications, only 22 per cent were attributable to patients with suppurative complications. Expressed in terms of percentage, this means that the occurrence of suppurative complications was more than 50 per cent greater in the secondary cases than in the primary ones (chart 2).

In the 500 releases of group 2, only 7 per cent were adults and all the secondary cases arose from children. Here we call attention to the fact that scarlet fever patients released from the hospital as recovered transmitted the disease to others during the warm months of the year, notably July, August and September. Moreover, though most of the patients in the group were released during the warm season, the infectivity rate was at its peak (7 per cent) and the secondary rate was likewise at its height (11.8 per cent). This diametrically opposes the opinion of Gordon,¹ who states that "the secondary case rate [of scarlet fever] is materially lower" during the summer months.

Group 3 was made up of patients who were released under quarantine regulations which stipulated that a negative nose and throat culture on blood agar be secured in every uncomplicated case before dismissal, regardless of the prolongation of hospitalization. Three weeks, however, was the minimum quarantine period. In complicated cases the rules were the same as set forth for group 2. With the foregoing requirements in force there were 272 patients, twenty-four of whom were adults, released from the hospital between Nov. 29

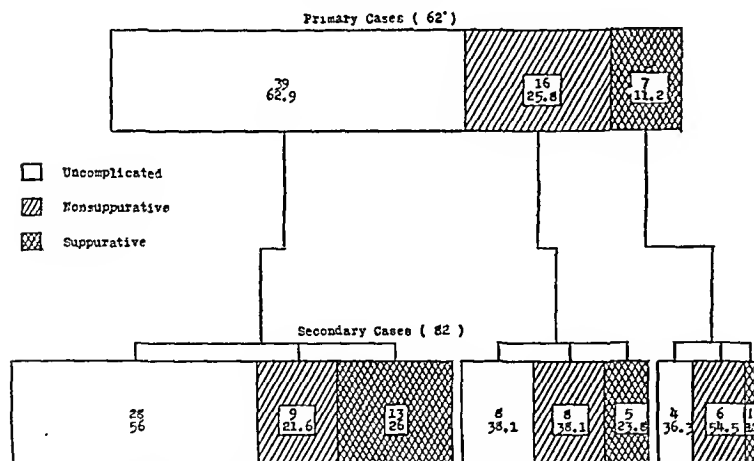


Chart 1.—Four weeks quarantine period. In the charts the upper figure gives the number of cases in each group, the lower figure the percentage.

(7 per cent) were the cause of fifty-nine secondary cases of scarlet fever, nor does this take into consideration, as pointed out in regard to group 1, the possibility of other secondary cases that did not enter the hospital and were thus unknown to us.

Among these thirty-five primary cases, only six had presented suppurative processes, whereas twenty-one were entirely free from complications. Again we were impressed with the fact that 60 per cent of the primary cases had presented no complications, yet this 60 per

and Dec. 24, 1932. In this small group, but eight were shown to have infected others following their release, resulting in a total of nine secondary cases, or slightly more than a ratio of 1 per primary patient, whereas in groups 1 and 2 the ratio was nearer 2 to 1.

While this group concerns only 272 patients, we nevertheless believe that it is of interest in connection with the quarantine problem as it pertains to scarlet fever. Under this plan there were less than 3 per cent known to have transmitted scarlet fever following release. Among these eight, however, it was again disclosed that the complicated case was not a greater source of danger than the uncomplicated, for these two classes of patients were equally divided. In this particular group, four uncomplicated cases were responsible for four secondary cases, two of which showed complications of a suppurative nature, whereas the other four were responsible for transmitting scarlet fever to five patients, three of whom developed complications. While this ratio differs slightly from that shown in the previous groups, we believe it may be explained on the basis of the small number of released patients (chart 3).

In group 4 the quarantine requirements specified that all uncomplicated cases of scarlet fever were eligible for release at the end of three weeks, provided a negative nose and throat culture on blood agar be secured before dismissal. This culture was taken as a routine procedure on the nineteenth day. If such a culture was positive, the patient with no complications was then held in quarantine for an additional week, being released at the end of twenty-eight days without further effort

whom were adults. Eighty-five, or 4 per cent, of the discharged patients were responsible for 132 secondary cases of scarlet fever. In view of the opinion sometimes expressed, which has been previously referred to, it is interesting to note that 9.4 per cent of the eighty-five known vectors were adults. This again emphasizes the part the adult may play in the transmission of scarlet fever.

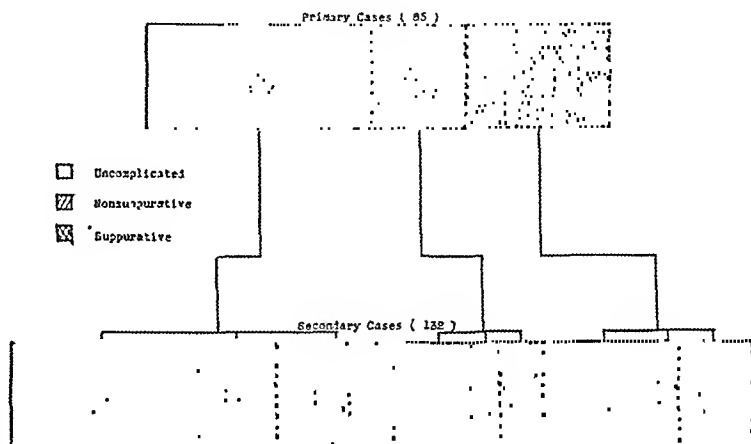


Chart 4.—Released after three weeks if culture was negative; if not, after four weeks.

We have mentioned that, under the arrangement applied in group 4, eighty-five of the 2,089 patients dismissed from the hospital were sources of infection in which 132 known cases of scarlet fever developed. Of the eighty-five patients there were but twenty-six (31 per cent) who had suffered from suppurative processes, while forty-one, or 48 per cent, did not have any complications. These gave rise, however, to seventy of the secondary cases (53 per cent), while the twenty-six patients (31 per cent) who had experienced suppurative complications were responsible for only thirty-seven of the secondary cases (28 per cent) in this group. The remaining eighteen suffered from such conditions as

TABLE 1.—Summary of Observations

	Adults	Children
Number of patients discharged.....	620	3,695
Number of patients transmitting scarlet fever.....	14	176
Infectivity rate.....	2.27%	4.76%
Number of secondary cases.....	26	256
Secondary case rate.....	4.1%	6.9%

cervical adenitis or other nonsuppurative conditions (chart 4).

Therefore, fifty-nine of the total eighty-five patients in this group who served as foci of infection had experienced no complications of a suppurative nature. This again demonstrates the fallacy of believing that it is only the scarlet fever patient who has suffered from abnormal discharges that is likely to transmit scarlet fever to others following release from quarantine.

SUMMARY

1. Among 4,315 scarlet fever patients released from the hospital between Jan. 1, 1932, and July 6, 1933, there were 190 known vectors responsible for secondary cases of scarlet fever. Undoubtedly there were many other instances not disclosed by our investigation.

2. Of the 4,315 scarlet fever patients released, 620, or 14 per cent, were adults and fourteen of these were known vectors (tables 1 and 2).

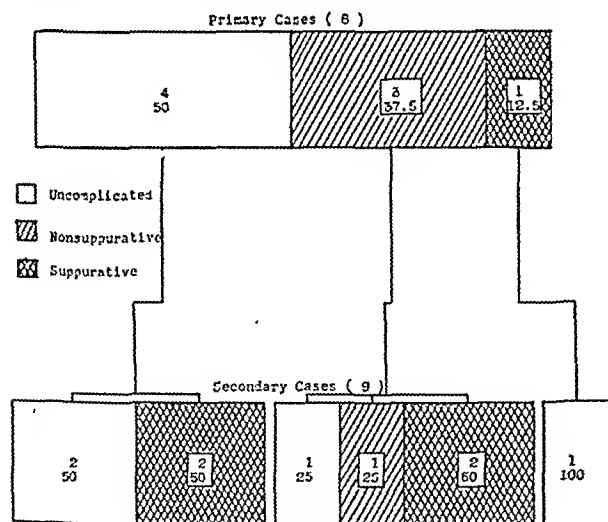


Chart 3.—Released only on negative culture.

to determine by means of cultural methods whether or not he continued to harbor hemolytic streptococci.

If the patient suffered from a complication, he was held, as in the preceding group, until he was clinically well or until two successive negative cultures were secured from any abnormal discharges. These cultures were taken on blood agar plates at weekly intervals. In this group there were released between Dec. 25, 1932, and July 6, 1933, 2,089 scarlet fever patients, 323 of

3. Of the 190 known vectors, 150 (79 per cent) were nonsuppurative, whereas but forty (21 per cent) had suffered from suppurative processes.

4. The 190 known vectors were responsible for 282 secondary cases.

5. Fourteen per cent of the total releases were adults and 7 per cent of the 190 known vectors were adults. One out of every forty-four adults at the termination of quarantine transmitted scarlet fever to a susceptible. With children, one out of every twenty-nine under similar circumstances was responsible for secondary cases.

CONCLUSIONS

1. We have demonstrated that the patient who has had uncomplicated scarlet fever, contrary to the opinion often expressed, may be as dangerous to the community following release from quarantine as the patient who has suffered from abnormal discharges during the acute attack.

2. On the basis of our data we believe that the adult patient who has suffered from scarlet fever cannot be regarded as a negligible factor in the transmission of the disease following his release from quarantine.

TABLE 2.—Cases According to Groups

	Total Trans- Number mitting of Scarlet Patients Fever Dis- After charged Release From From Hospital Hospital	Number of Cases Infec- tivity Rate, per Cent	Number of Secon- dary Cases	Secon- dary Case Rate, per Cent	
Group 1: Four weeks quarantine period	1,454	62	4.26	82	3.6
Group 2: Three weeks quarantine period	500	35	7.00	59	11.8
Group 3: Quarantined until nose and throat cultures were nega- tive	272	8	2.94	9	3.3
Group 4: Three weeks quarantine period if nose and throat cul- tures were negative, otherwise four weeks	2,069	85	4.07	132	6.3

3. The number of secondary (return) cases of scarlet fever bears an inverse ratio to the length of the quarantine period and is not dependent on seasons.

4. The secondary case of scarlet fever contracted from one of a mild type is frequently characterized by unusual severity. The converse is also true.

5. It is our opinion that the spread of scarlet fever cannot be effectively controlled by the methods of quarantine now in general use. The morbidity and mortality of scarlet fever, as well as that of diphtheria, can never be reduced to a satisfactory level without resorting to thorough and systematic methods of active immunization.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. LUCCHESI AND BOWMAN AND
DRs. HOYNE AND BAILEY

DR. JOHN A. TOOMEY, Cleveland: Drs. Lucchesi and Bowman advocate the use of antitoxin because their treated patients did not have fever as long as the untreated and the complications were less in the former group. They compare 3,045 patients who were given antitoxin with 2,332 who were not. The numerical difference between these two groups of cases is 713, or nearly 24 per cent, a differential that would have to be considered in the interpretation of their results. As far as the number of days of duration of fever is concerned,

correction for such a differential would tend nearly to equalize the averages, thus robbing these statistics of some of their importance. One could hardly compare 257 nontreated with 800 treated severely ill patients and be justified in concluding that because the former had a complication rate of 52.79 per cent and the latter a complication rate of 26 per cent, scarlet fever antitoxin should therefore be used. If one is warranted in these conclusions, one must also logically conclude that, if there were more severely ill patients in the nontreated group, the complication rate would be greater or at least remain the same; but everybody knows that the more cases there are, the lower is the complication rate. I noticed that the authors recommended the early use of antitoxin, and yet I got the impression from their charts that the later they treated the patient the better were the results. The authors state that the reduction in fever after the injection of antitoxin is not outstanding in the mild or moderately ill group of scarlet fever patients. If this is so and since the authors aver that serum reactions tend to make the patient uncomfortable for at least three or four additional days, one wonders why it should be used in the milder cases. I have used antitoxin in treating the severely ill and toxic type of scarlet fever patient but have never been quite sure that it did much good. Drs. Hoyne and Bailey present statistics on the effect of various methods of quarantine on the number of scarlet fever cases that arise secondary to cases discharged from the hospital. The lowest infectivity rate was found in the group of uncomplicated cases isolated at least twenty-one days and whose cultures were negative before discharge from the hospital. In cases of the same group that showed complications, two negative cultures were obtained a week apart on blood agar medium. The infectivity rate here was 2.94 per cent and the secondary case rate for this group was 3.3 per cent. A striking point made by the authors is the fact that the majority of secondary cases arose not from patients who were discharged from the hospital with suppurative or open lesions but from those who had no complications whatever, thus demonstrating that the uncomplicated case of scarlet fever is often more likely to give rise to secondary cases than the complicated one. If this is true, it must follow that present criteria of infection and isolation are totally inadequate. I agree that the ultimate answer to the quarantine question lies in prophylactic immunization against the disease, but I think that much experimentation will have to be done before an immunization product is available the use of which can be pushed as a general public health measure. I doubt whether the mortality rate of the present mild type of scarlet fever will be much affected by any method of immunization.

DR. J. E. GORDON, Detroit: Drs. Hoyne and Bailey are to be thanked for emphasizing that patients convalescing from simple uncomplicated scarlet fever not infrequently transmit the disease. This often fails to receive the consideration it warrants. However, if one considers the kind of patient most likely to communicate scarlet fever to another person, that is another problem. Infecting cases have been distributed into three groups: those in which the course was uncomplicated, those with nonsuppurative complications and those with suppurative complications. Most of the infecting cases were in the group without complications, but so are most of the cases of scarlet fever. The essential problem is which of the three groups is relatively most likely to communicate scarlet fever infection and which requires the greatest precautions for adequate control of the disease. There are differences in the proportion of patients who tend to transmit the disease, dependent on the number and nature of the complications they have had. Not all active suppurative conditions are of equal danger. Patients who have had suppurative otitis media transmit the infection with about the same frequency as do those who did not have complications. Of course, they are restricted for longer periods of time. By contrast, I have found that patients with cervical adenitis and those with nasal or sinus infections constitute the most important problem. Dr. Toomey nicely emphasized the diagnostic difficulties associated with complications related to the nose. Drs. Hoyne and Bailey have reported a summer in which infecting cases were particularly frequent. Data over six consecutive years in Detroit have shown that the rate is generally lowest at that time. In one of the six years we had an increased rate during the summer, and most interest-

ingly that was followed by a greater prevalence of scarlet fever the next year, which duplicates the quoted experience. At present we are employing in Detroit an isolation period of two weeks for adults and three weeks for children. The infecting case rate is essentially the same as that reported here for the four weeks period; this year, about 4 per cent; the average for the three years it has been practiced, a bit less. Drs. Hoyne and Bailey stated in their conclusion that no known isolation plan suffices to control scarlet fever adequately. It would seem logical, then, to employ the shortest period that would give satisfactory results. Judged by the frequency of infecting cases, essentially as good results have been obtained in Detroit with these shorter periods as with the longer isolation for four weeks.

DR. P. F. LUCCHESI, Philadelphia: I must disagree with Dr. Toomey on several conclusions. He believes that the difference of 713, or 24 per cent, between the 3,045 patients who received serum and the 2,332 who did not, should not give our report a great deal of value. By the same token, he believes that 257 severe cases not treated with serum, with complications of 52.9 per cent, in comparison with the 800 serum treated cases of the severe type with a complication rate of 26 per cent, should likewise receive very little importance. If I may borrow Dr. Toomey's own method of conclusion, it would seem that if we increased the number, the small group of nonserum treated severe cases to 800, this would not account for the difference of twice the number of complications in the serum treated cases. There was a consistency in the lessening of the incidence of complications in the three groups. We performed a skin test in order to avoid anaphylactic shock and not to predict a serum disease. I have seen several patients, however, in whom the skin test was negative but who were definitely positive or sensitive to the serum. At present we are not getting the same high incidence of serum disease that we got in the early days of antitoxin. This undoubtedly is caused by the more refined antitoxin used at present. I agree with Dr. Toomey that ephedrine or ephedrine and calcium salts have little effect in the incidence and prevention of serum disease. Dr. Toomey stated that he had the impression that we obtained better results in those cases in which the antitoxin was given later. We did not mean to create that impression. In the light of our present experiences I believe that Dr. Bowman and I are justified in concluding that scarlet fever antitoxin will be of value if used in the moderately or severely toxic cases. Dr. Gordon said something in favor of a two weeks quarantine period for adults and three weeks for children. In Philadelphia we practice the minimum of a thirty-day quarantine period, provided they have no suppurative complications. Our proportion of return cases is seldom over 3 per cent, and I think the reason for this is the keeping of our cases in the hospital for an average of thirty days. Last year, with more than 3,000 cases treated, the hospitalization averaged thirty-three days.

DR. ARCHIBALD L. HOYNE, Chicago: It is true, as Dr. Toomey infers, that in scarlet fever cases classed as uncomplicated there may actually be some complication not ordinarily disclosed by the customary examination made at the time of the patient's release. However, we do not feel justified in requiring that all scarlet fever patients undergo a roentgen examination in order to determine whether or not they may have an infected sinus. There seems to be no doubt that virulence is increased by rapid transmission of a disease from one patient to another. That probably explains why so many of the secondary cases are severe, although the disease is acquired from a mild case. This brings up the question as to what is meant by the term "mild." My understanding is not the same, apparently, as of many others. Frequently, if there is not a high death rate the scarlet fever is referred to as mild. The fact that the death rate is not high does not necessarily mean that the disease has been mild. The question of the secondary case of scarlet fever is in itself complicated and, in discussing it, it is difficult to tell what is meant. I feel that Dr. Gordon is in error in believing that we did not properly calculate what we intended to demonstrate. We did not attempt to draw any conclusions as to the infectivity rate of any particular class of patients. The infectivity rates that we showed here are based on the total number of patients discharged. The infectivity rate in no way referred to either the complicated or the uncomplicated cases as separate groups. It had to do merely

with all the patients who transmitted the disease. Therefore, I still think that what we undertook to show we did show and that it is essentially correct. When quarantine is being discussed, there are different systems of figuring its duration. My belief is that, because of the difference in establishing the quarantine time, the minimum quarantine period in Chicago at present is less than the minimum period in Detroit.

ATYPICAL FLEXNER DYSENTERY

A PRELIMINARY REPORT OF THE JERSEY CITY EPIDEMIC

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The Jersey City outbreak is a repetition of incidents known with regard to bacillary dysentery since Shiga first described the causative organism in 1898 in Japan, and Flexner in 1899 in the Philippines. The outbreaks in the United States have been due almost entirely to the acid-producing type represented by the Flexner Y and Sonne strains. Though serologically and bacteriologically distinct, these organisms have many characteristics in common. The paradysentery strains of Castellani and similar organisms described by other investigators probably belong to this group and illustrate the heterogeneous nature of the dysentery bacillus. Nelson considers Castellani's paradysentery identical with Sonne dysentery. One of us (J. F.) recently described an outbreak of the latter disease in New York City, which was terminated a few months before the inception of the Jersey City epidemic. The similarity of the clinical, bacteriologic and immunologic features in these two outbreaks was so marked that they will be again referred to in this communication.

Widespread epidemics of bacillary dysentery have occurred in Europe and elsewhere since 1538. They have been encountered among the armies of almost every nation from the Crimean to the World War. These epidemics were based on well recognized hygienic and sanitary factors incident to warfare. Outbreaks in civilian life, however, in communities with presumed sanitary facilities, have also been common. The "asylum dysenteries" of England, the Flexner Y type of "summer diarrheas" in infants, the milk-borne and water-borne outbreaks in this country and abroad emphasize the belief that the disease is always endemic and that periodic outbreaks occur, often without any apparent laxity in sanitary regulations.

EPIDEMIOLOGY

The Jersey City outbreak began about July 21, when five children were stricken with dysentery. The early cases appeared in one quarter of the city, but others soon occurred elsewhere and by August 10 there were 184 reported cases. It was evident that the entire outbreak represented a contact infection, and further investigation revealed the fact that Flexner dysentery had been endemic in Jersey City for about one year. This was ascertained by referring to the clinical and laboratory records at the Medical Center. It appeared quite certain that sporadic cases kept the disease going, many

of the milder cases probably having been unrecognized until enough susceptible contacts occurred to cause an outbreak. Many of the very early cases occurred in families. Thus, on July 23 five members in one family were involved with one death, a child aged 7. July 30, three members in a family were affected with one death, an infant aged 21 months. This was a prominent feature of the subsequent cases, in one instance all members of a family being confined to the Isolation Hospital at the Medical Center.

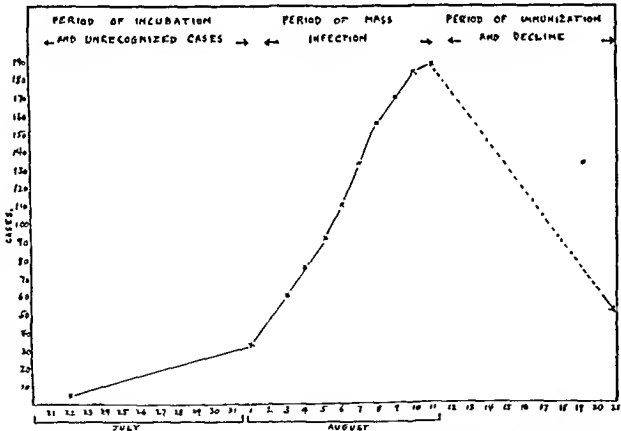
Of the total number involved up to the present, approximately 100 patients have been studied at the Medical Center. It is our impression that the true extent of the outbreak will never be accurately known, because many of the patients are not sick enough to seek medical attention. The same appears to be true for the surrounding communities. Only a careful cultural and serologic check up on an extensive scale will furnish accurate information in this regard. On August 10 one of us (J. F.) definitely diagnosed a case in New York City in a boy, aged 6, who had returned from the Catskills a few days before. He had been playing with two neighbor children, who were confined to bed with bloody diarrhea. Serologic and cultural studies were positive for the Flexner organism, as were cross studies against our Jersey City strains and serums. The one point we wish to stress from the epidemiologic standpoint is the importance of detecting the symptomless or mild cases. Cultures should be made on all contacts and the serum tested for the agglutination titer. Intramural hospital infections are common and may be avoided by isolating every newly admitted child and every adult with loose bowel movements, for forty-eight hours, until the presumptive tests have proved negative. This can be effectively carried out by making a culture

played by the healthy carrier. Shiga, moreover, states that the carrier is the chief factor in the spread of the disease. In Japan, where the more toxic type of dysentery (Shiga) is prevalent, the disease is said to persist in the interepidemic period through the medium of healthy carriers, mild sporadic cases and convalescents. The rôle of domestic animals and flies is now being studied with the cooperation of Health Commissioner

Summary of Age and Familial Incidence and Symptomatology
(100 Patients)*

Age Groups:	
Infants	15%
Adults	15%
Children	70%
Familial Incidence:	
Two in family.....	3
Three in family.....	2
Four in family.....	4
Six in family.....	1
Symptomatology:	
Vomiting	27%
Bloody and mucoid diarrhea.....	90%
Colic	50%
Prodromal symptoms: anorexia, lassitude.....	10%
No diarrhea	5%
Constipation following diarrhea.....	40%
Neurotropic:	
Herpes	13%
Convulsions	4%
Stupor	5%
Rigidity of neck.....	13%
Positive Kernig and Brudzinski signs.....	10%
Ankle clonus	2%
Positive Babinski	2%
Disease Types:	
Typical Mild.....	63%
Severe	35% to 20%
Neurotropic	13%
Appendicular	3%
Afebrile, asymptomatic	4%

* These figures are subject to slight inaccuracy owing to borderline cases. Some of the neurotropic group also fell in the severe type.



Jersey City outbreak of atypical Flexner bacillary dysentery. Total figures include only the reported cases. Note rapid increase in incidence after the first ten days. Thirty-two cases reported in the first eleven days, 156 in the second eleven day period.

of the fresh stool on an Endo plate and setting up the suspected colonies against known immune serums. The patient's serum agglutination titer can be determined on the same day, but the results may be negative until the fifth or sixth day. The work of Conradi,¹ Wollstein,² Duval and Shorrer³ indicates the important rôle

Salmon and the local Society for Prevention of Cruelty to Animals. It is known that dogs may contract dysentery, and we are now examining the diarrheal droppings on the streets of Jersey City. One of our patients had a sick cat for one week prior to the onset of his illness. Kruse and Bowman⁴ have reported Flexner dysentery in monkeys, and Messerschmidt⁵ has recovered the same organism from healthy rabbits. The dysentery organism persists for long periods in the soil, as illustrated by the outbreak at the Chalons military camp in 1889⁶ when troops occupying a site over an old latrine used by dysenteric soldiers the year previously contracted the disease.

Isolation of patients, careful handling of food and water supplies, thorough examination of all food handlers, adequate screening against flies and instruction in personal hygiene are necessary measures in controlling the spread of the disease. Hospital outbreaks have been reported in this country and abroad involving the Sonne as well as the Flexner organisms.⁷

CLINICAL ASPECTS

The statistical data concerning the hospitalized patients, nearly all of whom were at the Medical Center, are summarized in the accompanying table.

The majority of cases occurred in children, usually from the poorer quarter of the city. It is surprising,

1. Conradi: Festschrift für Robert Koch, Jena, 1903.
2. Wollstein, Martha: Studies from the Rockefeller Institute of Medical Research 2, 1904.
3. Duval, C. W., and Shorrer, E. H.: Studies from the Rockefeller Institute of Medical Research 2, 1904.

4. Kruse and Bowman, cited by Castellani, Aldo, and Chalmers, A. J.: Manual of Tropical Medicine, New York, William Wood & Co., 1920.
5. Messerschmidt, cited by Lentz: Ztschr. f. Hyg. 41, 1902.
6. Zinsser, Hans: Textbook of Bacteriology, New York, D. Appleton & Co., 1922, p. 715.
7. For general literature covering this subject see Felsen, Joseph, and Ososky, A. G.: Sonne Dysentery, J. A. M. A. 103:966 (Sept. 29) 1934. Felsen, Joseph: Am. J. Digest. Dis. 1:297 (July) 1934.

however, to note the relatively large number of adults affected.

Typical, Mild Form.—The typical case was of the mild type. The incubation period was short, often only a few hours. There were no prodromal symptoms other than anorexia or slight lassitude. The onset was generally quite sudden with colic and profuse watery diarrhea, often greenish and foul, with bright red specks or fluid blood and mucus appearing after from twenty-four to forty-eight hours. In some cases there was vomiting, usually ascribed to "food poisoning." There was only a moderate pyrexia with a corresponding increase in pulse rate. The average patient looked very well and complained little or not at all. Often the patient would be brought to the hospital on the third or fourth day of illness and in a day or two the temperature would be normal. Very shortly thereafter, usually the same or the next day, the diarrhea ceased. In some of the positive cases the bowels were actually constipated after admission. At or about the sixth day the patients often clamored to be sent home and would have been were it not for the bacteriologic check up. Sigmoidoscopic examinations were made in a limited number of cases and revealed a reddened mucosa weeping bloody fluid and covered in patches with thick, yellowish gray mucus. Ulceration, when present, was very superficial and could be made out only by careful examination of the reddened, moist mucosa. Follicular hyperplasia was nearly always present and was noted as multiple small punctate elevations of the mucosa due to hyperplasia of the underlying solitary lymph nodules. It is interesting to note that some patients exhibited definite inguinal lymphadenopathy due to inflammation extending to the anorectal margin. Lymphatic drainage from this area is to the inguinal region. We include in this group a member of the intern staff who was handling the hospitalized patients and who had a brief attack of bloody diarrhea unaccompanied by any marked constitutional symptoms.

The mild form of the disease as encountered by us may be described as an acute inflammatory condition of the intestine, characterized by a bloody and mucoid diarrhea accompanied by colic, having a brief incubation period, of short duration and of a relatively nontoxic type. This definition coincides with that given by one of us for an identical clinical picture seen in Sonne dysentery.

Severe Type.—In some of the infants and younger children a severe form of the disease was encountered. The onset was sudden with headache, vomiting, colic, profuse bloody diarrhea and prostration. By the time the patients reached the hospital they were markedly dehydrated, acidotic and acutely ill. It is quite certain that some of the infants were saved only by the prompt hypodermoclyses and phlebotomies administered by the intern staff. In this form the pyrexia was often as high as from 104 to 105 F., and the duration of the disease was prolonged beyond the usual six day period. It may be noted in passing that some of the severe cases occurred in adults. Thus far the mortality in the severe type of the disease has been 2 per cent. We have not encountered any cases of sudden death as described by Harvey⁸ and by Charles and Warren.⁹ It is noteworthy that in the severe form there was an initial

leukopenia with gradual return to normal or even a leukocytosis during convalescence.

Unusual Types; Neurotropic Type.—Some of our patients exhibited labial herpes and meningitic symptoms such as severe headache, violent emesis, convulsions, drowsiness or stupor. These were not infrequently accompanied by rigidity of the neck and positive Kernig and Brudzinski signs. These patients appeared to fall into a definite group. While herpes is generally conceded to be a virus infection, we were impressed by the constant association of this lesion with meningitic symptoms. The spinal fluid, however, was negative and the symptoms subsided after a few days. Several of these cases were admitted with a tentative diagnosis of meningitis. It is possible that this form of Flexner dysentery is caused by a neurotropic strain.

Appendicular Type.—Some of our cases were admitted with a diagnosis of acute appendicitis and, after observation, were transferred to the Isolation Hospital. The suggestive symptomatology is due to the mesenteric adenitis and lymphoid hyperplasia, which is often most marked in the ileocecal region. Nelson,¹⁰ Clayton¹¹ and Felsen have described similar cases. These patients are apt to have a normal leukocyte count or actual leukopenia early in the disease.

Afebrile Type.—Some of our patients have been completely afebrile throughout their stay in the hospital, though bloody and mucoid diarrhea was present. These patients generally exhibit no noteworthy constitutional symptoms.

Asymptomatic Type.—A few adults and children have entered the hospital because of one or a few loose bowel movements without blood or mucus. Many of these cases undoubtedly exist as they have in other epidemics and medical attention is sought only because of the publicity incident to an outbreak.

CULTURAL, IMMUNOLOGIC AND ANIMAL STUDIES

We are studying many of the strains isolated thus far and the immunologic titers of the serums during the disease and convalescence stages. Discharged patients and contacts are now being recalled for further investigation. We have reproduced the disease in rabbits by intravenous inoculation of the Jersey City strains and recovered the organism in the feces. Toxin studies, serum and bacteriophage therapy and widespread vaccination of children are being initiated.

POSTMORTEM REPORT

One infant exhibited a general lymphoid hyperplasia of the small and large bowel, notably the ileum and ileocecal region. Peyer's patches and solitary lymph nodules stood out prominently. After fixation, the latter showed a peculiar central dimpling suggestive of early necrosis. There was a generalized mesenteric lymph node hyperplasia, which appeared to be most marked at the ileocecal angle and on the posterior aspect of the cecum. There were numerous superficial ulcerations of the mucosa with vascular congestion. Sections of the spleen revealed hyperplastic splenic lymph nodules surrounded by a prominent hemorrhagic halo containing many macrophages loaded with blood pigment. In places the connective tissue trabeculae were similarly outlined.

8. Harvey, E.: *Lancet* 1: 190 (Jan. 23) 1933.

9. Charles, J. A., and Warren, S. H.: *Lancet* 2: 626 (Sept. 21) 1929.

10. Nelson, R. L.: *Sonne Dysentery*, *Am. J. Dis. Child.* 41: 15 (Jan.) 1931.

11. Clayton F. H. A.: *Lancet* 1: 391 (Feb. 19) 1927.

THERAPY

Flexner dysentery as we have encountered it is a self limited disease. Most of the patients received repeated doses of castor oil in order to favor elimination of the toxin, which is known to be excreted through the wall into the bowel lumen. In dehydrated cases, liberal phlebotomies and hypodermoclyses were given. Aside from these measures the treatment was essentially symptomatic. It is too early to report on the effects of specific therapy, as many of the patients enter the hospital on or about the third or fourth day of the disease and often are well in one or two days.

667 Madison Avenue.

A NEW DANGER IN DINITROPHENOL THERAPY

AGRANULOCYTOSIS WITH FATAL OUTCOME

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NEW YORK

With the use of alpha-dinitrophenol reaching proportions that must astound and alarm even its enthusiastic advocates, it is felt that this report of another fatality following its administration should be published.

REPORT OF CASE

A woman, admitted to the Mount Sinai Hospital, May 26, 1934, had an irrelevant past history except for the fact that she had always been obese, averaging 250 pounds (113 Kg.). About one year previously her physician noted moderate hypertension. Two months before admission, after a careful physical examination by her physician, who found only obesity (265 pounds, or 120 Kg.) and hypertension (175 systolic, 100 diastolic), the patient was given sodium alpha-dinitrophenol in doses of one-half grain (0.03 Gm.) three times a day. This dose was gradually increased so that five weeks later the patient was taking 2 grains (0.12 Gm.) three times daily. Her weight at that time was 258 pounds (117 Kg.), a loss of 7 pounds (3.2 Kg.) since the use of the drug was begun. She then saw her physician and as he found no toxic symptoms he increased the dose of the sodium alpha-dinitrophenol to 3 grains (0.18 Gm.) three times daily, or 9 grains (0.54 Gm.) a day. It is to be noted that the largest dose taken by the patient was still within the safe limit recommended by Tainter in his publication; namely, less than 5 mg. per kilogram of body weight. This dosage was maintained for six days. At the end of this period the drug was discontinued because the patient complained of pain in the head and ears. There was no fever, excessive perspiration or skin rash. She continued to be up and about for two days after stopping the medication. The next day, four days before admission to the hospital, the patient complained of headache, fever, sore throat and progressive swelling in the right side of the neck. The next day her physician found an ulcerating lesion in the tonsillar fossae and a fever of 103.5 F. A blood count made at that time showed only 600 white blood cells per cubic millimeter. Of these, only 20 per cent were polymorphonuclear leukocytes, 10 per cent were monocytes and 70 per cent were lymphocytes. A diagnosis of agranulocytosis was made; liver extract was administered intramuscularly, and the patient was sent to the hospital, May 26.

At the hospital she was found to be very acutely ill. There was a yellow tinge to the skin (dinitrophenol), but the sclerae were not icteric. In addition to the ulcerating tonsillar lesion and the suppurating lymphadenitis below the right lower jaw, there was an infected callus of the sole of the right foot. The spleen was felt. During her hospital stay the patient's temperature varied between 104 and 105.8 F., the pulse rate between 120 and 140 beats per minute and the respiratory rate

between 20 and 42 per minute. She was treated with liver extract intramuscularly and given two direct blood transfusions of 300 cc. each on May 26 and May 28. In spite of this, her condition became worse, pneumonia developed and the patient died, May 31.

A blood culture taken two days before death revealed the presence of *Staphylococcus aureus*.

May 26, Dr. Nathan Rosenthal reported the patient's blood count as follows: hemoglobin, 94 per cent; red blood cells, 5,520,000; platelets, 290,000; leukocytes, 1,440; segmented polymorphonuclears, 4 per cent; nonsegmented polymorphonuclears, 4 per cent; lymphocytes, 92 per cent. This, he stated, was the blood picture of agranulocytosis.

May 28, Dr. Rosenthal found: hemoglobin, 95 per cent; red blood cells, 5,370,000; platelets, 250,000; leukocytes, 1,500; segmented polymorphonuclears, 8 per cent; nonsegmented polymorphonuclears, 7 per cent; eosinophils, 1 per cent; lymphocytes, 78 per cent; monocytes, 6 per cent. He stated that this blood smear showed improvement over that of May 26.

The urine showed no bile, but urobilin was present. A faint trace of albumin was the only other abnormality. The blood pressure was 125 systolic, 90 diastolic. The blood Wassermann reaction was negative. Chemical examination of the blood revealed: sugar, 200 mg.; urea nitrogen, 68 mg.; calcium, 9.8 mg., and phosphorus, 3.3 mg. per hundred cubic centimeters of blood. The icteric index was 8 and the van den Bergh reaction was negative. The bilirubin content of the blood serum was 0.3 mg. per hundred cubic centimeters.

Postmortem examination was performed under the direction of Dr. Paul Klemperer who, among the conditions present, observed bronchopneumonia of all lobes of both lungs, severe degeneration of heart, liver and kidneys, cellulitis of the right side of the neck, necrotic ulceration of the plantar surface of the left foot, and obesity. From a consideration of the clinical history the diagnosis of agranulocytosis and bacteremia were added. Smears of the bone marrow made by Dr. Rosenthal showed evidences of hyperplasia of the marrow, such as is often seen in agranulocytosis.

The report by Hoffman, Butt and Hickey¹ is the only reference in the literature to a similar reaction to dinitrophenol, but as this is, so to say, buried in a paper dealing primarily with amidopyrine, I feel that more direct attention should be called to the rôle of dinitrophenol in the production of agranulocytosis.²

Although no causal relationship can be established between the use of dinitrophenol and this patient's death from agranulocytosis, it is felt that the rapidly mounting number of toxic and fatal cases following the drug's use should greatly limit its prescription, especially since we have been unable to convince ourselves at the Mount Sinai Hospital of its efficacy in weight reduction in a carefully controlled series of twenty-four hospital and outpatient department patients. These cases convinced us that dinitrophenol was of use only when combined with dietary restriction and that dietary restriction had to be continued after the therapy with the nitrated phenol had been stopped. In view of this and the fact that we are treating a relatively benign condition with a substance of undetermined toxicity, we have, for the present at least, discontinued the use of dinitrophenol in the hospital and recommend strongly that it be made available only on a physician's prescription.

Addendum: Since this case was observed I have heard of another death due to agranulocytosis following the therapeutic use of dinitrophenol by a middle-aged woman who had not been ill before the administration of the drug.

124 East Sixty-First Street.

1. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, *J. A. M. A.* 102: 1213 (April 14) 1934.

2. Since this report was prepared there appeared in *THE JOURNAL*, on July 28, page 249, the case record of another, but nonfatal, case of agranulocytosis after dinitrophenol observed by Dr. S. Stephen Bohn.

Clinical Notes, Suggestions and New Instruments

A MECHANICAL DEVICE THAT PRODUCES UNIFORM DISPERSION OF BLOOD CELLS IN THE DILUTING PIPET

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A study of the reports of leukocyte counts reveals contradictions and discrepancies that are clearly the result of faulty technic. A systematic study has revealed that a significant source of error is the failure to obtain a uniform dispersion of blood cells in the diluting pipet, which is reflected in variations of the numbers of cells as well as in their uneven distribution over the field of the counting chamber. Errors of surprising magnitude in the widely used manual method of shaking the diluting pipet in one plane were revealed in our study, and they were even more marked with certain mechanical shakers known to have been used in a number of research laboratories. The extent of the errors due to the use of a mechanical shaker is illustrated in table 1, which records typical results when as many successive counts as possible (nineteen) were made from the contents of a single pipet. It will be noted that the range between the minimum count of 6,480 cells and the maximum of 11,480 cells is 5,000 cells, while the coefficient of variation of the counts is ± 12.8 per cent in a series with an arithmetical mean of 8,716. It should be stated that similar unreliable results were obtained whether the pipet was continuously shaken or reshaken between successive counts, although two drops were always "wasted" before a drop was admitted to the counting chamber.

TABLE 1.—Dispersion of Leukocytes in the Diluting Pipet
Obtained by Means of a Mechanical Shaker,
Shakes the Pipets in Only One Plane*

Order of Count	No. of Cells per Square Millimeter of Area									Total No. of Count per Field of Cu. Mm. of Blood (T) T(200/9)	
	1	2	3	4	5	6	7	8	9		
1	40	50	37	42	38	44	44	67	47	410	9,100
2	33	60	57	42	42	41	51	39	42	407	9,040
3	30	30	36	50	37	43	36	49	47	384	8,520
4	45	41	51	55	42	47	29	59	59	426	9,460
5	52	52	56	39	33	41	46	35	44	398	8,840
6	33	32	46	35	38	35	54	41	41	355	7,880
7	63	49	40	35	53	52	53	41	48	439	9,740
8	39	45	53	47	47	48	38	43	40	400	8,880
9	47	52	38	48	46	57	58	48	65	459	10,200
10	40	42	60	50	32	39	41	52	68	424	9,420
11	39	42	43	36	38	58	37	42	38	391	8,720
12	41	46	62	43	37	42	42	48	44	405	9,000
13	41	39	40	32	43	37	32	49	31	344	7,640
14	48	40	36	23	36	47	57	41	42	370	8,220
15	40	54	40	31	47	30	39	48	47	372	8,260
16	48	40	44	60	54	98	30	54	89	517	11,480
17	43	37	33	27	34	37	44	44	50	349	7,740
18	37	28	36	27	29	20	50	26	32	292	6,480
19	32	36	44	31	33	36	33	33	37	315	7,000
Arithmetic mean = 43.6										Arithmetic mean = 8,716	
Range = 78										Range = 5,000	
Coefficient of variation = $\pm 23.92\%$										Coefficient of variation = $\pm 12.8\%$	

* Showing the number of leukocytes on each square millimeter of area (of the fields of a counting chamber) obtained when as many counts as possible (nineteen) were made from the contents of a single pipet. Each total count is based on all the cells counted on one field, i. e., 9 sq. mm.

Potain, who devised the pipet with a bead in the bulb in 1862, specified the following method of mixing the cells: "Rotate the mélangeur around its axis and at the same time raise and lower its ends."¹ This technic, which was employed by Garrey and Butler in their recent studies, gives more consistent results than those obtained by either manual or mechanical shaking. The authors have devised a mechanical "rotor" which mixes the diluting fluid (Türks solution) and blood in the pipet by what is essentially the Potain method. The device

materially increases the accuracy of the counts. In its simplest form it may be assembled in any laboratory, as shown in figure 1. It is constructed from a large wooden spool on which wire or solder filament is wound. The spool (A), which has a diameter of $3\frac{1}{2}$ or 4 inches, is mounted on a shaft (B), which can turn on its axis by mounting through a bearing of brass tubing (C) at each end, the tubing being clamped (D) to the two uprights of a Jackson stand or any similar device. A pulley (E) on the shaft serves for a belt drive by an electric motor. The rotation of the spool must not be faster than 50 revolutions per minute; otherwise centrifugation of the cells will nullify the desired dispersion. Proper gearing is therefore essential. A satisfactory speed (42.8 revolutions per minute) has been obtained with an alternating current induction motor provided with the desired reducing gear (35 to 1) made by the Bodine Electrical Company (Type Car-2).

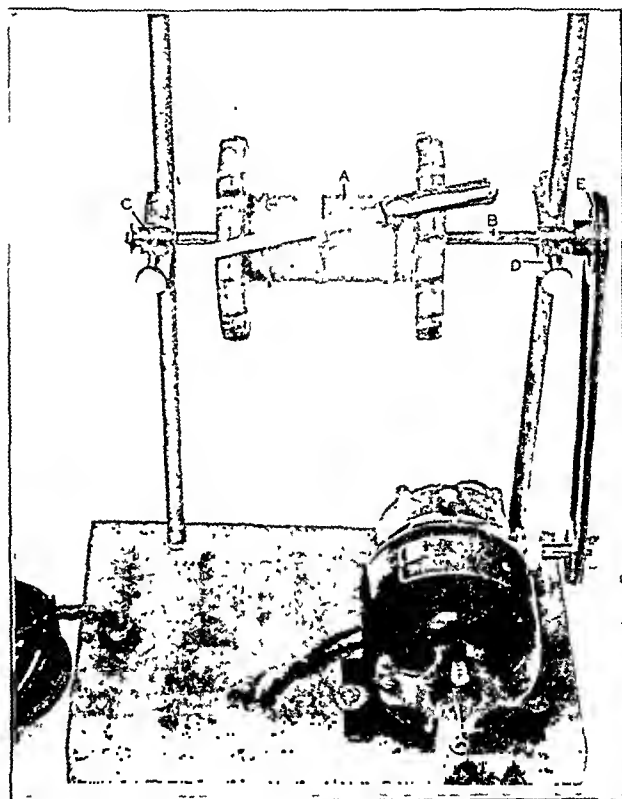


Fig. 1.—Simple rotor. A large spool rotated from 40 to 50 revolutions per minute by a motor with reducing gear and pulleys of proper ratio gives uniform dispersion of leukocytes in the pipet, which is attached at an angle to the axis of rotation. Lettering is described in the text.

The flanges of the spool are notched at several points to receive the pipets, which are mounted in the notches at an angle of 15 degrees and held in place by small rubber bands. Leakage from the pipets is prevented by stretching over their ends a wide rubber band or by the use of a collar device, such as is used with hematocrit tubes or such as is furnished with the Haak diluting pipet.

Figure 2 shows an improved mechanical rotor, which was built in the Vanderbilt Medical School Apparatus Shop by M. Herblin. This rotor is equipped with spring clamps, which will hold any commercial pipet in place. Leakage is prevented by means of thick rubber disks, placed in cups at each end of the clamp.

The principle involved in the use of this apparatus is that, owing to rotation, the cells settle by gravity in all possible directions and in ever changing planes, while at the same time they are stirred by the figure of eight movements of the glass bead.

Table 2 shows the results obtained in a typical experiment when as many counts (nineteen) as possible were made from the contents of a single pipet, mixing of the cells being

1. Tigerstedt, Robert: *Handbuch der physiologischen Methodik*, Leipzig, S. Hirzel, 1913, B: II 2, part 5, p. 11.

accomplished by means of the rotor device. The total white counts in this case with an arithmetical mean of 8,284, a minimum of 7,960 and a maximum of 9,120 vary over a range of only 1,160 cells, with a coefficient of variation of ± 3.4 per cent as compared to a range of 5,000 cells and a coefficient of variation of ± 12.8 per cent already noted when a mechanical shaking device was used (table 1). The compared counts of tables 1 and 2 were made from two pipets that were filled at the same time from the same sample of blood. A graphic representation of the distribution of cells on the fields of a hemocytometer is shown in figure 3.

TABLE 2.—Dispersion of Leukocytes in the Diluting Pipet Obtained by Means of a Mechanical "Rotor"*

Order of Count	No. of Cells per Square Millimeter of Area									No. of Cells per Field (T)	Total Count per Cu Mm. of Blood T(200/9)
	1	2	3	4	5	6	7	8	9		
1	34	53	41	45	47	44	42	39	48	393	8,720
2	46	41	41	35	41	31	41	49	40	365	8,100
3	45	48	35	41	46	34	34	47	45	375	8,320
4	31	33	38	45	30	50	45	43	47	362	8,040
5	46	47	39	38	42	43	36	47	47	385	8,540
6	41	42	41	36	41	46	44	37	37	364	8,080
7	46	41	47	46	44	45	46	51	45	411	9,120
8	40	37	39	44	50	40	41	41	35	367	8,140
9	40	44	45	37	49	40	39	38	45	377	8,760
10	34	48	27	40	37	42	42	37	44	361	8,020
11	38	45	37	37	48	47	38	46	41	377	8,760
12	49	47	42	36	41	42	49	44	37	373	8,720
13	36	37	43	48	41	45	45	48	35	378	8,400
14	41	36	47	44	40	41	38	49	36	372	8,260
15	34	47	34	38	45	50	40	37	46	367	8,140
16	38	42	38	44	46	44	32	41	40	367	8,140
17	41	45	41	42	32	42	46	49	41	379	8,420
18	37	48	34	46	42	34	45	34	39	379	7,960
19	39	40	44	42	38	34	42	43	359	7,960	
Arithmetic mean = 41.4											Arithmetic mean = 8,284
Range = 23											Range = 1,160
Coefficient of variation = $\pm 11.8\%$											Coefficient of variation = $\pm 3.4\%$

* Showing the number of leukocytes on each square millimeter of area (of the fields of a counting chamber) obtained when as many counts as possible (nineteen) were made from the contents of a single pipet. Each total count is based on all the cells counted on one field, i. e., 9 sq. mm.

If the pipet is placed in the rotor immediately after the sample is taken and diluted, from five to ten minutes is sufficient to give an even dispersion of cells. However, if for

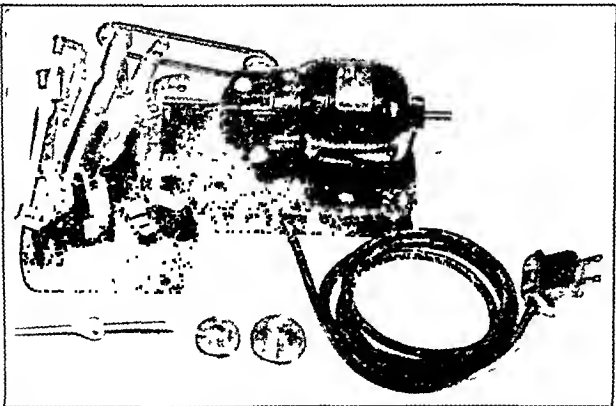


Fig. 2.—Improved form of rotor shown in figure 1. Extra pulleys to adjust the speed of rotation to about 50 revolutions per minute are shown. Described in text.

any reason the pipets must be kept for a while before the counts are made, thus allowing the cells to settle out, they may still be counted with the same degree of accuracy by being rotated for at least twenty minutes prior to the making of the counts. White blood cells begin to disintegrate after about twenty-four hours when diluted with Türk's fluid, but pipets may be allowed to stand for from twelve to eighteen hours and still may be counted with the same degree of accuracy as if counted immediately.

A statistical analysis of the results that we have obtained with this apparatus on more than 2,000 white cell counts is in progress and will be published subsequently, together with a study of other factors that influence the accuracy of the leukocyte count.

The distribution of red blood cells on the fields of a hemocytometer is likewise more uniform when the rotor device is used; however, certain precautions are necessary in the use

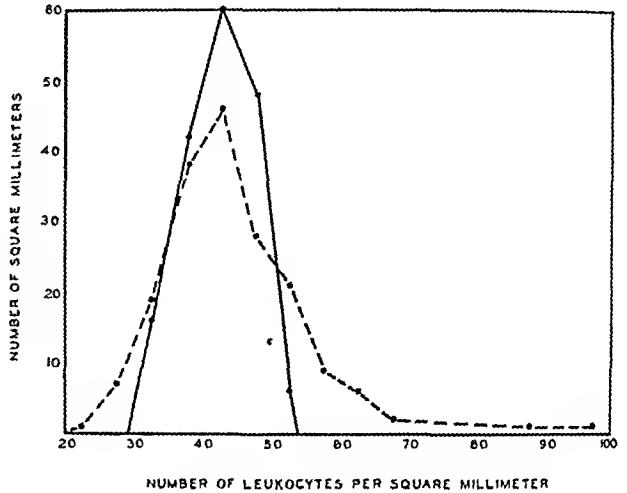


Fig. 3.—Frequency polygons, showing the variation in the number of cells in each square millimeter area of the fields of a counting chamber when as many counts as possible were made from the contents of a single pipet. The solid line shows the variation obtained when the cells in the pipet were mixed by means of the mechanical rotor (figs. 1 and 2). The broken line shows the more scattered results obtained when a pipet, which was filled from the same sample of blood, was shaken in a mechanical device which shakes in only one plane. Areas of 171 square millimeters (nineteen fields of a counting chamber) were counted in the case of each pipet.

of the diluting fluid. As formerly pointed out, Hayem's fluid develops a precipitate and after standing "should not be used in the case of blood samples which contain increased amounts of fibrin."² In our experience a large percentage of normal blood samples clump in the rotor device if Hayem's fluid is more than two or three weeks old, or if the fluid contains an excess of corrosive mercuric chloride. Freshly prepared Hayem's fluid gives excellent results. The tendency to clumping of the cells, due to the diluting fluid, is manifest in the case of the rotor device by balling up of the cells into clumps visible to the naked eye, so that they cannot be counted. In case the pipet is vigorously shaken the clumps are smaller, even microscopic, and, while the cells may be counted, accuracy of the results is nevertheless materially reduced. Other diluting solutions are being investigated.

SUMMARY

The mechanical device (rotor) and technic described add materially to the accuracy of the leukocyte count, give a greater constancy to the number and uniformity of distribution of these cells on the ruled field of the counting chamber, and permit repeated leukocyte counts of samples from a single pipet, even from twelve to eighteen hours after the dilution of the subject's blood has been prepared. Red cells may likewise be counted with greater accuracy, provided certain precautions are adhered to in preparation and use of the diluting fluid.

Vanderbilt University School of Medicine.

2 Tigerstedt Handbuch der physiologischen Methodik, p. 15.

Judicious Blending of Science and Art.—One of the greatest problems of those engaged in the practice of medicine, is the judicious blending of the science and the art. After all is said and done, there is no antagonism between the science of medicine and the art of medicine and the most successful practitioner is he who most judiciously fuses them.—Blumer, George: Some Discursive Remarks on Bedside Diagnosis, *Yale J. Biol. & Med.* 6:571 (July) 1934.

Special Articles

THE EPIDEMIOLOGY OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

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NEW ORLEANS

The papers by Drs. Craig and Simon in this issue are part of a series of clinical lectures on amebiasis read at the Cleveland session. The other five papers, by Dr. Melency, Dr. Magath, Drs. Chesley and McCoy, Dr. Reed and Dr. Lynch, will be published next week and the week following.

In order to understand the epidemiology of amebiasis it is essential that one have a clear conception of the life history of the cause of the infection, *Endamoeba histolytica*. This organism belongs to the protozoa, or unicellular animals, and has three stages in its life cycle, a vegetative stage, during which it is known as a trophozoite; a precystic stage, and a cystic stage. It is essentially a tissue parasite, living in the tissues of the intestine of man, or elsewhere in the body, but also capable of life in the lumen of the bowel for a limited period of time at least. In the tissues of the intestine and in other tissues the amebas occur as motile trophozoites, and cysts are not formed in the tissues. In the feces during attacks of diarrhea or dysentery they occur also as motile trophozoites, although in very rich infections cysts may also be found in such stools, but usually the precystic and cystic forms are found only in semi-formed or formed stools. In the motile forms, reproduction occurs by simple division of the trophozoite into two amebas; no reproduction occurs in the precystic forms, while in the cysts the nucleus divides into four nuclei, cysts being found in the stools containing from one to four nuclei, the fully developed cyst having four. These cysts are the transmitting agents of the infection, as they are capable of resisting the gastric juice when swallowed in infected food or drink, while the motile forms are destroyed by the normal gastric secretion and hence are not infective. The cysts when swallowed pass unchanged through the stomach and greater portion of the small intestine, and in the lower portion of the ileum and the upper portion of the large intestine liberate a four nucleated ameba, which, after a complicated series of nuclear changes, divides into eight small amebas, which may invade the tissues or encyst and be passed in the stools of the host.

The methods of transmission of amebiasis depend on the fact that the cysts are the transmitting agents and that man becomes infected through the ingestion of food and drink contaminated by feces containing these cysts. As the cysts are seldom passed in any number in the stools of patients having acute diarrhea or dysentery, such patients are usually not infective, but it is the individual who is convalescent from dysentery, or who is apparently healthy or suffers from indefinite gastrointestinal symptomatology, who is a source of infection to those about him, as the cysts occur in semi-formed or formed stools in large numbers. As in practically

all untreated or improperly treated cases of amebic diarrhea or dysentery the cysts of this parasite are passed in the stool, it is evident that all such individuals become potential sources of infection, and the same is true of all individuals who harbor this parasite, regardless of the presence or absence of symptoms.

Amebiasis may be transmitted to man through a water supply polluted by feces containing the cysts of *Endamoeba histolytica*, through the use of human excreta in the fertilization of garden truck, through the handling of food by individuals who are excreting the cysts, and through the droppings of flies and perhaps other insects that have fed on infective material.

The transmission of amebiasis through a contaminated water supply is most apt to occur in rural regions where soil pollution is practiced and wells and springs are used as a source of water. It is probable that a large part of the incidence of this infection in country districts is due to contaminated water, as the cysts of this parasite will live in water for days, and even weeks, as proved by many authorities. That widespread infection with amebiasis may also occur in cities through a contaminated water supply has recently been demonstrated by the outbreak of amebic dysentery traced to contaminated water in certain hotels in Chicago, where, although food handlers undoubtedly played a part in the transmission of the infection, the water supply was apparently the chief factor in the transmission of the parasite. In this unique epidemic of amebic dysentery, defective plumbing and cross connections between the water supply of the hotels and the sewer were apparently responsible for extensive pollution of the water supplied the guests, with consequent transmission of the infection, although some transmission must have occurred through food handlers, as many of those employed by the hotels were found to be carriers of *endamoeba histolytica*.

Infection of man with *Endamoeba histolytica* is, under certain conditions, caused by polluted water; but infection from this source will not occur in localities where there is a properly impounded and filtered water supply unless this supply is polluted after leaving the filtration plant. It should be remembered, however, that the treatment of water with chlorine in order to kill disease-producing organisms is useless so far as amebiasis is concerned, for it has been repeatedly shown that the quantity of chlorine necessary to kill the cysts of *Endamoeba histolytica* is practically a hundred times greater than that used in water sterilization and that this agent cannot be used for this purpose. Boiling affords the only practical method of rendering water safe that has been contaminated with the cysts of this parasite.

Transmission of amebiasis through the use of human fecal material in the fertilization of truck gardens is a common method of transmission of the infection in the Orient, but even in this country this practice is not unknown and may be a method of transmission. The cysts of *Endamoeba histolytica* will remain alive in moist fecal material for as long as two weeks, and if this material is used in fertilization, and the vegetables so fertilized are eaten in an uncooked condition, it is obvious that there is great danger of the transmission of amebiasis in this manner.

The most common method of transmission of amebiasis, in otherwise well sanitized regions, is through the contamination of food and drink by food handlers

who are carriers of this parasite. Although recently there has been an effort made to minimize the danger of infection in this manner, it remains an incontrovertible fact that in cities and towns having an impounded and filtered water supply, and where sanitation is otherwise excellent, infected food handlers employed in hotels, restaurants, lunch counters and other public eating places are the chief source and transmitters of amebic infection. While the cysts of this parasite die rapidly after drying, and while the recent experiments of Spector and Buky¹ show that within ten minutes the cysts have perished after drying on hands experimentally soiled with feces containing them, this period is amply sufficient to infect food if the individual handles it directly after leaving the toilet. The transmission of this infection by food handlers who are uncleanly is practically a certainty unless the greatest care is taken regarding personal hygiene and the cleanliness of the hands, and it has been found that the incidence of this infection in food handlers employed in public eating places is often excessive, owing to their close association and the constant intake of cysts in the food that they themselves contaminate. There are many instances of record in which one infected food handler apparently infected many others in the same institution, and there is nothing more common than to find several members of a family infected if one member has been demonstrated to harbor the parasite. I have records of several families in which every member showed infection, and the infection could be traced to a cook who harbored the parasite. The infected food handler must still be regarded as the principal source of infection with amebiasis wherever the water supply is beyond suspicion, and even in regions in which water may be a potential source of infection a large part of the amebiasis present will have originated from infected individuals engaged in the preparation and handling of food.

The contamination of food and drink by the droppings of flies is sometimes a method of transmission where flies are very plentiful and have access to fecal material. The cysts of *Endamoeba histolytica* remain viable in the intestine of these insects for as long as forty-eight hours, during which time the droppings of the insect contain them, and food may be thus contaminated. It is impossible to say just how important this method of transmission may be but, under certain conditions, as in military operations or large construction problems where many men are collected together, fly transmission may become a very important method of transmission.

The question of the possible existence of strains of *Endamoeba histolytica* differing in virulence is one that deserves consideration, and recently Meleney and Frye² have brought forward some evidence favoring variations in virulence of certain strains of the parasite with which they have infected kittens. While the theory of variations in virulence in strains of *Endamoeba histolytica* is an attractive one and one that would explain some of the puzzling differences observed in the symptoms attending human infection, it must be admitted that up

to the present time such evidence as is available is not sufficient to offset the results of the many investigations which have apparently demonstrated that there is no difference in virulence between strains of this parasite isolated from symptomless individuals and those suffering from severe attacks of amebic dysentery. The only successful experiments in the production of amebic dysentery in human volunteers, those by Walker and Sellards,³ were obtained by feeding cysts of *Endamoeba histolytica* obtained from symptomless carriers of the parasite. It is probable that the explanation of the variations in the severity of the symptoms produced by *Endamoeba histolytica* in man depends on the number of cysts ingested and the resistance of the individual rather than on differences in virulence of the parasite, although further work needs to be done along this line before such differences in virulence can be denied.

While under ordinary conditions the symptom complex of amebiasis known as amebic dysentery usually occurs in the form of sporadic cases, it may occur in epidemic form if conditions as regards lowered resistance or massive dosage of cysts are present. The epidemic occurrence of amebic dysentery was observed repeatedly among troops operating in the field in the Philippines, when resistance was lowered by the conditions present in active field operations and constant reinfection by swallowing numerous cysts in highly polluted water occurred. The recent outbreak of amebic dysentery contracted in certain hotels in Chicago is another instance of the epidemic occurrence of this condition when massive infection is possible. However, it is most unusual to encounter epidemics of this type of dysentery, and it is well to remember that the vast majority of cases of amebic dysentery occur sporadically and in this feature differ from bacillary dysentery, which very frequently occurs in epidemic form.

As regards climate, amebiasis is not a tropical disease, and its most serious manifestation, amebic dysentery, occurs throughout the world, although more frequently observed in the tropics because of greater chances of heavy infections and the lowered resistance of the inhabitants. It is true that heat and humidity appear to favor the development of symptoms in individuals harboring *Endamoeba histolytica* and that removal of patients suffering from amebic dysentery to a cool climate is generally followed by a marked improvement in their condition; but this is believed to be entirely due to the increase in the resistance of the individual following the stimulating effect of the change to a cooler climate.

There is no good reason for believing that this infection even originated in the tropics or subtropics, for *Endamoeba histolytica* has been found wherever it has been looked for, and the first case of amebic dysentery ever described was in a resident of St. Petersburg, Russia, who had never been in the tropics. It is also true that amebiasis and amebic dysentery have been occurring in the United States for many years and that the impression which some physicians have that this is a recently introduced infection is far from the truth. It is probable that amebiasis has always been present in this country but has been unrecognized, and careful observation will certainly demonstrate that it is much more prevalent than has been believed.

1. Spector, Bertha K., and Buky, Florence: *Viability of Endamoeba histolytica and Endamoeba coli: Effect of Drying*, Pub. Health. Rep. 49: 379 (March 23) 1934.

2. Meleney, H. E., and Frye, W. W.: *Studies of Endamoeba histolytica and Other Intestinal Protozoa in Tennessee*, Am. J. Hyg. 17: 637 (May) 1933.

3. Walker, E. L., and Sellards, A. W.: *Philippine J. Sc.* 8: 253, 1913.

So far as its epidemiology is concerned, it differs but little from that of the epidemiology of most infections contracted through infected food or drink, and the measures that have been found successful in preventing infection with these diseases will prove equally effective in combating amebiasis. The first essential is the recognition by the physician and public health officer that this infection is a prevalent one in this country, with a thorough understanding of its nature and the methods of transmission.

THE CLINICAL DIAGNOSIS OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

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NEW ORLEANS

From a clinical point of view, the most characteristic feature of amebiasis is embodied in the wide variability of its manifestations. The course pursued by the disease exhibits a symptom complex of highly diverse and changeable character, ranging in varying degrees of severity from attacks of a virulently acute fulminating colitis, such as occurred in the Chicago episode of 1933, to mild and all but negligible forms of bowel derangement. Moreover, fairly extensive lesions are found to occur along the intestinal tract without producing any striking symptoms or positive evidence of their presence. The first detailed description of the condition was undertaken by Councilman and LaFleur¹ in 1891 under the title of amebic dysentery. This designation is now regarded as not sufficiently accurate and in many respects as misleading, in view of the present knowledge that the occurrence of typically dysenteric as well as other intestinal phenomena comprises only a relatively small part of the composite picture of an amebic infestation. At least 50 per cent of individuals who harbor pathogenic amebas, in fact, never become cognizant of the presence of the organisms within the body. This group of so-called symptomless or healthy carriers nevertheless usually display some ill effects of their infection, even though slight. Indeed, invasion of the structures of the body by *Endamoeba histolytica* constitutes a definite clinical as well as pathologic entity, irrespective of whether manifestations are present or not.

ETIOLOGIC FACTORS

The cause of the variable degrees of severity exhibited by the disease and the inconstant and irregular character of the clinical picture as a whole may be ascribed to one or more of several contributory factors: 1. The site of location of the active pathologic lesions in the colon as well as the total area of bowel involvement are both factors of considerable clinical importance. In general, the nearer the lesions invade the region of the rectum and sigmoid, the more manifest are the intestinal symptoms. 2. The numerical concentration of cysts of *Endamoeba histolytica* present in contaminated water or food supplies furnishes a

source for the rapid development at times of a virulent type of infection. Such conditions are encountered most often in military units but may also occur in civilian groups when insanitary living facilities prevail, as was the case in the recent Chicago outbreak. 3. An incidental bacterial infection superimposed on an amebic invasion of the bowel often gives rise to complexities in diagnosis. This double or crossed type of infection involving most frequently organisms of the *Bacillus dysenteriae* group serves to intensify and at times to mask the true picture of amebiasis. 4. The reaction of the human host to the invasion of the pathogenic amebas, in this as in other infectious processes, determines in great part the degree of severity and the clinical tendencies displayed by the disease. A relative as well as an absolute immunity is manifested in amebiasis, notably in certain racial strains as well as under varying circumstances of prolonged exposure to the infection, climate, age, sex and physical fatigue. 5. The varying changes of morphology that the organisms undergo during the evolution of their life cycle within the tissues exercise a measurable influence on the clinical phases of the disease. These changes range from the stage of motile activity of the vegetative cycle, accompanied by further tissue invasion and necrosis, to the stage of encystment wherein the organism is rendered completely innocuous to its original host.

CLINICAL GROUPS

These fundamental predisposing factors, briefly surveyed, afford an insight into the changeable conditions that surround the clinical course of amebiasis. The kaleidoscopic picture can be outlined best, it would seem, by a division into several more or less well defined clinical groups, as follows: 1. Acute fulmination amebic colitis, which originates, as a rule, spontaneously from a definitely traceable source of infection. These cases appear commonly in virulent epidemic form and yield a high rate of mortality. 2. The relapsing stage of chronic intestinal amebiasis. Acute and subacute sporadic attacks occurring in this group seldom attain the high degree of intensity observed in the primary or epidemic type. 3. Chronic amebic colitis exhibiting active clinical phenomena over a period of several months or years. During the prolonged clinical course, intercurrent attacks of dysentery or diarrhea as well as other manifestations appear, which alternate with irregular periods of quiescence. 4. The nonactive or latent type of infestation with *Endamoeba histolytica*, which includes the relatively large numerical group of innocent carriers of the infection. These individuals, while they do not display outspoken evidence of their infection, nevertheless in most instances exhibit certain departures from normal health standards. 5. A group of atypical clinical conditions not associated with disturbances of bowel function but none the less traceable in origin to the presence of pathogenic amebas within the structures of the body.

ACUTE AMEBIC COLITIS

Experimental investigations in lower animals have demonstrated that infection of the colon with *Endamoeba histolytica* does not bear any constant relationship to the time of onset of clinical symptoms. The period of incubation in man likewise remains uncertain

Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 12, 1934.
1. Councilman, W. T., and LaFleur, H. A.: *Johns Hopkins Hosp. Rep.* 2: 393, 1891.

and from the clinical side can rarely be determined with any degree of accuracy. As far back as 1913, Walker and Sellards² were able to carry out experimental tests with twenty volunteer prisoners in the Philippine Islands, who were made to swallow fecal material containing cysts of pathogenic amebas. Of these, eighteen were successfully parasitized with the organisms. Subsequently, in four of these eighteen individuals, or approximately 22.2 per cent, typical symptoms of intestinal amebiasis developed. The incubation period of these four cases turned out to be twenty, fifty-seven, ninety-five, and eighty-seven days respectively, yielding an average of 64.8 days for the series. As far as I have been able to learn, no subsequent series of human tests of this character have been carried out. In the recent Chicago outbreak, virulent symptoms developed in several patients within two weeks following their exposure to the infection. The source of the infection proved to be a contaminated water supply, which, while comparatively free of bacterial organisms, contained vast numbers of the cysts of *Endamoeba histolytica*.

The onset of an attack of acute amebic colitis is usually quite sudden but may be preceded by a diarrhea of a few days' standing. In the fulminating types, the bowel evacuations rapidly assume a mucoid and bloody appearance and are accompanied by a marked degree of tenesmus. The rectal straining along with frequency of the stool passages advance to a state that compels the patient to remain more or less constantly on the bed pan or become "glued to the pot," as the English express it. Abdominal cramps precede and accompany the appearance of the dysenteric stools. Evidence of constitutional toxemia sets in at an early stage, so that the patient is frequently transformed from good health into a virulently ill individual within a few hours. The range of temperature varies but from the onset may assume an elevation from 103 to 105 F. Marked physical prostration with mental hebetude completes the picture of the rapid absorption of toxic bodies from the highly inflamed and, in some instances, gangrenous bowel surfaces. Death may ensue within the first few days of the onset, but in cases showing a favorable outcome improvement becomes evident about the fourth or fifth day of the illness. Microscopic examination of the evacuations reveals the presence of desquamated epithelium, large phagocytic cells, red blood corpuscles and leukocytes, in addition to the motile vegetative amebas. During the initial period of the acute attack, amebas, however, may be found missing from the stool even after careful search has been made. This constitutes a point of great importance, especially in fulminating cases, since a positive diagnosis of amebic infection must be withheld until the specific organism can be demonstrated in the dejecta. Further confusion is entailed in this respect because of the close similarity that obtains between the clinical characteristics of acute bacillary dysentery of various strains and acute colitis of amebic origin. Cross infections occur quite frequently and are probably always the rule in fulminating amebiasis. In four cases reported by Lund and Ingham³ with fatal termination, pathogenic amebas were dis-

covered in the bowel only at autopsy, though repeated stool examinations had previously been conducted. Weinberger⁴ recently recorded two cases of acute bacillary colitis in which vegetative endamebas were subsequently found two and one-half months after the onset of the illness. When doubt exists regarding the presence of a double infection, most authorities agree that hypodermic medication with emetine hydrochloride is indicated tentatively to control the possible amebic involvement.

Fortunately, in the acute relapsing stages of a chronic amebic colitis, the protozoal organisms can be found in the feces more uniformly and with greater facility. The symptoms likewise fail to attain the degree of severity witnessed in the fulminating or primary type, except on rare occasions. Indeed, the dysenteric features may be absent entirely or may be replaced by a simple diarrhea. The frequency with which relapses occur in chronic amebic infection of the colon varies considerably. Indiscretions in diet, changes in atmospheric conditions and prolonged physical fatigue stand out as among the principal contributory factors in the production of acute or subacute outbreaks.

CHRONIC AMEBIC COLITIS

In the vast majority of instances, amebiasis of the colon is revealed as an essentially protracted infectious process, largely of undetermined origin and inception. A careful analysis of many case records will, however, disclose a history of mild degrees of clinical derangement long before the onset of the more typical intestinal disturbances. In one of my own cases presenting healed hepatic abscess, I was able to trace the amebic invasion back forty-three years. Large numbers of individuals infested with *Endamoeba histolytica*, as previously stated, fail to show any appreciable clinical evidence pointing to the presence of the organisms. On the other hand, the infection may light up quite suddenly into a highly acute form after having remained dormant for a long time. Even during the less active periods, however, the disease still carries harmful potentialities, since remote complication of serious character, such as hepatic abscess or perforation, may occur without the intervention of previous intestinal symptoms. The clinician should never be led into error by the uncertain or changeable course of the disease. Neither should a prompt subsidence of symptoms be regarded as evidence of recovery from the infection. In the past, many widely heralded cures have been recorded as a result of the employment of certain amebicidal agents. On further study, a large percentage of these prove to be mere examples of the conversion of the active symptom picture of the disease into one of relative quiescence. Indeed, the simple expedient of placing the patient in bed on a restricted diet will in many instances prove sufficient to allay the immediate irritable bowel disturbances.

Apart from the occurrence of intestinal manifestations, other clinical features are commonly found to be associated with a protracted state of infection induced by *Endamoeba histolytica*. The character of these disturbances consists, in the main, of functional neuroses of various kinds, digestive disabilities, secondary ane-

2. Walker, E. L., and Sellards, A. W.: *Philippine J. Sc.* sec. B 8: 253, 1913.

3. Lund, C. C., and Ingham, T. R.: *Four Fatal Cases of Unsuspected Amebiasis*, *J. A. M. A.* 101:1720 (Nov. 25) 1933.

4. Weinberger, H. L.: *Dysentery*, *J. A. M. A.* 102:916 (March 24) 1934.

nia, loss in weight, physical fatigue, and a general impairment of bodily strength. As far as the digestive sphere is concerned, patients complain vicariously of anorexia or a capricious appetite, bad taste, acid eructations and heartburn, and occasionally nausea and vomiting. These symptoms may be traced for the most part to the presence of a particularly obstinate form of constipation, a condition that is quite common during the less active phases of amebiasis. Evidence of functional neuroses is frequently present in other organs of the body apart from the digestive tract. These are to be ascribed in great part to the absorption of toxins from the submerged areas of ulcerative lesions in the intestinal wall. Severe grades of anemia are rarely encountered in amebic infections, though the oozing of blood from the surface ulcerations, combined with the attending constitutional toxemia, is capable of producing a definite chloranemia. Changes in the number or character of leukocytes is rarely observed during the normal course of an intestinal amebiasis. When leukocytosis does occur, it indicates either the occurrence of a mixed infection with bacilli or a remote complication such as hepatic abscess, appendicitis or perhaps localized or general peritonitis. Loss in weight and the lowering of the health standard in general are phenomena not infrequently found in connection with the disease. In a series of 217 cases that I⁵ studied a few years back there was an average loss in weight of 12 pounds (5.4 Kg.) covering the recognized period of duration of the disease.

CLINICALLY ATYPICAL AMEBIASIS

Unusual clinical types occur in amebiasis with sufficient frequency to justify a separate grouping. The chief characteristics of these cases lie in the fact that knowledge of the existence of an amebic infection of the bowel could scarcely have been obtained from the clinical history or the physical state of the patient. On the contrary, these are in many instances rather of a contradictory nature. Because of this, reliance for the diagnosis of all clinically atypical amebic infections must be placed on the detection of pathogenic amebas in the stool passages. This does not exercise any undue clinical hardship, however, since at the present time routine fecal examinations have become a necessary adjunct to every diagnostic study. In an article published in 1926 I⁶ described in detail a group of unusual clinical types of amebiasis. Each of these cases presented, in turn, a perplexing clinical problem, previously unsolved and entirely apart from any disturbance within the intestinal tract.

The following comprise examples of the type of symptom complex one may encounter in cases of atypical amebiasis of the colon: pain of indefinite character localized in various sections of the abdomen; spurious appendical phenomena, which not infrequently have led to unnecessary operative intervention; pains of the boring or aching type in the lumbar and sacral regions not associated with orthopedic disability; low grade daily temperatures accompanied by marked physical fatigue which suggest low grade infectious states, as tuberculosis; persistent and unexplained loss of weight; secondary anemias of marked degree showing lack of

therapeutic response; massive hemorrhage from the bowel without an explainable cause; attacks of nausea and vomiting, sometimes of long duration, without demonstrable etiology except the accidental discovery of amebic infestation of the colon. The clinical manifestations in such cases as have come under my observation have subsided promptly following the employment of amebicidal agents. In fact, the results in some instances have proved quite fantastic. Brown⁷ has recently reported five cases of atypical amebiasis, yielding satisfactory therapeutic results, in which he lays particular stress on the responsibility of the clinician for maintaining a low "threshold of suspicion" in the search for amebic infestation.

DIFFERENTIAL DIAGNOSIS

In its purely clinical aspects, amebic colitis possesses a close similarity to a number of other disease conditions of the lower portion of the bowel. In the acute stage, confusion is frequently encountered in connection with the acute bacillary dysenteries, and acute ulcerative colitis of varied etiology, as well as certain types of acute enterocolitis arising from infectious or toxic sources. The differential diagnosis of chronic amebiasis is also beset with difficulty in some instances, principally in respect to certain ulcerative and infiltrative lesions of the upper and lower portions of the bowel, as follows: chronic bacillary dysentery, chronic ulcerative colitis due to a number of causative agents, carcinoma of the rectum and lower portion of the bowel, intestinal tuberculosis, recurrent acute and subacute appendicitis, chronic ileitis, sprue, pellagra and balantidiosis, in addition to flagellate infections of the bowel.

No attempt will be made to discuss the points of difference that distinguish these various clinical states. It suffices to comment, at present, however, on the all too frequent errors in diagnosis disclosed in the case histories of amebic patients. In earlier periods the recognition of amebic infestation was overlooked by a large percentage of the profession in spite of repeated warnings as to its universal distribution. Since wider knowledge of the disease and its possibilities has been attained in recent times, however, many intestinal lesions have been diagnosed as amebic in origin which have in fact no connection with the organism. During the past year I have myself encountered ten cases of carcinoma of the lower portion of the bowel that had been treated persistently for months for amebiasis. Again, it is not an uncommon experience to observe patients showing definite evidence of amebic ulceration of the bowel, who had undergone operations previously for hemorrhoids or other rectal lesions. The clinician has to be on guard, therefore, both in his failure to find the infection and in mistaking amebiasis for other conditions.

DIAGNOSTIC CRITERIA

In the ultimate analysis the diagnosis of amebiasis in the living subject must devolve on the detection of the specific organism in the bowel passages. Under no circumstances should reliance be placed on the clinical phenomena alone, no matter how suggestive they might prove to be. The discovery of vegetative or encysted endamebas may be accomplished either by direct micro-

5. Simon, S. K., in Tice, Frederick: *Practice of Medicine* 4:300.
6. Simon, S. K.: *M. Clin. North America* 9:1045 (Jan.) 1926.

7. Brown, P. W.: *A. J. Digest Dis. & Nutrition* 1:10 (March) 1934.

scopic examination of specimens of the bowel evacuations or from cultures of the suspected feces. The latter plan of cultivating the organisms in specially prepared mediums has been perfected in more recent times, largely through the work of St. John.⁸ This method, though it yields a high degree of diagnostic accuracy, unfortunately lies beyond the reach of the average practitioner of medicine. A similar disadvantage may be said to surround the complement test of blood serum, which was devised by Craig⁹ and has been employed by him and others with great success in the diagnosis of ameba infested subjects.

The great problem in amebiasis, it would seem at the present moment, is to find ways and means to enable the great army of clinicians to recognize the disease more accurately and with greater facility than has obtained in the past. The scope of such a plan must necessarily center on the microscopic examination of the stools. Contrary to the opinion expressed by many laboratory workers, I do not believe that extensive technical training is needed for the recognition of pathogenic amebas either in the vegetative or in the encysted form. The ideal method is to have the clinician conduct his own examination of the feces with the patient directly at hand. If ambulant, he should be asked to bring the fecal specimen, whether formed or not, to the office. This is examined carefully for the presence of vegetative amebas or cysts. The following day the patient is required to take a saline cathartic and to appear for proctoscopic examination shortly after the appearance of the first watery bowel passages. Rectal examination through the proctoscope will reveal the presence or absence of ulcerative lesions of the lower portion of the bowel and at the same time afford an opportunity to procure scrapings of the bowel surface as well as specimens of the soft or watery stool for detection of the motile vegetative organisms. Repeated examinations are necessary in some cases before a positive diagnosis can be ruled out.

The character of the ulcerative lesions in amebiasis, as viewed through the proctoscope, can in no manner be considered pathognomonic. The more typical type presents a deeply punched out appearance, with ragged overhanging edges. The base of the ulcers is covered, as a rule, with a thick, yellow, purulent secretion. The ulcers and mucous surfaces of the bowel wall can be made to bleed readily by the slightest trauma. The proctoscope picture, it is well to remember, represents merely surface ulcerations and is not to be confused with the true pathologic lesions of the disease, which are infiltrative in character and are located chiefly in the submucosa. Moreover, in the vast majority of individuals who harbor *E. histolytica*, no visible evidence of the infection can be found by rectal examination.

The x-rays have been called into service to assist in the differential diagnosis of amebic infiltration and ulceration of the bowel wall as distinguished from other lesions in the colon. Marked thickening of segments of the colonic wall as well as deeper areas of ulceration can usually be detected readily by a radiologic examination. However, this cannot be made the basis for the diagnosis of specific amebic involvement when other clinical and laboratory signs fail.

1520 Aline Street.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed.

THERAPY OF CARBUNCLE

Carbuncle is a deep seated intradermal staphylococcal infection, which differs from furuncle (q. v.) in being characterized by multiple foci of necrosis and terminating in gangrene. Because of radical difference of treatment, malignant pustule, or anthrax (q. v.), must be differentiated from carbuncle. Anthrax is characterized by the early formation of a blister and of a hard, black, painless and insensitive slough that becomes surrounded by a halo of vesicles, in the fluid of which smears show anthrax bacilli. History of exposure to infected animals or animal products may lead to suspicion of anthrax.

LOCAL TREATMENT OF CARBUNCLE

There is no use in wasting time with hot moist dressings. Possibly roentgen irradiation (300 roentgens, 140 kilovolts, with a filter of 0.25 mm. of copper and 1 mm. of aluminum) may be of value if the case does not seem ripe for radical treatment.

Surgical Treatment.—Crucial incisions are made, excepting in carbuncle of the lip, which is treated like furuncle of the lip (q. v.). Under general (not local) anesthesia and as soon as there is a point of softening, the indurated area is incised from sound skin to sound skin by crucial incisions clear through the derma and down to the deep fascia. The points of skin are raised with toothed forceps and the subcutaneous trabeculae are severed, thus undermining the skin to tap the collections of pus. The points of the skin flaps as well as all necrotic tissues are then excised to leave a wide opening for drainage and the extrusion of the slough. Pockets containing necrotic material that cannot well be excised are curetted. The cavity is then cauterized with Liquefied Phenol, which is removed after a minute by means of an alcohol-saturated tampon. The cavity is finally packed with iodoform gauze and hot boric acid dressings are applied. At change of dressing, instillation of Solution of Hydrogen Dioxide and irrigation with hot Physiologic Solution of Sodium Chloride may help in the separation of the sloughs. The ulcer remaining after the sloughs have been discharged is treated in accordance with general principles (see Therapy of Ulcers).

Magnesium Sulphate-Phenol Paste

℞ Dried magnesium sulphate.....	75.00 Gm.
Liquefied phenol	10.00 cc.
Glycerin	90.00 cc.

Mix in a hot mortar, with a hot pestle, and keep in a tightly covered jar to prevent absorption of moisture.

Label: Apply on lint to cover the whole of the affected area, and cover with a thick pad of absorbent cotton.

Analgesic Paste Dressing.—Until surgical treatment can be applied and when it is contraindicated, the magnesium sulphate-phenol paste dressing gives some relief

8. St. John, J. H.: *Am. J. Trop. Med.* 6: 319 (Sept.) 1926.
9. Craig, C. F.: *J. Lab. & Clin. Med.* 18: 873 (June) 1933.

and, being hygroscopic, tends to convert the moist into dry gangrene. After the skin is defatted with ether, the paste, spread on lint, is applied to the whole area and covered with a thick layer of cotton. This dressing is removed at least every twenty-four hours, until the sloughs have separated.

SYSTEMIC TREATMENT

Absolute rest in bed and of the affected part is essential. Nutritious food should be given and morphine administered as required for pain (q. v.). Bowel and kidney function should be maintained. For diabetic patients, insulin therapy (q. v.) should be given energetically.

PROPHYLAXIS

For prevention of recurrence, the same methods are employed as in the prophylaxis of furuncle (q. v.).

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

BISMUTH SUBSALICYLATE (See New and Non-official Remedies, 1934, p. 116).

The following dosage form has been accepted:

Bismuth Subsalsicylate with Butyn-D. R. L.: A 10 per cent suspension of bismuth subsalsicylate-U. S. P. in peanut oil to which has been added 0.6 per cent butyn and metaphen 1:20,000. Each cubic centimeter represents from 0.057 to 0.059 Gm. of elemental bismuth. The product is marketed in bottles containing 60 cc.

Prepared by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

PROCAINE-ABBOTT (See New and Nonofficial Remedies, 1934, p. 61).

The following additional dosage forms have been accepted:

Ampoules Procaine Hydrochloride Solution 10%, 2 cc., For Spinal Anesthesia: Each cubic centimeter contains procaine hydrochloride, 0.1 Gm., dissolved in distilled water.

Ampoules Procaine Hydrochloride Solution 2%, 5 cc.: Each cubic centimeter contains procaine hydrochloride 0.02 Gm., dissolved in physiologic solution of sodium chloride.

Procaine-Epinephrine Solution, 100 cc. Bottle: Each cubic centimeter contains procaine hydrochloride 2%, epinephrine 0.04 mg. (1/4,000 grain), sodium bisulfite 0.001 Gm., in isotonic solution.

Procaine Hydrochloride Hypodermic Tablets 1/2 grain.

Procaine Hydrochloride Hypodermic Tablets 3 grains.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

ERYSIPELAS AND PRODIGIOSUS TOXINS (COLEY)

Sir James Paget is said to have first called attention to the occasional spontaneous remission of malignant tumors following attacks of acute febrile conditions, particularly erysipelas. As early as 1882 Fehleisen,¹ who discovered a streptococcus as the cause of erysipelas, employed living cultures in the treatment of cancer with beneficial results in some instances. In 1891 Lassar and Spronck¹ advocated the use of killed cultures, while in this country W. B. Coley published some observations on the action of viable streptococci in the treatment of sarcoma. The use of such preparations did not achieve widespread popularity, nor has it up to the present, in spite of the fact that many noteworthy cures have been reported in seemingly hopelessly inoperable cases. From its inception,

however, Coley has pursued the method avidly and has published reports of extensive series of cases, as well as developing the combined toxins of *B. prodigiosus* and *Streptococcus erysipelas*. The latter preparation was suggested by the observations of Roger,¹ who found that the toxins of the former materially enhanced the virulence of experimental erysipelas in rabbits. By 1910 the preparation "Erysipelas and Prodigiosus Toxins-Coley" had been sufficiently investigated to warrant its inclusion in N. N. R.² At that time it was estimated to effect a cure in from 4 to 9 per cent of cases of inoperable sarcoma. Under "Actions and Uses" in New and Nonofficial Remedies the following statement was made originally:

It is therefore likely that the treatment of inoperable sarcoma with the toxins of erysipelas and *B. prodigiosus* leads to a cure in approximately 4 to 9 per cent of cases. And some results obtained so far suggest that this method of treatment may prove of value as a post-operative procedure in diminishing the number of recurrences, and that in a certain number of cases it might limit the necessity for amputation of the limb in cases of sarcoma of the long bones. As to its mode of action nothing definite can be stated, but it is likely that the toxins themselves, as well as the local and general reactions they produce, frequently affect the life of the sarcoma cells unfavorably.

This statement was revised to a more concise form, of the same import, in 1914 and has remained in N. N. R. for twenty years with no further change:

Its use has been advised in cases of inoperable sarcoma. This remedy is said to have benefited and produced cures in a small percentage of cases treated, though there is some difference of opinion as to this.

Because of this relatively indefinite status of the product, it was deemed expedient at the time of its reconsideration this year to review the situation with a view to the elaboration of a more specific and explicit estimate of the therapeutic utility of the preparation and of its limitations. As is the case with many drugs, the determination of efficiency in terms of the proportion of successes to failures is most difficult, owing to the tendency on the part of students and investigators to report, predominantly, only the former.³

One of the earliest reliably recorded failures is a case of sarcoma of the scapula observed by Babcock and Pfahler,⁴ wherein excision had been attempted four times with recurrence after each attempt. When, finally, the condition attained a frankly inoperable state the authors resorted to irradiation and certain of the therapeutic fancies then in vogue, such as trypsin, methylene blue and Doyen's serum.⁵ Through all this the patient failed rapidly and the scapular mass attained the size of a "man's head." Seven days prior to death, huge doses of Coley's toxins were employed and probably served only to hasten the inevitable outcome. This case is typical of many of the reported failures in which the toxins of erysipelas and prodigiosus were instituted when the patient was moribund. In view of the prolonged treatment that has been employed in the successful cases, it is only reasonable to predict certain failure if the immediate temporal outlook for survival is not sufficiently long to allow of an adequate course of therapy.

Spencer⁶ observed a case that well illustrates the point under discussion. The patient had a large inoperable mass of undetermined origin occupying the entire lower abdomen and infiltrating various viscera and the parietes, including the rectus muscle.⁷ Biopsy, taken at operation, showed the tumor to be a spindle-cell sarcoma. Coley's toxins were employed in dosage of from one-half to three minims on alternate days for twelve doses with no apparent effect. The patient left the hospital very emaciated with a fatal prognosis, only to return two months

2. Report of the Council on Pharmacy and Chemistry, J. A. M. A. 54: 290 (Jan. 22) 1910.

3. Effort has been made throughout to include only those cases which have been found to be adequately recorded according to present-day custom. About eight of every ten reported prior to 1920 were found to present shortcomings sufficient to preclude their consideration as valid, incontrovertible evidence.

4. Babcock, W. W., and Pfahler, G. E.: A Conservative Treatment of Sarcoma, Pennsylvania M. J. 11: 849, 1907-1908.

5. Trypsin was employed by direct application in an attempt to "digest" the tumor mass. Doyen's serum was a serum prepared by the immunization of animals to organisms isolated from tumor tissue; the so-called Doyen's bacillus which was supposed, by Doyen, to bear some etiologic relationship to malignant processes.

6. Spencer, C. G.: A Case of Sarcoma Treated with Coley's Fluid, Proc. Roy. Soc. Med., London 2: 152 (Clinical Section) 1909.

7. It seems likely that this may have been a tumor of a persistent urachus.

1. Cited by Loeh, Leo: The Treatment of Inoperable Sarcoma by Erysipelas and Prodigiosus Toxins, J. A. M. A. 54: 262 (Jan. 22) 1910.

later showing a gain of 15 pounds (6.8 Kg.) and the ability to take active exercise. The mass was still present, though greatly diminished in size. Thirty-four more injections were given into the mass or intramuscularly throughout the ensuing three months, during which time the mass entirely disappeared. The patient returned to active army life and was reported free of recurrence and well at the time of writing, two years later. Spencer's paper includes two other cases similarly and successfully treated, each shown in biopsy to be fibrosarcoma, one of the tonsil (which had recurred following each of three attempts at surgical eradication) and the other of the sheath of the femoral artery (with tumor thrombus) in which operation was refused.

Green⁸ reported a series of three cases in which the patients were living and well from three to ten years following treatment with the Coley toxins. Two of these, giant cell sarcomas of the shoulder, were deemed inoperable when first seen. The third, a small round-cell sarcoma of the femur, recurred after operation. Injections were made directly into the tumors as well as intramuscularly at a distance. Disappearance of the masses and complete healing took place within three months in all cases, although the toxins were continued another three months thereafter. Soper⁹ records two cases in which amputation was followed by recurrence. The patients were alive and well six years after intensive and prolonged administration of the toxins. In one of these cases a spindle-cell sarcoma of the scapula exhibited recurrence in the posterior chest wall after total excision of the pectoral girdle on the affected side. In the other, a periosteal sarcoma of the hip joint was probably inoperable at the time amputation was performed and pelvic recurrence ensued promptly. Newcomet,¹⁰ however, reports a uniformly fatal issue in each of three inoperable cases with the combined use of the toxins and irradiation; he concludes that the toxins served merely to hasten the fatal issue. Odier¹¹ arrives at the same conclusion following his report of one case so treated.

During approximately the same time that the foregoing papers were appearing, Coley was enjoying a wide experience with the product and numerous of his reports were published.¹² In 1925 he reported¹³ sixteen cases with more or less thorough roentgenographic and pathologic studies. However, in 1926 and 1927 a most comprehensive review¹⁴ of 171 cases was presented by the same author, including a later follow up of many of the cases previously reported. In all instances the tumors were of the giant-cell, spindle-cell or periosteal-osteogenic type of sarcoma. This series included only sarcomas of long bones, in 111 cases of which toxins were administered alone or combined with amputation or with irradiation or with both, while in the remaining sixty, aside from biopsy, no initial treatment was given other than with radium or the roentgen ray. The distribution in either group as to the type, duration and location of the tumors is fairly equable, sufficiently so to warrant certain conclusions from the results as tabulated in a variety of ways. Of sixteen patients subjected to amputation with no other preliminary or postoperative treatment, fourteen were dead within a year, one died of pulmonary metastasis seven years later, and the other died of recurrence in the calvarium five years later. Thus, but two (or 12.5 per cent) of sixteen patients lived three years or longer, with seven years being the maximum period of survival. Of thirty-nine patients given the toxins following amputation as "prophylaxis" against recurrence, twenty (or 51 per cent) are reported alive and well from four to twenty-eight years later, with an average duration of survival when last reported of over eleven years. Of thirty-

two patients living and well five years or more (average 11.7 years), all had received the toxins at one time or another (although irradiation and amputation may have been employed conjointly). In this group the limb was saved in fifteen cases (47 per cent) and sacrificed in five. Of twenty-nine patients receiving irradiation originally and amputation subsequently, if necessary, twenty-one died within a year, seven were alive from one to three years later, and one case was too recent to merit consideration.

Lilienthal¹⁵ reports a well studied case of a female infant of 22 months suffering from a large mediastinal mass with extensive invasion of either lung. To reduce cardiac compression, a portion of the tumor was excised with, of course, no attempt at eradication. A diagnosis of angiosarcoma was made by F. S. Mandelbaum, of hemangioendothelioma by Louis Gross, and of malignant cellular tumor of embryonal type by James Ewing. The toxins were begun and continued for eleven days (increasing from one-fifth minim to 4½ minims), when the mother refused further treatment because of the severe reactions. Roentgenographic examination over two years later demonstrated the chest to be essentially normal in every respect, with no indication of the original process. Quite as thoroughly studied is the case of Christian and Palmer,¹⁶ who record the occurrence of myelosarcoma of the tibia, on a chronic osteomyelitic basis, in a master mariner of 31 years. This diagnosis was concurred in by Ewing and Codman. Mid thigh amputation was performed, but three months later a mass appeared just above the umbilicus and a month thereafter nodules had developed in the groin and the stump. The toxin treatment was instituted with an initial dose of one-fourth minim, increasing to 6½ minims daily. In seventeen days the circumference of the stump had decreased 2 inches (from 19 to 17 inches), the mass in the groin had disappeared and the supra-umbilical metastasis was distinctly smaller.

The dose was kept at 6½ minims a day for the ensuing week, when a daily increase of 1 minim was instituted and maintained until, finally, a dose of 18 minims was being administered. Because of severe emaciation, medication was discontinued after three weeks of the increased dosage, at which time the stump had resumed growth and considerable edema had appeared both in the stump and in the sound leg. Throughout the ensuing four months the patient's course was extremely retrograde; multiple metastases appeared in the abdominal wall, clavicles, sternum, scalp, cranium and the cervical vertebrae. The stump attained a circumference of 31 inches (almost twice the original size) and its end presented a large, necrotic area. Roentgen examination barely revealed the outline of the femoral cortex, the remainder of the bone having been completely destroyed. As a last resort the Coley toxins were begun once more, starting with 2 minims and increasing rapidly to 17, where they were maintained for one month and, following a two weeks rest, again instituted for another three weeks. At this time the stump had healed completely and had returned to its normal size (17 inches); all evidence of metastasis had disappeared except for a residual roughening of the clavicle demonstrable on palpation. The patient was discharged as tentatively cured with instructions to return twice yearly for short courses of injections. At the time of publication, Christian and Palmer report the patient to be living, well and free from recurrence two years after the beginning of treatment.

The Coleys¹⁷ record the histories of fifty-five cases of sarcoma including photographs, roentgenograms, photomicrographs and complete follow-up records. Several of these patients had definite pulmonary or other distant metastases; in most cases the pathologic diagnosis was confirmed by such men as Caven of Toronto, Ewing of New York or Welch of Baltimore. These are the cases a statistical abstract of which was discussed in a previous paragraph.

It appears that (1) undoubtedly the combined toxins of erysipelas and prodigious may sometimes play a significant rôle in preventing or retarding malignant recurrence or metastasis; (2) occasionally they may be curative in hopelessly inoperable neoplasms; (3) probably their value is rather strictly

8. Green, W. E.: The Coley Treatment of Inoperable Sarcoma by the Combined Toxins of Erysipelas and Prodigiosus, *North American J. Homeop.* 55: 685, 1907.

9. Soper, R. W.: Treatment of Sarcoma by Injections with Coley's Toxins, *Dietet. & Hyg. Gaz.* 24: 10, 1908.

10. Newcomet, W. S.: Results in the Treatment of Sarcoma, *Pennsylvania M. J.* 11: 846, 1907-1908.

11. Odier, R.: Traitement des affections sarcomateuses par les toxines de M. Coley, *Rev. méd. de la Suisse Rom.* 28: 649, 1908.

12. Coley, W. B.: Sarcoma; Its Treatment; Operative and by the Mixed Toxins, *Brooklyn M. J.* 20: 313, 1906; Treatment of Sarcoma with the Mixed Toxins of Erysipelas and Prodigiosus, *Boston M. & S. J.* 158: 175, 1908; *Ann. Surg.* 48: 455, 465, 805, 1908; *Lancet* 2: 173, 1909; *Detroit M. J.* 9: 197, 1909.

13. Coley, W. B.: Sarcoma of the Long Bones, *S. Clin. North America* 5: 117 (Feb.) 1925.

14. Coley, W. B., and Coley, B. L.: Primary Malignant Tumors of the Long Bones, *Arch. Surg.* 13: 779 (Dec.) 1926; 14: 63 (Jan.) 1927.

15. Lilienthal, Howard: Mediastinal Sarcoma Treated by Coley's Fluid, *Ann. Surg.* 55: 615 (April) 1927.

16. Christian, S. L., and Palmer, L. A.: An Apparent Recovery from Multiple Sarcoma, *Am. J. Surg.* 4: 188 (Feb.) 1928.

17. Coley, W. B., and Coley, B. L. (footnote 14, second reference).

limited to tumors of entodermal or mesodermal derivation and, more particularly, in the case of bone tumors, to those exhibiting little or no osteoplasia. The Council has, for these reasons, retained Erysipelas and Prodigiosus Toxins-Coley in New and Nonofficial Remedies, with a view to facilitating further studies with the product, especially in connection with its use as a prophylactic in conjunction with conservative or radical surgery. Its use in definitely inoperable cases may be quite justified, in many instances, as a desperate attempt to combat the inevitable.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

RITTER TOMATO JUICE

Manufacturer.—P. J. Ritter Company, Philadelphia.

Description.—Canned tomato juice, retaining in high degree the natural minerals and vitamins. Seasoned with salt.

Manufacture.—Field ripened, selected tomatoes are washed in running water and by water sprays, inspected for removal of damaged and unsuitable fruit, trimmed by hand, again sprayed with water, passed through a steamer, automatically cut, and conveyed to a supply kettle which feeds a screw type, stainless steel air tight machine for expressing the juice through a fine screen. The juice is conveyed to stainless steel kettles and is heated to 85 C. in about six minutes, salt is added, and the juice is flowed through glass lined pipes to the filling machines and filled into bottles or enamel lined cans, which are processed at 90 C. and cooled to 37 C.

Analysis (submitted by manufacturer).—	per cent
Moisture	93.1
Total solids	6.9
Ash	1.2
Sodium chloride	0.8
Fat (ether extract)	0.1
Protein (N X 6.25)	1.0
Reducing sugars before and after inversion	3.5
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference) ..	4.5

Calories.—0.2 per gram; 6 per ounce.

Claims of Manufacturer.—This tomato juice is prepared by a process permitting retention in high degree of its natural vitamins A, B and C.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—(1) Chapman Dairy Company, Kansas City, Mo.; (2) Concordia Creamery Company, Concordia, Kan.; (3) Elmhurst Dairy, Inc., Hornell and Wellsville, N. Y.; (4) Fargo Dairy, Inc., Batavia, N. Y.; (5) Fischl Ice Cream and Dairy Company, Manitowoc, Wis.; (6) Geneva Milk Company, Geneva, N. Y.; (7) Graham Milk Company, Ottumwa, Iowa; (8) Hydrox Dairy, Inc., Olean, N. Y.; (9) Ionia Creamery Company, Inc., Ionia, Mich.; (10) Lehrack-Ferguson Dairy Products Company, Wichita Falls, Texas; (11) Lemke Milk Products Company, Wausau, Wis.; (12) Luce Dairy Company, Ithaca, N. Y.; (13) Magic City Ice and Milk Company, Endicott, N. Y.; (14) Merkle Dairy Company, Kalamazoo, Mich.; (15) Muller's Dairy, Rockford, Ill.; (16) Natoma Farm, Hinsdale, Ill.; (17) Quality Milk Company, Fort Smith, Ark.; (18) Sheboygan Dairy Products Company, Sheboygan, Wis.; (19) Sunlite Dairy Company, Oshkosh, Wis.; (20) Topeka Pure Milk Company, Topeka, Kan.; (21) The United Dairy Company, Wheeling, W. Va.; (22) Weber Dairy Company, Joliet, Ill.; (23) West End Dairy,

Charleston, S. C.; (24) Williamsport Milk Products Company, Inc., South Williamsport, Pa.

Licenser.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla extract. See Krim-Ko Chocolate Flavored Drink, THE JOURNAL, June 30, 1934, page 2187.

VITAMIN D FORTIFIED PASTEURIZED MILK

- (1) AVONDALE FARMS
- (2) BROADVIEW DAIRY
- (3) QUALITY DAIRY PRODUCTS COMPANY
- (4) RIDER'S
- (5) SEFCIK DAIRY CO.'S
- (6) SOUTHERN DAIRIES
- (7) SPRINGBROOK DAIRY'S
- (8) VITEX LABORATORIES

Distributors.—(1) Avondale Farms Creamery, Inc., Knoxville, Tenn. (2) Broadview Dairy, Inc., Portland, Ore. (3) Quality Dairy Products Company, Salt Lake City. (4) The Rider Dairy Company, Danbury, Conn. (5) Sefcik Dairy Co., Chicago. (6) Southern Dairies, Inc., Asheville and Winston-Salem, N. C., and Knoxville, Tenn. (7) Springbrook Dairy, Portland, Ore. (8) Vitex Laboratories, Detroit.

Description.—Bottled pasteurized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 400 U. S. P. X (Revised, 1934) vitamin D units per quart.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D.

Vitamins.—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used.

Claims of Distributors.—A vitamin D fortified, antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

DOLE HAWAIIAN FINEST QUALITY PINEAPPLE

DIAMOND HEAD BRAND CRUSHED, SLICES AND TIDBITS
HAWAIIAN CLUB BRAND CRUSHED, SLICES AND TIDBITS
HONEY DEW BRAND CRUSHED, SLICES AND TIDBITS
PANAMA PACIFIC BRAND CRUSHED AND HALF SLICES
PINE-HEART TIDBITS

SEA ISLAND BRAND SLICES AND HALF SLICES
SURF RIDER BRAND CRUSHED AND HALF SLICES

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1932, p. 1106, and April 29, 1933, p. 1338).

HIGH UP BRAND GOLDEN SYRUP

Distributor.—The Guymon-Petro Mercantile Co., Dodge City and Hutchinson, Kan.

Packer.—The Hubinger Company, Keokuk, Iowa.

Description.—Table syrup; corn syrup flavored with refiners' syrup. The same as Hubinger Golden Table Syrup, THE JOURNAL, January 20, 1934, page 213.

Claims of Manufacturer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 6, 1934

NURSING EDUCATION

Phenomenal advances in the science of medicine during half a century have been paralleled by significant improvement in the art of caring for the sick. The development of the trained nurse has been an influential factor. Physicians, therefore, are vitally interested in the proper integration of nursing in the practice of medicine. The final report of the Committee on the Grading of Nursing Schools, containing the results of a comprehensive study of nurse training and nurse practice conducted over a period of eight years, emphasizes the rapid increase in the production of trained nurses and the widespread unemployment that was manifest even before the onset of the period of economic depression. Most people will readily agree that one nurse for every 100 families is more than the country can be expected to support.

The surplus of nurses is due, in part at least, to the large number of poor or mediocre schools in which the educational function is subordinated to the financial exigencies of the hospital. Many of these should be closed just as rapidly as the hospitals can make other arrangements for caring for their patients. One half of all the schools of nursing in the United States are conducted by hospitals with not more than seventy-five patients, while one fourth of the hospitals have only from eight to forty-two patients. The report lays stress on the excellence of the university schools of nursing and on the need of liberal endowments to maintain schools of this type. It recommends that most of the training schools be closed and that hospitals employ graduate nurses rather than students in caring for their patients. In this way the idle could be reemployed and the quality of hospital service improved. Moreover, the prediction is made that the change can be effected without increasing costs.

The committee considers in detail plans for improving nursing schools but realizes that schools most needing improvement will be least likely to adopt its suggestions. It therefore raises the question whether schools of nursing should not be licensed. It recom-

mends that registration of graduate nurses be required in every state and studies made to determine whether all workers who take care of the sick for hire should be licensed. The failure to enforce medical practice acts should have indicated to the committee the likelihood that similar legislation for nurses would be inoperative.

In a summary of its investigations the committee says: "The present system of nursing education is, in general, not attracting as many women of adequate capacity and basic training as would be desirable and is not giving them the quality of training which fits them for the demands of their professional career. On the other hand, it is producing far too large a number of nurses of a type unsuited to those demands." Opinions as to the proper function of the nurse are so divergent that these conclusions will not meet with unquestioning assent.

ERYSIPELAS AND PRODIGIOSUS TOXINS (COLEY)

In this issue of THE JOURNAL (p. 1067) is reported the reacceptance for inclusion in New and Nonofficial Remedies of Erysipelas and Prodigiosus Toxins (Coley), long, albeit somewhat sporadically, employed in the treatment of selected cases of inoperable bone sarcoma. Although Coley first employed a vaccine of *Streptococcus erysipelatis* in inoperable malignant conditions as early as 1893, a satisfactory explanation of the therapeutic mechanism has not yet been advanced. The use of the product, like that of nonspecific proteins, has rested on an empirical basis supported solely by clinical observations of occasional cases of inoperable malignant disease which have exhibited spontaneous regression following fulminating attacks of acute infectious diseases, particularly erysipelas. Sir James Paget is said to have been the first to record such an occurrence.

Jacobsen¹ in a recent paper advances a theory based on related observations of the alleged increased incidence of cancer and the noteworthy present-day decrease of acute bacterial diseases in general. He cites a series of facts which, it is claimed, will represent the uniform observations of any selected group of widely experienced clinicians with reference to the incidence of malignant growths in patients the past victims of a common infectious process. Among his citations are the lessened frequency of neoplastic disease in the actively tuberculous, in the chronically osteomyelitic and in patients with acute infectious diseases in general, but particularly in those giving a history of typhoid, paratyphoid, scarlatina and diphtheria. Jacobsen's statement that remission of a malignant process following erysipelas is less likely to be permanent than that following typhoid or any acute process which produces a lasting, serologically demonstrable and specifi-

1. Jacobsen, C.: Chronic Irritation of Reticulo-Endothelial System Hindrance to Cancer, Arch. f. Dermat. u. Syph. 169: 562 (Feb.) 1934.

cally homologous immunity tend to controvert Coley's stand. The theory is put forth that the increased cancer rate, while due to modern public health and sanitary measures, is not a function of the increased number of persons now enabled to attain the so-called cancer age. To render this view tenable, the greater occurrence of cancer in the age group from 30 to 50 is cited.

Little experimental work is quoted, although Teutschlander² has demonstrated a definite decrease in the susceptibility of tuberculous fowls to the Rous chicken sarcoma.

Jacobsen concludes (1) that the evidence tends to support the hypothesis that the reticulo-endothelial system, when sufficiently active (as when stimulated by one or a number of acute infectious processes), may attain in a measure the ability to cope with neoplastic diseases in a similar if not identical manner, and (2) that the present increase in malignant morbidity is due to the decreased resistive powers of the reticulo-endothelial system occasioned by the lessened incidence of exposure to and infection of the general public with those diseases which were widely endemic before the advent of modern public health methods. As a corollary to these conclusions it is suggested that routine immunization of cancerous patients to typhoid up to an agglutinin titer of 1:800 may prove of value but that surgery should remain the therapeutic measure of choice whenever conditions permit. Two of the conclusions would appear too broad in the light of the reported evidence; namely, (1) that as acromegaly is regarded as a disease of the pituitary so should cancer be regarded as a disease of the reticulo-endothelial system, and (2) that the hope of prevention, if not the treatment of cancer, lies in vaccinotherapy with markedly antigenic substances. The possibility of accumulating more accurate data in this regard seems particularly likely at present through a follow up and study of the cancer rate among veterans of the World War, the vast majority of whom were subjected to typhoid-paratyphoid inoculation.

These observations, in the main, are dependent on statistical surveys; it is only reasonable to point out that the matter of the trend of cancer incidence is distinctly controversial at present. If Wood's³ views or those recently expressed editorially by THE JOURNAL⁴ are correct, Jacobsen's work is untenable. However, if Macklin's⁵ report is reliable, Jacobsen's reticulo-endothelial theory is deserving of thoughtful consideration.

Whatever the immediate decision, it would appear possible that public health and sanitation, as developed throughout the years, may prove to have been a two-edged sword. Certain it is, however, that its sharpest

edge, thus far, has been that which has reduced typhoid, plague, cholera, smallpox, diphtheria and a score of other diseases to the realm of the infrequent and added years to life expectancy in comparison with which even the increased cancer toll seems of significantly lesser importance. Further studies on the effect of powerfully antigenic substances in inoperable malignant conditions or as a postoperative measure in attempting to combat recurrence seem to be indicated in the light of the accumulated evidence.

REBATES AND COMMISSIONS

Elsewhere in this issue (p. 1088) appears a letter from the secretary of the American Surgical Trade Association discussing the code under which dealers in surgical apparatus and supplies will work under the National Recovery Act. The significant paragraph for physicians is one that now places legal control over a situation that was formerly subject only to ethical considerations.

For many years the organized medical profession of this country has been opposed to the acceptance of commissions or rebates by doctors from the manufacturers of surgical supplies. The practice is a low form of the division of fees. It is developed primarily to induce doctors to send their patients to manufacturers who pay large commissions rather than to those able to supply the patient with the apparatus required at the lowest possible cost. Many physicians of high principles adopted the practice of turning over such rebate checks directly to their patients; others simply returned the checks to the manufacturer and discontinued the recommendation of patients to such manufacturers. Others, however, accepted such fees, consoling themselves with the thought that the fee might be considered an added honorarium for determining that the apparatus fitted the condition for which it was prescribed. Nevertheless, reasonable excuse is not to be found for this practice. In its eventual effects on the patient and on the practice of medicine it could do nothing but harm. Hence, regardless of what one may think personally of the development of the codes and of their application to industry, the legal restriction on the giving of rebates is bound to have a beneficial effect on this phase of medical practice.

In certain other ways, as well, the codes are beginning to operate for the development of higher standards in relationship to other phases of medical work. It seems likely that the use of the word "doctor" in commerce for promoting the sale of various types of shoes or other goods will also be restricted to legitimate purposes. In the drug field, higher standards are being developed for several phases of the industry.

In other branches of commercial life, some manufacturers have already found means for evading the spirit of the codes to which they affixed their signatures. The medical profession, with many centuries of ethical

2. Teutschlander: *Zentralbl. f. Bakt.*, I Orig. 122:57 (No. 113) 1931.

3. Wood, H. B.: Reliability of Cancer Statistics, *Am. J. Surg.* 28:31 (Oct.) 1932.

4. Is Cancer Becoming More Prevalent? editorial, *J. A. M. A.* 102:113 (July 14) 1934.

5. Macklin, Madge T.: Is the Increase of Cancer Real or Apparent? *Am. J. Cancer* 16:1193 (Sept.) 1932.

tradition behind it, will welcome these new forms of control, which place the force of the law behind the principles of right that the profession has always recognized and, for the most part, observed.

THE COURTS AND THE MILK SUPPLY

Cooperation between various governmental bureaus with appreciation of special points of view leads to efficient service for the public. This situation has come to pass between the judiciary and those groups whose concern is the public health with relation to milk control. Tobey¹ has stated that the "sagacious principles set forth by the learned judges will appeal to the dairy industry because of the recognition accorded the nutritional value of milk; and these decisions will likewise find favor with health officials because of the liberality with which all reasonable regulation of milk in the interests of public health and welfare is upheld." In the past thirty years or more several important decisions relative to milk control have been rendered by the federal Supreme Court. These decisions concerned, among others, the state's power to delegate to local health authorities the supervision of milk control, to regulate the sanitary production of milk and to prohibit impure milk or diseased cattle from entering a state. However, the recent decision upholding an emergency law of New York is by far the broadest yet handed down. Thus the court contends that price fixing under certain restrictions is a proper use of the police power of the state to regulate the "health, safety, comfort, morals and welfare of the people."

Numerous court decisions have declared that laws leading up to the eradication of bovine tuberculosis are constitutional. In 1932 the Supreme Court of Minnesota ruled that county commissioners have discretionary power to provide for tuberculin testing and that they must do so when petitioned, as these boards are agencies of the state in carrying out "its own paramount governmental duty to protect public health." The first decision on record dealing with public health measures for the control of undulant fever was rendered by the United States Supreme Court in 1933. A state commissioner of agriculture and markets denied entry of a herd of cattle on the ground of failure to possess a certificate showing freedom from Bang's disease, the cause of undulant fever in man; this order was subsequently upheld by the higher court on the ground that it was rendered in good faith and to safeguard public health by preventing the spread of the disease among cattle.

The purchase of milk bottles is an item of no inconsiderable expense in the distribution of milk. An ordinance in a Southern city required that milk bottles bear no other name or trade mark than that of the producer or distributor. The Supreme Court decided that this requirement was unreasonable and would, if

enforced, prevent even the name of the manufacturer on the bottle. The decision, however, left no doubt as to the recognition by the court of the importance of a sanitary milk supply and of the right of the government to enforce necessary regulatory measures. The stress of business conditions leads constantly to efforts to circumvent the dicta of safe practices in the production, processing and distribution of milk; it is a comfort to be assured that the higher tribunals acknowledge the significance of a sanitary supply of this essential food.

Current Comment

INTENSIVE TREATMENT OF DEMENTIA PARALYTICA

The clinical picture of dementia paralytica of thirty years ago seems to be losing some of its easily recognizable features. The expansive, euphoric psychosis or the pronounced neurologic symptoms that formerly were so common are not now so frequently observed. This change may be due to the fact that the present group of patients in the early period of their syphilitic infection were treated with such effective remedies as arsphenamine and other modern arsenicals. The patient today may show behavior changes without pronounced psychoses and at the same time laboratory changes indicative of cerebral invasion by the spirochetes. Carlisle and O'Neil¹ have reported ninety-nine cases of dementia paralytica, all of which presented behavior disorders and the usual neurologic and laboratory signs. These patients, mostly world war veterans, were followed up month after month for a long period, during which the changes in the clinical and laboratory observations were carefully noted. The patients were treated to the utmost. One patient, for example, in about four years received 186 injections of tryparsamide, 182 injections of bismuth compounds, 56 injections of sulpharsphenamine and 44 injections of mercury compounds. Many of them were also given malaria therapy. One patient was subjected to 17 malarial chills, 132 injections of tryparsamide, 134 injections of bismuth compounds, 44 injections of mercury compounds and 39 injections of sulpharsphenamine. In fact, the authors designate their treatment of these cases as "extra-intensive treatment." Sixteen of these patients have thus been enabled to leave the hospital and they have been making a satisfactory adjustment. Of those remaining in the hospital, 85 per cent have parole and pass privileges. The majority have been permitted to visit outside the hospital ninety days or more and there were no conflicts. Four of the patients have died. The authors believe that the agitative type of patient reacted more favorably to malaria therapy. Some cases have shown improvement, while their serologic reactions continued strongly positive; others have shown no mental improvement, while their serologic reactions continued to be negative. Nine of these cases have shown no mental improvement under "extra-intensive treatment."

1. Carlisle, C. L., and O'Neil, R. T.: Results of Extra-Intensive Treatment of General Paralysis of the Insane, *M. Bull. Veterans' Administration* 10: 309 (April), 11: 31 (July) 1934.

1. Tobey, J. A.: *Pub. Health Rep.* 49: 993 (Aug. 24) 1934.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

- October 11. Multiple Births, W. W. Bauer, M.D.
- October 18. Keep Fighting Diphtheria, W. W. Bauer, M.D.
- October 25. What Is a Serum? W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- October 9. School Health Problems, W. W. Bauer, M.D.
- October 16. Research in Medicine, A. C. Ivy, M.D.
- October 23. Reading About Health, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. William J. Donald, Athens, for several years health officer of Limestone County, has been appointed in charge of the health unit of Covington County, with headquarters in Andalusia.—Mr. W. Thurber Fales, Montgomery, for ten years director of the bureau of vital statistics of the state department of health, has resigned to accept a similar position with the Baltimore health department.

Protest Publicity on Dengue Fever.—The Etowah County Medical Society has adopted a resolution protesting against the publicity given to the prevalence of dengue fever in the county. Declaring that this publicity might prove harmful, especially since no case had been reported in twenty-five years, the society called on the state health department to give, through the press, the full facts regarding the prevalence of the disease. Newspapers pointed out that the county had been selected with others in the state as a site for the campaign against the disease to prevent its introduction from adjacent states where outbreaks have been reported. The resolution commended the state and local health departments for their efforts to eradicate mosquitoes.

ARKANSAS

Clinical Conference.—The staffs of the Leo N. Levi Memorial Hospital and the Charles Steinberg Clinic will hold their fourth clinical conference, Hot Springs National Park, October 11. Guest speakers will be Drs. George R. Livermore, professor of urology, University of Tennessee School of Medicine, Memphis, and Col. William B. Meister, chief of the medical service, Army and Navy General Hospital, Hot Springs National Park. The conference will consist of lectures, demonstrations and clinics on medical and surgical subjects of especial interest to the general practitioner. Instead of reading papers this year, members of the staff will present cases and clinical reports. The meeting will close with an informal dinner at the Arlington Hotel. No registration fee will be charged.

CALIFORNIA

New Department of Bacteriology.—A department of bacteriology has recently been established at the University of California at Los Angeles, according to *Science*. Carl C. Lindgren, Ph.D., research assistant in microbiology at the Mellon Institute, Pittsburgh, has been appointed chairman.

Jailed for Violation of Medical Practice Act.—William Fisher, Los Angeles, was sentenced to jail for 180 days following his plea of guilty to a charge of violating the medical practice act. He was committed to jail when he was unable

to pay a fine of \$600. Fisher used an escharotic cancer paste, with which he is said to have treated a patient for cancer of the breast for several months.

Personal.—Dr. Dorothy M. Henderson, Van Hornesville, N. Y., has been appointed medical adviser to women and director of women's physical education at Stanford University, succeeding Dr. Bertha Sabin Stuart Dymont, it is reported. Dr. Henderson is a graduate of Northwestern University Medical School, Chicago, class of 1932.—Dr. Francis M. Stump, Crescent City, has been appointed health officer of Del Norte County to succeed Dr. William J. Stump.—Dr. Warren L. Nichols has succeeded Dr. Donald C. Fowler as city health officer of Exeter.

Society News.—Dr. Arthur Elmer Belt, Los Angeles, addressed the Galen Medical Society in San Diego, September 10, on "Obstructive Uropathy." The Galen society is composed of younger members of the San Diego County Medical Society.—Dr. Leo L. Stanley, San Rafael, addressed the Hollywood Academy of Medicine, September 20, on "Looking Back on Twenty Years of Prison Medicine."—Dr. James C. Hayes, Medford, Ore., addressed the Humboldt County Medical Society in Crescent City, August 16, on "Fractures of the Long Bones," and Dr. George K. Rhodes, San Francisco, "Drainage of the Abdomen and Traumatic Injuries to the Abdomen."—Dr. Joseph Salem Rubin, Los Angeles, addressed the Imperial County Medical Society in Calexico, September 18, on "Nephroposis."

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 22, indicate that the highest mortality rate (19.1) appears for Wilmington, and the rate for the group of cities as a whole, 9.6. The mortality rate for Wilmington for the corresponding period last year was 11.3, and for the group of cities, 9.8. The annual rate for eighty-six cities for the thirty-eight weeks of 1934 was 11.4, as compared with 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

University News.—New appointments at George Washington University School of Medicine include that of Dr. Herbert P. Ramsey as assistant professor of obstetrics and gynecology. Among the guests present at the opening of the one hundred and tenth academic year were Dr. John L. Reenstierna, professor of bacteriology, University of Upsala, Sweden.

Personal.—Brig. Gen. Frank R. Keefer, U. S. Army, retired, formerly assistant surgeon general, was recently awarded the honorary degree of doctor of science by Dickinson College, Carlisle, Pa.—Lieut. Col. Jules Voncken, director of the Military Hospital at Liège, was guest of honor at a luncheon at the Army and Navy Club, September 6. Colonel Voncken was en route to Tokyo to represent Belgium at the International Conference of Red Cross Societies.

FLORIDA

Society News.—At a recent meeting of the Bay County Medical Society in Panama City, Dr. James M. Hoffman, Pensacola, directed a symposium on cancer control. Other speakers on the program included Drs. Mozart A. Lischkoff, Pensacola, on common ear conditions; John T. Ellis, Dothan, hematuria, and James H. Fellows, Pensacola, location of hemorrhage in brain due to birth injuries.—Speakers before the Dade County Medical Society, September 7, were Drs. Robert T. Spicer, Miami, on trichomonas vaginalis, and Ernest Donald, Miami, the rectum.

GEORGIA

Triple Vaccine Discontinued.—The laboratory of the Georgia State Department of Health has discontinued the distribution of mixed or typhoid-paratyphoid vaccine. The facts that paratyphoid fever is relatively rare in Georgia and that the U. S. Army, which first introduced the use of triple or mixed typhoid vaccine, has recently discontinued its use entirely were cited as reasons for this action.

Personal.—Dr. Isaac C. Evans has been named city physician and health officer of Columbus, succeeding Dr. William E. Mayher Jr., resigned.—Dr. H. P. Rankin, formerly of Elba, Ala., has been appointed health officer of Grady County

to succeed Dr. James R. Dykes; the latter has been named to a similar position with the Thomas County Health Department, with headquarters at Thomasville, succeeding Dr. Hugh B. Jenkins, who resigned to become medical inspector for the Civilian Conservation Corps at Pensacola, Fla.—Dr. Emile B. Woods, Valley Junction, Iowa, has been appointed assistant professor of obstetrics and gynecology, University of Georgia School of Medicine, Augusta.

District Meeting.—The Fifth District Medical Society will meet at the Academy of Medicine, Atlanta, October 18. Dr. Marion C. Pruitt, Atlanta, president of the Fulton County Medical Society, will give the address of welcome, and Dr. Clarence L. Ayers, Toccoa, president, Medical Association of Georgia, the response. Other speakers on the program will include:

Dr. William F. Shallenberger, Atlanta, Surgical Complications of Pregnancy.

Dr. James E. Paullin, Atlanta, Pathology of Rheumatoid and Hypertrophic Arthritis.

Dr. Tinsley R. Harrison, Nashville, Pathogenesis of Congestive Heart Failure.

Dr. Isidore Cohn, New Orleans, Masses in the Groin.

Dr. Joseph Yampolsky, Atlanta, is president of the district society, and Dr. Hulett H. Askew, Atlanta, secretary.

ILLINOIS

Health Survey of Negro Children.—That the Negro children under preschool age in East St. Louis are in good physical condition is indicated in a recent survey made by the state department of health. This condition prevails despite the fact that nearly one half of them are in families on relief, it was stated. Only 117 out of 715 children examined exhibited any degree of deviation from normal nutrition. Nearly three fourths, or 72 per cent, had no decay whatever in their teeth. Only seventeen had detectable visual defects and only fifteen had any impairment of hearing. There were twenty-four with some manifestation of heart impairment or abnormality. The survey was carried on during the first week in September to determine prevailing health conditions among Negro children with a view toward establishing a program for the improvement of the race (*THE JOURNAL*, September 1, p. 686). The study was made in St. Clair County where the Negro population is principally concentrated.

Chicago

Personal.—Dr. Frank S. Needham, Oak Park, won the Van Derslic cup at the annual golf tournament of the Chicago Medical Society, August 1, with a low gross score of 79.—A tea was given by friends of the late Dr. Charles H. Miller, September 20, as a part of a campaign to raise funds for the Charles H. Miller Memorial Fund, which will be used to endow a room at the Woodlawn Hospital. Dr. Miller died last March.

Course for Pediatricians.—The management of children's behavior problems is the theme of a series of lectures to be given at the Institute for Juvenile Research, 907 South Lincoln Street, under the auspices of the University of Illinois College of Medicine. Lectures will be delivered on Tuesdays, October 9 to November 27. For a limited number of physicians these lectures may be supplemented by clinical experience in the treatment of children's behavior problems under supervision. Dr. Paul L. Schroeder is director of the Institute of Juvenile Research.

Symposium on Cancer.—Carcinoma of the breast will be considered in a symposium before the Chicago Medical Society, October 10. Dr. William C. MacCarty, professor of pathology, University of Minnesota Graduate School of Medicine, Rochester, will discuss the pathology; Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, the diagnosis and differential diagnosis; Dr. Arthur D. Bevan, clinical professor of surgery, Rush Medical College, surgical treatment, and Dr. Edward L. Jenkinson, roentgenologist of St. Luke's Hospital, the radiologic treatment.

Discussion of Medical Practice and Economics.—Medical practice and government plans for economic security will be discussed at a meeting of the North Side Branch of the Chicago Medical Society in Thorne Hall, McKinlock Campus, Northwestern University School of Medicine, October 8. Participating in the symposium will be the following:

Dr. Olin West, Secretary and General Manager, American Medical Association, The Situation Today.

Dr. Roscoe G. Leland, Director, Bureau of medical economics, American Medical Association, What Medicine Is Doing.

Dr. Morris Fishbein, Editor, *THE JOURNAL* of the American Medical Association, What Medicine Should Do.

Frederick A. Britten, congressman, ninth district, The Legislator's Viewpoint.

Guests of honor at this meeting will include Drs. Charles H. Phifer, Julius H. Hess and Thomas P. Foley, president, president-elect and secretary of the Chicago Medical Society, respectively; Stanley D. Tylman, D.D.S., president of the Chicago Dental Society; George L. Secord, president, Chicago Retail Druggists Association, and Lenore Tobins, president of the first district, Illinois State Nurses' Association. Members of these organizations are requested to bring interested friends. Dr. Irving S. Cutter, dean, Northwestern University School of Medicine, will give the address of welcome.

INDIANA

Society News.—Dr. Harry E. Mock, Chicago, will speak before the Tippecanoc County Medical Society in Lafayette, October 16, on "Management of Acute Head Injuries." Dr. Jean P. Pratt, Detroit, discussed "Endocrine Disturbances Peculiar to Women," September 13.—Dr. Claud R. G. Forrester, Chicago, will speak before the Tenth District Medical Society in Gary, October 31, on "Reduction of Fractures Under Local Anesthesia with Ambulatory Treatment."

IOWA

Society News.—A symposium on cancer of the stomach was presented before the Des Moines Academy of Medicine and Polk County Medical Society, September 25, with the following speakers: Drs. John T. Strawn, William E. Sanders and John B. Synhorst. Dr. Clinton E. Harris, Woodmen, Colo., will speak before the organization, October 8, on "Diagnosis of Lung Tumors," and Dr. Russell L. Cecil, New York, October 26, "Influenza and the Common Cold."—Speakers before the Dubuque County Medical Society, September 11, included Drs. Porter P. Vinson, Rochester, Minn., on "Bronchoscopic Diagnosis and Treatment of Lung Conditions"; Frederick A. Figi, Rochester, Minn., "Fractures of Nose, Jaws and Other Facial Bones," and Leo G. Rigler, St. Paul, "Early Diagnosis of Cancer."

KENTUCKY

Health Officer Appointed.—Dr. Charles W. Garrison, Little Rock, Ark., formerly state health officer of Arkansas, has been appointed health officer of Lexington to succeed Dr. Garland L. Weidner, who resigned a year ago. Dr. Garrison served as head of the health service of Arkansas from 1914 to 1933. He is a former president of the Conference on State and Provincial Health Authorities of North America and in 1924 represented the United States at a League of Nations Health Conference in Geneva.

Society News.—Dr. James W. Bruce, Louisville, addressed the Jefferson County Medical Society, September 17, on "Treatment of Burns in Children." Dr. Joshua B. Lukins, Louisville, addressed the society, September 3, on malpractice suits.—Drs. Isaac A. Arnold and John T. Bate Jr. addressed the Louisville Surgical Society, September 27, on "Gas Gangrene" and "Injuries of the Supraspinatus Muscle," respectively.—Dr. Claude S. Eddleman was the speaker at a meeting of the Louisville Urological Society, September 25, on "Calculi of the Upper Urinary Tract."

LOUISIANA

Society News.—At a meeting of the Bi-Parish Medical Society (East and West Feliciana parishes) in Jackson, recently, Drs. Charles H. Voss and Irvine Ashton Robins, Baton Rouge, discussed "Diseases of China" and "Treatment for Primary Syphilis."—Dr. Fred W. Rankin, Lexington, Ky., addressed the Shreveport Medical Society, September 8, on cancer of the intestine.

Tri-State Meeting.—The Tri-State Medical Society of Arkansas, Louisiana and Texas will hold its annual session in Shreveport, October 16-17. Included among the speakers will be the following physicians:

Theodore M. Oxford, Shreveport, Fracture and Dislocation in the Elbow Region.

Wyeth B. Worley, Shreveport, Pyelitis in Children.

Arthur C. Scott, Temple, Texas, Gallbladder Surgery.

Ernest Sachs, St. Louis, Diagnosis and Treatment of Trigeminal Neuralgia.

Marvin T. Green, Ruston, Acute Suppurative Parotitis as a Complication in Abdominal Surgery.

Barton A. Rhinehart, Little Rock, Modern Gastro-Enterology.

Dr. Vesse R. Hurst, Longview, Texas, will give his presidential address on the opening morning. Other speakers will include the mayor, George W. Hardy; Dr. William S. Kerlin, president, Shreveport Medical Society, and Leonce J. Kosminsky, Texarkana.

MASSACHUSETTS

Public Relations Committee.—The Middlesex South District Medical Society has appointed a committee to study and promote better relations between the medical profession and the public. Dr. David C. Dow, Cambridge, has been named chairman of the committee which includes as members Drs. Elmer W. Barron, Boston; Charles F. K. Bean, Medford; Fred A. Higginbotham, Watertown; Walter H. Crosby, Boston; Dana F. Cummings, Natick, and Norman M. Hunter, Hudson. The report stated that the newly formed committee will work with Dr. Charles E. Mongan, Somerville, who is a member of the House of Delegates of the American Medical Association.

MINNESOTA

Credit Bureau Formed.—Twenty-four physicians of Winona County recently formed the Winona County Physicians' Credit Bureau. A credit list of all patients who have made no payments on accounts for six months is being compiled. Emergency service to relief patients is not included.

Chiropractor Sentenced for Producing Abortion.—Mrs. Katie Mac Jenks, a licensed chiropractor, pleaded guilty to a charge of criminal abortion in the district court at Alexandria, July 25, and was sentenced to two years at hard labor in the Women's Reformatory at Shakopee; she began her sentence, July 30.

Tuberculin Testing of Cattle.—Seventy-four of the eighty-seven counties in Minnesota are now accredited in accordance with regulations governing the tuberculin testing of cattle with the incidence of tuberculosis 0.5 per cent or less. It is expected that seven other counties will be accredited by the end of October, although it will be impossible to accredit the remaining six counties before June 1935. It was pointed out that the first tuberculin test has been administered to all the cattle in the state. The work has been somewhat handicapped by the drought, which made it impossible to adhere strictly to quarantine provisions in some accredited counties, because large numbers of cattle from drought-stricken counties were moved there for sustenance, according to the *Journal-Lancet*.

MISSOURI

Art in Medicine.—The William Rockhill Nelson Gallery of Art will be the scene of a special program planned by the entertainment committee of the Kansas City Southwest Clinical Society for registrants at the fall clinical conference. Mr. Paul Gardner, director, will discuss "Masterpieces of the Gallery Collection"; Dr. Logan Clendening, Kansas City, "Medical Subjects in Classic Art," and Dr. Edward H. Skinner, Kansas City, "Art and X-Ray."

Society News.—At a meeting of the Jackson County Medical Society in Kansas City, September 11, Drs. Carl H. B. Schutz and Ferdinand C. Helwig discussed water intoxication, and Dr. Cecil M. Kohn, "Treatment of Cardiac Disease by Total Thyroidectomy."—The Nodaway County Medical Society was addressed in Maryville, September 5, by Drs. James G. Montgomery and Donald R. Black, Kansas City, on "Surgery of the Spleen" and "Treatment of Diabetes," respectively.

Survey of After Effects of Encephalitis.—To determine the after effects of encephalitis, a survey was undertaken in St. Louis and St. Louis County the latter part of September by the St. Louis Metropolitan Health Council. The council has asked private physicians for permission to examine their patients with a view to reaching all patients still residing in the city and county. The work is expected to take three months and it is planned now to repeat the survey in a year. Official records show 1,097 cases of encephalitis with 221 deaths. Dr. Paul J. Zentay, St. Louis, is secretary of the Metropolitan Health Council.

NEW YORK

District Meetings.—The twenty-eighth annual meeting of the fourth district branch of the Medical Society of the State of New York was held in Gloversville, September 21-22. Among speakers were Drs. Edward M. Livingston, New York, on "Clinical Diagnosis of Surgical Diseases of the Abdomen"; Richard B. Cattell, Boston, "Diseases of the Colon," and Herman O. Mosenthal, New York, "The Heart Muscle with Advancing Years." At a dinner at the Sir William Johnson Country Club, speakers were Drs. Arthur J. Bedell, president, Medical Society of the State of New York, and Thomas

Parran Jr., state health officer, both of Albany.—Dr. Earl D. Osborne, Buffalo, was guest speaker at the annual meeting of the third district branch of the Medical Society of the State of New York at Livingston, September 19, on "Treatment and Prognosis of Early Syphilis." Dr. Arthur J. Bedell, Albany, president of the state medical society, also made an address.—At the annual meeting of the sixth district branch of the Medical Society of the State of New York in Cortland, September 26, speakers included Drs. Russell L. Cecil, New York, on "Treatment of Pneumonia"; Claude F. Dixon, Rochester, Minn., "Surgical Management of Carcinoma of the Rectum and Rectosigmoid," and Donald Guthrie, Sayre, Pa., "The Tragedy of Appendicitis." Dr. Arthur J. Bedell, Albany, president of the state society, discussed the *New York State Journal of Medicine*.—At the annual meeting of the seventh district branch of the Medical Society of the State of New York in Auburn, September 27, speakers included Drs. Russell L. Cecil, New York, on "Common and Unusual Heart Lesions," and Harrison S. Martland, Newark, N. J., "Management of Gastric Lesions, Peptic Ulcer and Malignancy."

Cornerstone for Saratoga Spa Laboratory.—A new unit of the spa being developed by the state at Saratoga Springs was started September 14, when the cornerstone was laid for the Simon Baruch Research Laboratory. Gov. Herbert H. Lehman presided at the ceremonies, naming the laboratory for Dr. Simon Baruch, a pioneer in hydrotherapy in this country and for many years professor of hydrotherapy at the College of Physicians and Surgeons, New York. His son, Dr. Herman B. Baruch, New York, laid the stone. Dr. John H. Wyckoff, dean, New York University—Bellevue Hospital Medical College, was the orator of the occasion. The laboratory building will be the largest in floor area of the group of buildings now under construction at Saratoga. It will contain physicians' offices, experimental rooms for baths and an auditorium in addition to laboratories for roentgenography, fluoroscopy, capillary examinations, blood pressure and basal metabolism determinations, chemistry and physics. Other buildings of the center will include the Hall of Springs, a bath house of distinctive design, a hotel with sanatorium facilities, a bottling plant for the spring waters, and a recreation center, at which the remedial uses of sports will be stressed. Dr. Walter S. McClellan is medical director of the spa and members of the Saratoga Springs Commission are Pierrepont B. Noyes, Oneida, chairman, and Drs. Carl R. Comstock, Saratoga Springs, and Lemuel Whittington Gorham, Albany.

New York City

Hospital News.—At the invitation of the Bronx Hospital, Dr. Erwin Schiff, former professor of pediatrics, University of Berlin, delivered three lectures at the hospital, September 14, 18 and 21, on "Dehydration and Intoxication," "New Points of View in the Treatment of Intoxication and Diarrhea in Infants," and "Therapy of Neurodermatitis in Infants."

City Hospital Capacity Taxed.—During the first six months of 1934 New York City hospitals operated at more than their normal capacity, according to a report of the department of hospitals issued recently. The average daily census for all institutions was 19,060, while the bed capacity averaged 18,463. The number of days of hospital care for the six months was 3,500,000, a rate of 7,000,000 days of care per year, or approximately one day of institutional care for each inhabitant of the city. In addition the city pays for about 1,000,000 days of care for indigent persons in 105 private hospitals. During the first six months of this year there were 8,483 births in the city's hospitals and 9,759 deaths. The mortality rate, based on the number of persons treated was 7.3. In twelve general hospitals, the average length of stay was sixteen days. In twelve special hospitals, which include hospitals for chronic nervous disorders, cancer, tuberculosis and communicable diseases, the average stay was sixty-seven days. The city operates 121 ambulances on general emergency calls and nine exclusively on contagious disease calls. In the year 1933, ambulances responded to 310,255 emergency calls; 166,698 patients were treated on the spot and not moved to hospitals. In 7,651 cases the patients were found dead on arrival of the ambulance.

Society News.—A symposium on acute anterior poliomyelitis will be presented before the section of neurology and psychiatry of the New York Academy of Medicine, October 9; speakers will be Drs. John R. Paul and James D. Trask, New Haven, Conn., Arthur R. Elvidge, Montreal, Maurice Brodie, William H. Park and Claus W. Jungeblut.—The council of the Physicians Equity Association of America, Inc., at a meet-

ing in New York, September 19, unanimously endorsed the ten principles of policy adopted by the House of Delegates of the American Medical Association at its June meeting in Cleveland. Members of the council are Drs. William M. Cooper, Joseph E. Conroy, Cassius L. De Victoria, Joseph J. Eller, Judson C. Fisher, Seymour Fiske, Charles Goodman, Harold M. Hays, Samuel M. Kaufman, Locke L. MacKenzie, Malcolm Campbell, Alexander Nicoll, Herman B. Philips, Joseph Safian, Herman Sharlit, Clarence H. Smith, Robert E. Walsh, Andrew A. Eggston and Edward R. Cuniffe.—The third annual meeting of the Society for Plastic and Reparative Surgery will be held in New York, October 9-12.—A symposium on arthritis will be presented at the meeting of the New York City branch of the Society of American Bacteriologists, October 9, by Dr. Reginald Burbank, Dr. Currier McEwen, H. R. Sinay, William Reiner-Deutsch, Ph.D., Dr. Maximin D. Touart, Dr. Martin H. Dawson, G. H. Chapman and Dr. William B. Rawls.—Dr. Harrison S. Martland, Newark, N. J., Dr. Thomas A. Gonzales and Alexander O. Gettler, Ph.D., will discuss "Scientific Crime Detection" before the Science Forum of the New York Electrical Society, October 17.

NORTH CAROLINA

Society News.—At a meeting of the Ninth District Medical Society in Statesville, September 27, speakers included Drs. George M. Cooper, Raleigh, on "Maternal and Infant Mortality in North Carolina," and Benjamin W. McKenzie, Salisbury, "Serum Proteins in Infections"; H. Calvin Rea, D.V.M., Charlotte, "Relationship of Animal Diseases to Human Health," and Ernest A. Branch, D.D.S., Raleigh, "Undernourishment as Reflected in the Mouth."—The Catawba Valley Medical Society met at Hickory, September 11, with the following speakers: Drs. William G. Bandy, Lincolnton, on "Coronary Thrombosis"; Walter V. Costner, Lincolnton, "The Normal Heart in the Child"; John S. Lewis, Hickory, "Differential Diagnosis Between Certain Heart Conditions and Certain Surgical Conditions," and Clyde R. Hedrick, Lenoir, "Practical Value of Electrocardiography."

OREGON

Professor of Biochemistry Appointed.—Edward S. West, Ph.D., since 1923 a member of the faculty of Washington University Medical School, St. Louis, has been appointed professor of biochemistry at the University of Oregon Medical School to succeed the late Dr. Howard D. Haskins. Dr. West has done extensive research in biochemistry, especially in the field of carbohydrates.

PENNSYLVANIA

Organization to Consider Public Health Legislation.—The public health committee of the Medical Society of the State of Pennsylvania has recently completed the organization of the Public Health Legislative Conference of Pennsylvania, whose purpose is the dissemination of evidence against legislation detrimental to public health and arguments for legislation favoring public health. The conference is made up of two representatives each of the state medical society, the state eclectic medical society, the state homeopathic medical society, the nurses' association, pharmaceutical society, dental society, hospital conference and the woman's auxiliary of the state medical society. Dr. Chauncey L. Palmer, Pittsburgh, is chairman, and Will D. Everhard, D.D.S., Harrisburg, secretary. Analogous organizations have been established in every county in which they are practical.

Philadelphia

Dr. Kolmer Resigns as Professor of Medicine.—Dr. John A. Kolmer has resigned as professor of medicine at Temple University School of Medicine to devote more time to research. He will continue to teach immunology, bacteriology and chemotherapy but asked to be relieved of clinical work. Dr. Kolmer has held the professorship of medicine at Temple since August 1932, having previously been professor of pathology and bacteriology at the Graduate School of the University of Pennsylvania. Since 1912 he has been head of the department of pathology of the Research Institute of Cutaneous Medicine and was recently made director and president of the board of trustees.

Airplane Survey of Pollen.—The Philadelphia College of Pharmacy and Science has launched an aerial survey of air-borne pollens, to be carried on for five years over the metropolitan area of Philadelphia, the New Jersey coast and out to sea for twenty miles. It is planned to measure accurately

the density, nature and distribution of air-borne pollen in the upper atmosphere. Daily flights will be made during the remainder of the current season and throughout the seasons for the next four years. At a special meeting marking the beginning of the project, Drs. Theodore B. Appel, state health officer, J. Norman Henry, director of health of Philadelphia, Randle C. Rosenberger, chairman of the air hygiene committee of Philadelphia, and Arthur C. Morgan made addresses.

Pittsburgh

Executive Secretary Resigns.—Mr. Lester H. Perry, executive secretary of the Allegheny County Medical Society since September 1931, has resigned to become managing editor of the *Pennsylvania Medical Journal* and manager of the annual sessions of the Medical Society of the State of Pennsylvania.

Practical Courses for Physicians.—The eighth series of practical courses sponsored by the Allegheny County Medical Society will begin in October. Subjects to be treated are the dietetic management of metabolic disorders, obstetrics, fundamentals of everyday dermatology, slit lamp microscopy and ophthalmoscopy, hyperthyroidism and hypothyroidism, acute neurologic conditions, medical emergencies, and orthopedic surgery for the general practitioner.

Branch Society Has Graduate Assembly.—The fourth annual graduate assembly of the Allegheny Valley Branch of the Allegheny County Medical Society was held, September 15, at Tarentum. An operative clinic was held in the morning at the Allegheny Valley Hospital and the following program of addresses was presented in the afternoon:

- Dr. William W. G. MacLachlan, Pittsburgh, Prognosis and Treatment of Pneumonia.
- Dr. John Alexander, Ann Arbor, Mich., Advancing Scope of Thoracic Surgery.
- Dr. Charles Howard Marey, Pittsburgh, Diagnosis and Treatment of Chronic Lung Infections.
- Dr. George W. Grier, Pittsburgh, Foreign Bodies in the Air Passages.
- Dr. Carey P. McCord, Cincinnati, Chest Diseases Caused by Dust.

VERMONT

Surgical Meeting in Burlington.—The annual meeting of the New England Surgical Society was held in Burlington, September 28-29. Among physicians who appeared on the program were:

- Dr. George A. Moore, Brockton, Mass., Bleeding Gastric Ulcer.
- Dr. Thomas N. Hepburn, Hartford, Conn., Ureterorectal Anastomosis.
- Dr. John Homans, Boston, Recurrent Peripheral Thrombophlebitis Causing Pulmonary Embolism.
- Dr. Richard H. Miller, Boston, Acute Hematogenous Osteomyelitis.
- Dr. Isaac M. Webster, Portland, Maine, The Limitations of Enterostomy and Undesirable Effects Incident to Its Use.
- Dr. James W. Sever, Boston, Slipping Epiphysis of the Head of the Femur.

GENERAL

Science Writers Form Association.—Announcement was made September 14 of the formation of the National Association of Science Writers, made up of staff members of newspapers and press associations who devote their major efforts to the field of science. Mr. David Dietz, Cleveland, science editor for the Scripps-Howard newspapers, is president of the association, the purpose of which is to "foster the dissemination of accurate scientific knowledge by the press of the nation in cooperation with scientific organizations and individual scientists."

Society News.—A special committee on the revision of the U. S. Pharmacopeia and National Formulary has been appointed to represent the American Academy of Pediatrics, as follows: Drs. Isaac A. Abt, Chicago; William N. Bradley, Philadelphia; Louis W. Sauer, Evanston, Ill., and John Ruhrah, Baltimore.—The seventh annual meeting of the Central Society for Clinical Research will be held in Chicago, November 2-3, at the Medinah Michigan Avenue Club.—The Central States Dermatological Society will hold its annual meeting in Buffalo, November 3.

Meeting of College of Surgeons.—The twenty-fourth clinical congress of the American College of Surgeons will be held in Boston, October 15-19, with headquarters at the Statler and Copley-Plaza hotels. Addresses to be delivered at evening meetings include the John B. Murphy Oration in Surgery by Dr. Donald C. Balfour, Rochester, Minn., on "Principles of Gastric Surgery," and a fracture oration on "The Unsolved Fracture," by Dr. Kellogg Speed, Chicago. Special features of the program will be a symposium on cancer, a fracture conference and one on industrial medicine and traumatic surgery, and a community health meeting.

Resolution Condemns Indiscriminate Use of Radium.—The American Radium Society at its annual meeting in Cleveland adopted resolutions criticizing commercial laboratories which give advice or directions for the use of radium. The same criticism was applied to institutions that rent or furnish radium to members of their staffs or persons outside the staffs who are unskilled in the application of radium and also to certain individual owners of radium. The society considers approval by the National Board of Radiological Examiners as the minimum standard for those assuming the responsibility of using radium. The resolutions recommended refusal of advertising matter in state and national journals when the firms concerned are advertising a consulting service or are advertising such service through the mails. They further disapproved any physician's association with a firm that carries on such advertising but approved an informal medical consultant for guidance of companies that refrain from advertising such professional service, either publicly or privately. The ethical commercial company is a necessity, the resolutions emphasized; it is the advertised consulting service that is deprecated. Restrictions on the advertising of a medical service will in no way hamper qualified radiologists in obtaining supplies, it was asserted. In another resolution the society stated its belief that it is justifiable to produce a second degree radiodermatitis when it is necessary in order to give sufficient treatment to overcome malignant disease. These resolutions were also approved by the board of chancellors of the American College of Radiology and the Section on Radiology of the American Medical Association.

FOREIGN

Cameron Prize Awarded.—Sir Edward P. Sharpey-Schafer, emeritus professor of physiology, University of Edinburgh, received the Cameron Prize in practical therapeutics awarded by the university in recognition of the advances in therapeutics arising out of his discoveries in endocrinology. Sir Edward, now 83 years old, retired in 1933. He has received many honorary degrees and medals from scientific societies and is widely known as the originator of the Schafer prone pressure method of artificial respiration. The award was made at the recent commencement at Edinburgh.

Congress on Industrial Medicine.—The Seventh International Congress on Industrial Accidents and Diseases will be held in Brussels in July 1935. The congress has been divided into three sections, each of which will deal with two subjects. The section on surgery will consider delayed effects of injuries to the cranium and traumatism of the hand and fingers; the section on occupational diseases, prevention of industrial dusts and pathologic action of gases escaping from veins of coal mines; and a joint session will take up objective manifestations of pain and electricity. For information address the secretary general of the congress, Dr. Leo Dejardin, 23 Rue de Commerce, Brussels; Dr. Fred H. Albee, 57 West Fifty-Seventh Street, New York, American president of the national committee for the section of accidents, or Dr. Emery Hayhurst, state department of health, Columbus, Ohio, American president of the national committee for the section of diseases.

Government Services

Discontinue Medical R. O. T. C. Units

With the graduation of the last remaining classes in June 1935, all medical department units of the reserve officers' training corps will be definitely discontinued, the war department has announced. According to the announcement, this will complicate the problem of procurement of medical department reserve officers, since these units have been the source of more than 50 per cent of the new appointments in this section of the officers' reserve corps. It is believed that the interest of medical and related personnel in the officers' reserve corps can be maintained by the establishment of proper contact with class A medical, dental and veterinary colleges. Effort should be made to interest young men who have just received their degrees, these applications to be solicited by specially designated contacting officers. Changes in army regulations have been approved which authorize the waiver of the requirement of license and actual engagement in practice of graduates of class A medical, dental and veterinary colleges in cases in which the applicants are commissioned at time of graduation. This permits the commissioning of medical graduates, as has been done in the case of medical students of the reserve officers' training corps in the past.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 8, 1934.

The Prevention of Road Accidents

If the dreadful toll of deaths and injuries on the roads shows no diminution, this is not due to any want of efforts on the part of the authorities. Indeed, it is possible that their efforts are producing effects that are counteracted, or more than counteracted, by the constant increase of automobile traffic. No figures have been published showing the relation of accidents to the amount of this traffic. The latest measure, which is a success, is the marking on the roadway of recognized crossing places for pedestrians, following the example of Paris. If a pedestrian is injured on one of these, the responsibility of the motorist is much increased. The minister of transport, Mr. Hore-Belisha, has set up a standing road safety council, over which he will preside. This body will meet at least once a week. It will be representative of all sections of road users. The first difficulty is to reconcile their conflicting claims. Among the organizations, the principal officers of which the minister has seen, are the Automobile Association, the Royal Automobile Club, the Commercial Road Users Association, the British Road Federation, the National Safety First Association, the Cyclists Touring Club, and the Pedestrians Association. As the result of the conversations all the officers of these bodies have undertaken to help in every possible way to reduce the number of accidents on the road and have readily acceded to the wish that they visualize the problem from a national rather than from a sectional angle. These organizations will combine in the formation of a standing council, which will discuss at regular meetings to be held at the ministry of transport all questions that have heretofore been considered solely from the points of view of the various organizations. To this council will be added representatives of local authorities, the police and the insurance companies. An important matter to which the minister is paying special attention is the obtaining of information regarding places where accidents occur most frequently. Observers will be sent to keep constant watch on "black spots" and to report defects that may be discovered in the control of traffic or obstacles that can be removed. The minister will adopt two methods: He believes that much good can be accomplished by the constant education of the public on the danger of the roads and the precautions necessary for all road users. His second method is regulations as to traffic. His decision to provide crossing places for pedestrians was prompted by the fact that the highest percentage of accidents occur to pedestrians. Since they were introduced into London, only one fatal accident has occurred at one of these crossings. On the other hand, most of the accidents to pedestrians in built-up areas occur where these crossings are some way off. A new order is the forbidding of the use of bicycles to carry more than one person unless it is specially constructed for the purpose.

Another New Cancer Treatment Exploded

Considerable and apparently undeserved space is given in the *Times* to the latest claim of a discovery with regard to cancer. At the Congress of International Science held at Frankfurt, Dr. Brehmer claimed that he had discovered a bacterium that causes cancer and was named by him *Siphonospora polymorpha*. Of Dr. Brehmer's claim it need only be said that it has excited incredulity even in his own country. A practical suggestion based on it has been confuted in England. As this bacterium develops best in a strongly alkaline medium, a treatment for cancer has been suggested, which includes bringing the patient's blood from the alkaline toward the acid side and regulating it

at a p_{H} between 6.8 and 7.1. In a letter to the *Times* Dr. Samson Wright, professor of physiology in the University of London, points out that this treatment is dangerous and not new. In animal experiments, disturbance of the blood reaction to this extent is always fatal, and in man a similar result is to be expected. Some ten years ago Mr. T. H. Kellock, surgeon to the Middlesex Hospital, which for a century has specialized in the investigation and treatment of cancer, tested the hypothesis that a moderate increase in the acidity of the blood might be of value in the treatment of cancer. But no improvement was observed in any of the patients so treated. Thus this apparently highly scientific work, which occupies nearly two columns of the *Times*, turns out, like a good deal of German investigations of the kind, to be only pseudoscientific.

The Storage of Food

At the annual meeting, at Aberdeen, of the British Association for the Advancement of Science, Sir Frank Smith, secretary of the department of scientific and industrial research, described recent advances that have been made in the storage of food. Most of the work is done at the research station of the department in Torry, Aberdeen, as much of it deals with the fishing industry. A smoking kiln heated by gas or electricity has been evolved to replace the smoldering fire of sawdust controlled simply by the curer himself and still used for converting herrings into kippers. This ancient method is at the mercy of the weather as to temperature and humidity. The Torry plant enables any desired cure to be produced with certainty. The salt cure of herrings has been combined with a process of chilling to produce a mild salted herring.

For the white fish trade—cod, halibut, plaice—investigations have shown how the unsatisfactory trawler storage of the catch in crushed ice can be improved. When landed the catch may be 17 days old, while the crushed ice can hold it fresh for only six or seven days. Research has found a solution by the freezing of the catch in cold brine at minus 20 C., at which temperature the growth of bacteria is completely arrested and the freezing enables the fish to be stored for three months. On thawing it is as good to look at and to eat as if it just came out of the sea.

For halibut a floating factory ship of 10,000 tons has been fitted up for the brine freezing of 4,000 tons of halibut at the rate of 70 tons a day. In May the ship goes to the Davis Straits, off the west coast of Greenland, where the fish are caught. In October it returns to Hull and there acts as a floating store. On the ship cod liver oil is manufactured and halibut livers are frozen and stored. Several other factory ships are at work on this principle.

MEAT FROM ABROAD

In Great Britain \$5,000,000 a day is spent on food brought from abroad, and the process that makes this possible is refrigeration. It has been found possible to stop completely the self-induced deterioration of meat by enzymes or organisms naturally present in the meat itself and to stop bacterial infection of the meat sufficiently to keep it good as a food. Mutton, lamb and pork are preserved by freezing, but freezing, as distinct from chilling, is unsatisfactory for beef, as the crystals of ice disrupt the muscle fibers and when the meat is thawed the water is not entirely reabsorbed but drains away and carries with it proteins, salts and pigments. The solution has been found to be carriage of the beef in an atmosphere containing from 10 to 20 per cent of carbon dioxide. Last year under these conditions a cargo of chilled beef was successfully brought for the first time from New Zealand. Rapid developments of this method are now being made by the shipping companies. Carbon dioxide storage also serves for apples and should help to overcome intolerance for cold, shown by the British apple.

PARIS

(From Our Regular Correspondent)

Aug. 22, 1934.

Pensions and Politics

The necessity of establishing the budget of France on a solid basis compels the government to effect all possible retrenchments. One of the heaviest expenditures of the government at present is for war pensions. It is the general opinion that there have been abuses of the pension laws and that these are on the increase. One might assume that since 1914 death would have reduced the number of war victims, but the number actually increases, and the amount of money expended likewise is increasing, for the law permits a pensioner to demand a revision of his pension if he thinks that the state of his health is worse. In this way a shrewd man who succeeded in obtaining an annuity of 10 per cent of his normal salary, by reason of a stubborn cold or an attack of influenza suffered during the war, eventually is granted 50 per cent, or even 100 per cent, of his normal salary if he is able to find a court that will consider him tuberculous. That may result in an annuity of 17,600 francs (\$1,144), which may revert, in part, to his wife and to his children, in the event of his death, in addition to many further advantages that the law of 1919, as an expression of a feeling of compassion, accords to all persons who wore the uniform. What is especially objectionable is that, in allowing these increases of pension, no account is taken of the natural result of aging or of possible bad habits of the person applying for an increase. Many gouty, asthmatic and diabetic patients, and even patients with alcoholic cirrhosis, are drawing liberal pensions. Persons hastily considered tuberculous in 1918 and granted a large pension are today in good health, either because the original diagnosis was wrong or because they have succeeded in obtaining a cure. In some instances they have given up their occupation, while, in other cases, if their occupations bring a good yield, they add their pension to their regular income. Moreover, the right to demand a pension remains open indefinitely for any one who thinks that his present bad health had its origin in the war service, even though he never saw any actual fighting, having been merely employed in some office, far from the fighting lines. Irrespective of the time that has elapsed, the law gives him the right to present his claim. His application is examined by one of the special courts established in every department of France. Local political influence is brought to bear on this court, which is thus compelled to be generous. Nearly a billion dollars (almost a fourth of the annual budget) is devoted each year to pensions. It would be an easy matter to clip off two or three billion francs, which would be sufficient to balance the budget. But the pensioners are bound together in powerful political organizations, which exert an influence on the deputies, and when a few wise men demand a revision of war pensions wrongfully granted, they organize a vociferous opposition. Nevertheless, the government recently announced a reduction of 2 per cent in the pensions for disease only. Thereupon these pensioners immediately instituted an organized opposition and paraded the streets, uttering loud shouts in expression of their disapproval. The public contemplates these manifestations with a feeling of melancholy sadness, recalling the heavy taxes they have to pay by reason of these pensions, which they find themselves powerless to combat, in view of the demagogic system of politics that prevails. It is true that the same scandalous conditions are found in other countries, only the governments of Germany and Italy having been able to cope with any success with these deplorable abuses.

Restriction of the Number of Medical Students

Dr. Georges Portmann, professor of otorhinolaryngology at the Faculté de médecine de Bordeaux, elected senator last year,

has introduced a bill designed to limit the number of students to be admitted to the *facultés de médecine*. In 1930 the dean of the *Faculté de médecine de Paris* and the general secretary of the *Confédération des médecins de France* called attention to the deplorable situation in a circular letter addressed to the parents of pupils in the *lycées*, urging them to enlighten their children in regard to the future prospects of those who, under present conditions, take up the study of medicine. The number of physicians in France has increased from 16,815 in 1900 to 27,500 in 1928, whereas in this period the population has increased only two million. In spite of warnings, the situation has grown steadily worse. The number of students enrolled in the French medical schools has risen from 8,182 in 1929 to 9,780 in 1930, 9,842 in 1931, 10,242 in 1932 and 10,338 in 1933. The number of government diplomas issued to doctors of medicine by all the *facultés de médecine* was 1,076 in 1930, 1,102 in 1931 and 1,397 in 1932. But these figures correspond to the number of students enrolled five or six years previously. It is evident that in five years the number of graduates will be much greater. Overcrowding of the profession is reported from other countries. In Germany the Hitler government has recently decided that the number of medical students, which was 25,000 in 1933, shall be reduced to 15,000 in 1934. The bill proposed by Senator Portmann is not so rigid. It does not fix any maximum. It provides that the total number of medical students to be matriculated be fixed each year, according to the number of civil, army, naval and colonial physicians required, by a commission composed of the minister of public instruction, the minister of public health, the *Confédération des syndicats médicaux*, and the ministers of war, the navy department and the colonies. The selection would be made in two stages, the first at the end of the preparatory studies leading to the premedical diploma in physics, chemistry and biology, which affords entrance to the *facultés de médecine*, and the second after completion of the first year of study in the *facultés de médecine*. Only the number of holders of the premedical diplomas, as fixed by the ministerial commission, plus 50 per cent, would be admitted to the *facultés de médecine*, and this additional 50 per cent would be eliminated at the end of the first year of medical study. This regulation would concern only candidates for the government diploma, which grants the right to practice medicine in France (and in Rumania). As to the students enrolled for a university diploma, a degree much sought by foreigners, no limitation will be placed on their number; but the later transformation of a university diploma into a state diploma will be made more difficult and will be brought into harmony with the number of state diplomas fixed by the projected legislation.

Amebiasis in Paris

Amebiasis is rare in Paris, but possibly there are more cases than is generally supposed. Professor Lemierre has observed several hundred cases among the civil population in a period of fifteen years. The figures are much higher in the army and in the marine hospitals. The diagnosis is not so difficult as it appears at first. According to Lemierre, one cannot count on discovering pathogenic amebas other than in cases of typical intestinal amebiasis. The discovery of a hyperleukocytosis with neutrophil polynucleosis will be of great aid in distinguishing febrile hepatitis, without characteristic local symptoms, from malaria, typhoid or paratyphoid fever, tuberculosis and undulant fever. But the strongest proof of the amebic nature of the symptoms, when their character permits only a supposition, is the specific action of treatment with injections of emetine. The cases that figure in Lemierre's research show that, in the apparently hopeless cases, emetine works wonders, establishing thus, at the same time, the diagnosis. On the slightest suspicion therefore, he says, the physi-

cian should not hesitate to institute an emetine test treatment, which will be harmless if it has no curative effect. The only thing that one need fear is failure to recognize amebiasis when it presents itself.

International Conference on Chronic Rheumatism

An international conference was recently held at Aix-les-Bains, in Savoy, under the chairmanship of Prof. Fernand Bezançon, at which one topic, "Chronic Generalized Progressive Rheumatism," was discussed. In addition to the French members, a considerable number of foreign physicians were present, chiefly English. The conference was only a presentation of individual medical opinions (sometimes contradictory) on the pathogenesis of chronic generalized rheumatism, and no positive conclusions could be drawn from the conflicting papers. Prof. Fernand Bezançon and Dr. Weil endeavored to establish the limits of the pathologic condition termed "rheumatism" and admitted that the limits were rather uncertain in the neighborhood of degenerative osteo-arthritis. Contrary to the opinion of Charcot, the manifestations included under the name of generalized progressive rheumatism do not represent a homogeneous whole. Violence has been done to the facts in describing a symmetrical disease, regularly progressive, with a distal onset and a centripetal course. The deformations are commonplace. The trophic disorders for the most part develop late. There are, however, patients in whom one observes all these characteristics, and for these the authors proposed the term "progressive symmetrical polyarthritis" or, better still, "polyarthropathy"; for there is no direct proof that arthritis exists, in the strict sense of the word, or even that the disease is localized selectively in the joint. As for other cases, the symptoms develop differently. The authors discussed the mode of onset, the date of appearance, the progressive nature and the symptoms. Among these forms there are multiple varieties. From the radiologic point of view, four clinical types may be distinguished, according as there is an absence of radiologic lesions, destruction of articular contour, disappearance of bony segmentation or solely intense and diffuse decalcification. These aspects are not degrees in the morbid evolution; they represent exceptional states. Nevertheless, there is a family resemblance between all these cases. That is due not to the etiologic conditions nor to the state of the humors or the nature of the metabolism but to the conditions of the terrain. It is that which, by the progressiveness of the disease, creates the clinical type. Its cause lies in the mode of reaction of the subject, as a result of which, following the action of any factor—infectious, traumatic, proteinic or otherwise—disorders are produced in a joint, the essential character of which will be a tendency to become generalized.

Following the presentation of the previous paper, Loeper, D. Marchandau and J. Tonnet considered more particularly the metabolism of rheumatic patients, pointing out in them the excess of sulphur and calcium and the insufficiency of glutathione. Coste of Paris and Jacques Forestier of Aix-les-Bains surveyed the rôle of infectious elements in chronic generalized rheumatism (*gonococcus*, *streptococcus* and particularly *tubercle bacilli*). They scout the idea of a specific micro-organism.

Professor Gunzburg of Antwerp gave a critical survey of the modes of treatment to be applied to the various types of rheumatism. Professor Bach of London, in studying the anatomic aspects of generalized progressive rheumatism, which he called rheumatoid arthritis, attached great importance to the bone changes due to disturbed calcium metabolism. Mr. Scott of London recommended close study of roentgenograms to get an accurate conception of the disease and emphasized also the paramount rôle of decalcification. Professor Mouriquand of Lyons called attention also to the significance of the endocrine factors and the part played by the parathyroids. The

thyroid, the ovary and other organs. Professor Maranon of Madrid discussed at considerable length the diagnosis of various forms of progressive chronic rheumatism. Weissebach and Françon considered the prognosis. Professor Kahlmeter gave his interpretation of examinations of the blood of rheumatic patients. Professors Giraud and Puech of Montpellier presented a comprehensive paper on the thermic treatment of rheumatism.

BERLIN

(From Our Regular Correspondent)

Aug. 13, 1934.

The Cause of Pain in Angina Pectoris

By means of a type of calorimeter the physiologist Rein of Göttingen has succeeded in measuring directly the amount of the coronary blood flow, which it was found varies somewhat from hour to hour, being dependent on the performance of the heart. In contrast with the other vessels that are subordinate to the sympathicus, the coronary vascular system is dependent on the vagus tonus.

In the opinion of Professor von Bergmann, who spoke recently on angina pectoris before the Berlin Medical Society, the pain may be fully explained by the deficiency of oxygen in the heart muscle and the resulting injuries, the partial suffocation resulting in an impaired function ranging from mild oxygen impoverishment, acid formation and slight attacks of angina pectoris to cardiac infarct. Pain conduction is by way of centripetal nerves in the heart. An illuminating demonstration of the importance of the vagus in connection with the coronary blood flow consists in the expansion of the lowest portion of the esophagus by means of a rubber balloon, applied to the dog, which evidently irritates the vagus nerves and precipitates an attack, the same as pressure on the sinus caroticus; the expansion causes a reflex change in the blood flow. The connection between attacks of angina pectoris and the ingestion of full meals, increases of blood pressure and attacks of emotion is widely known. The electrocardiogram possesses great value as a diagnostic aid for determining the gravity of coronary changes in the heart, and particularly for the diagnosis of the cardiac infarct. The typical changes are the inverted secondary deflection (negative T), the high first deflection, the splitting of the R wave, the iso-electric secondary deflection, and the like. Rabbits poisoned by carbon monoxide and hence deficient in hemoglobin present similar aspects in the electrocardiogram. The von Bergmann "school" found in anemized rabbits anatomic changes in the form of typical necroses of the heart muscle. This observation appears to afford an important basis for the understanding of angina pectoris in man. One can produce also in human subjects the electrocardiogram corresponding to that of angina pectoris; for example, in connection with examinations in the subpressure chamber, such as are instituted in testing persons with reference to their aptitude as aviators. In such tests an artificial process is employed to render the blood deficient in oxygen, and one finds in examinations based on an assumed elevation of from 6,200 to 8,000 meters just such types of electrocardiogram. A further proof lies in the fact that in persons with a tendency to angina pectoris, at an early date, before the appearance of the subjective suffocation phenomena, the typical changes in the electrocardiogram are observable if one allows such persons to breathe between attacks while subjected to a deficiency of oxygen. These changes soon disappear as soon as an adequate supply of oxygen becomes available.

Oxygen deficiency of the heart muscle is shown beyond doubt to be the cause of pain associated with angina pectoris. The causes that lead to a narrowing of the coronary artery and thus to oxygen deficiency are various; for example, a severe

hemorrhage from a gastric ulcer may precipitate an attack. The most frequent cause is coronary sclerosis. The terms "angina pectoris falsa," "vera," "minor" and "major" are now no longer needed. Effort angina and angina pectoris ambulatoria, in the light of present-day knowledge of oxygen deficiency of the heart muscle as the precipitating cause of the attack, are readily understood. It is evident, therefore, that coming to a complete standstill on the street is the most suitable therapy in the event of an attack of angina pectoris, since such action gives the heart an opportunity to adapt itself to the oxygen deficiency.

The Heritability of Diseases of the Intestinal Tract

Dr. H. Kalk discussed before the Berlin Medical Society the heritability of diseases of the intestinal tract. In from one fourth to one third of the families of ulcer patients there is a history of diseases of the stomach. There are, moreover, extensive family trees of so-called ulcer families. An ulcerous disease presents itself earlier and in a more severe form when the hereditary trend is strong. Likewise during the course of the disorder (site of the ulcer, hemorrhages, perforation) marked familial aspects are often observable, especially in enzygotic twins. Frequency of sensitive stomach and cancer of the stomach in ulcer families points to a hereditary organic inferiority of the stomach. In carcinoma of the intestinal tract, cases of marked similarity as regards age and site in several members of a family have been observed. In gastritis, the frequent occurrence of sensitive stomach or a tendency to indigestion in certain families makes a hereditary predisposition very probable. Achylia is of frequent occurrence in families with a prevalence of pernicious anemia. A tendency to diarrhea appears to be the result of an inherited easily disturbed vegetative nervous system.

On the side of liver disorders there is a familial prevalence of an increase of the bilirubin content of the blood (constitutional hyperbilirubinemia); the dominant hereditary hemolytic icterus has, however, no connection. Also a familial tendency to icterus is observed. In gallbladder disorders—that is, in the pathogenically closely associated stone disorders, inflammation and disturbance of function of the gallbladder—the symptoms, much as in ulcer disorders, appear relatively early if the hereditary predisposition is marked (usually on the female side).

Criminality in Twins

A previous letter (THE JOURNAL, March 31, p. 1098) dealt with research on the subject of criminality in twins. At a meeting of the Deutsche Gesellschaft für Vererbungswissenschaft, Dr. Heinrich Kranz, of the Kaiser Wilhelm Institut für Anthropologie, menschliche Erblehre und Eugenik, announced the results of further research in this field. The examinees were inmates of the Prussian prisons. Up to the present time, twenty-seven enzygotic and thirty-seven dizygotic twins have been studied. In seventeen of the enzygotic groups, both twins had received a sentence for a crime or misdemeanor; in ten of the groups only one of the twins had incurred a penalty. Agreement, or concordance, was evidenced in 63 per cent, and differentiation, or discordance, in 37 per cent. In eighteen dizygotic groups, both twins had received a sentence; in nineteen groups, only one twin (46 per cent and 54 per cent, respectively). The agreement, or concordance, does not run as high as in the researches of J. Lange and of Legras. In the penalized groups of twins the enzygotic groups reveal great similarity in the number of penalties incurred and as to the time when the first penalty was imposed, but less similarity in the severity of the penalties and in the nature of the crimes and misdemeanors. The dizygotic groups show, on the other hand, marked differences in all these points. In the groups composed of a male and a female, the differences between the

enzygotic and the dizygotic groups were less marked. The hereditary influence is therefore strongest with reference to the repetition of the crimes, and next with regard to the time of onset of the criminal conduct. The severity of the penalties and the type of crime committed depend more on environmental influences. Combining the results secured by J. Lange, Legras and Kranz in their examination of twin groups with respect to criminality, one finds thirty enzygotic twin groups concordant and thirteen discordant (70 and 30 per cent, respectively); twenty dizygotic twin groups concordant and thirty-nine discordant (34 and 66 per cent, respectively). A deeper perception of the differences and the similarities in the two groups will be secured when a detailed examination of the individuals has been made.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1934.

Prophylaxis of Ancylostomiasis

During the construction of the railway line from Florence to Bologna, which extended over several years, the prophylactic crusade against ancylostomiasis assumed great importance. The results of this crusade were recently announced in a report of the ministerial sanitary commission, of which Professor Alessandrini, director of the institute of parasitology of the University of Rome, was chairman.

It was necessary to overcome many difficulties in order to prevent the development of larvae in the environs of the workmen. Laboratories were established, and all the workmen were given preventive examinations at regular intervals, particularly those who were engaged in underground work. Likewise, first aid stations were created, with facilities for isolation of patients. The work-yards and the bunkhouses were provided with good drinking water, baths with hot and cold water, and stoves; and periodic disinfection of the premises was instituted.

Owing to the adoption of these measures, not a single case of ancylostomiasis was diagnosed during the construction of the railway, although ova of the helminth were often found in workmen who applied for work. Such applicants were either not employed or were given thorough treatment before they were hired.

Research on Rheumatism

At the International Congress on Rheumatism, in Moscow, Professor Chini of Rome presented a paper prepared in collaboration with Professor Lusena, on the pathology of rheumatism. He endeavored to show that no absolutely reliable evidence has been adduced to prove a streptococcic etiology of rheumatism or a focal and allergic pathogenesis. Nevertheless, in many cases of rheumatism corresponding to the streptococcic rheumatism of Graff, it would seem that the streptococcus played an important part, and these pseudo types of rheumatism find also a counterpart in experimental researches in which the presence of a chronic streptococcic focus, developed heretofore in the rabbit with arthrophile micro-organisms, gives rise to a systemic granulomatosis similar to the rheumatic manifestation in man.

The Academy of Medical Sciences

The Academy of Medical Sciences met recently in Palermo, under the chairmanship of Professor Giuffrè. Mottarella reported the results of his studies on the action of the hematopoietic hormone of the liver, prepared according to the Piazza technic in thirty-three cases of primary and secondary, and plastic and aplastic, anemia. The hormone was administered by the parenteral route in daily doses of 0.04 Gm. In almost

all cases, before the appearance of the blood changes, the patients experience a sense of euphoria. Later on, an increase in the number of erythrocytes, or often even a hyperglobulia, becomes manifest. In the primary forms there is observed a gradual disappearance from the circulation of the mature types and a readjustment of the corpuscular values. In these cases, however, when the administration of the hematopoietic hormone is discontinued, the anemia gradually reappears, whereas in secondary anemias, when the normal erythrocyte count is reached, it persists. Often also secondary effects are produced, such as a decrease in the size of the spleen and a clearing up of the skin. In some cases malaria parasites appear in the blood stream, owing to reactivation of a latent process. In some types of aplastic anemia, even prolonged administration of the hematopoietic hormone causes no improvement in the patient's condition. To these forms belong the anemias associated with cancer and those due to *Ancylostoma duodenale*, in which, however, the nonsusceptibility to hormones is transitory and disappears when the parasite is eliminated.

Piazza, on the basis of studies on the hematopoietic hormone isolated by him, pointed out the existence in the liver of a normal internal secretion that regulates the blood mass by means of a hormone that reacts on the hematopoietic organs. In the pathogenesis of the anemias this internal secretion must be kept in mind and the anemias themselves must be interpreted as hematopoietic insufficiencies due either to insufficient secretion by the liver of the blood-regulative hormone or to insufficient sensitivity to the hormone on the part of the hematopoietic organs. In the latter case, a more than normal stimulus is needed to produce hematopoiesis, a stimulus that the liver is unable to furnish.

Standardization of Methods of Anthropology

The international committee for the standardization of methods in anthropology and eugenics met recently in Bologna, under the chairmanship of Professor Frassetto, director of the Anthropologic Institute of the university. Professor Weninger, director of the Anthropologic Institute of the University of Vienna, spoke on the standardization of the methods of describing external somatic characters, and of the morphologic, anatomic and histologic complexes.

Professor Davenport, director of the eugenics section of the Carnegie Institution in Washington, proposed in his paper some new methods pertaining to anthropometry as applied to living subjects.

Professor Fischer, rector of the University of Berlin, suggested a questionnaire for the study of racial crossings, based on the analytic geneological method. The committee fixed the program of the activity of this new scientific body (S. A. S.). The society will publish a bulletin that will summarize all the publications dealing with anthropologic methodology. Contributions on the researches of societies and of individual investigators of all countries will be solicited. The material thus collected will be evaluated and coordinated and will serve as the basis for the compilation of the *Codex Anthropologicus*, which will be published by the S. A. S.

Dr. Galegari

The death of Dr. Giovanni Battista Galegari, member of the army medical corps, with the rank of lieutenant general, at the age of 74, is announced. He was for many years department head in the Ospedale di Milano. During the war he was director of the army medical corps and distinguished himself by the organization of the crusade against cholera and exanthematic typhus. He was the director, in succession, of the sanitary service of two armies. After the war he served for years as general director of the army medical corps, in the ministry of war.

Marriages

ROY ELVIN NICODEMUS, Danville, Pa., to Miss Geraldine Frances Sullivan of Elmira, N. Y., in New York, August 3.

ALBERT WARREN KITTS, Kennett Square, Pa., to Miss Ann Stambaugh of Philadelphia, in Middlesboro, Ky., recently.

GILBERT MORTIMER HALPERN, Honolulu, Hawaii, to Miss Dorothy C. Waters of Philadelphia, July 5.

JOHN LEONARD PROBASCO, Bloomington, Ill., to Miss Laurastine Welch of Lexington, August 18.

LOVICK WILSON PIERCE, Brunswick, Ga., to Miss Julia Carmichael Bell of Augusta, August 6.

JOHN ROBERT HARDING, Cincinnati, to Miss Esther Beatriz Garcia of Tampa, Fla., September 1.

ERWIN H. GRUMKE, Lime Ridge, Wis., to Miss Alma M. Schroeder of Madison, September 1.

CLIFFORD HOGAN STRIPLING to Miss Louise Bennett, both of Jacksonville, Texas, July 27.

LLOYD M. SOUTHWICK to Miss Ruth Tarpley, both of Edinburg, Texas, September 1.

CARL A. S. GUNDERSON to Miss Modesta Elmer, both of Madison, Wis., August 28.

MICHAEL GLEASON, Mendota, Ill., to Miss Celeste Brahaney of Buffalo, September 4.

HENRY H. SLATER to Mrs. Emma A. Johnson, both of Deer Park, Wash., July 7.

EDWARD MARKEY PULLEN to Miss Joan Travers, both of New York, June 30.

LESLIE LORAN HUNTLEY, Omaha, to Miss Mary Bergdall in Chicago, July 7.

ROBERT F. PURTELL to Miss Florence McCormack, both of Milwaukee, June 6.

ARNOLD W. HACKFIELD to Miss Margaret I. Donley, both of Seattle, July 10.

HENRY W. KASSEL to Miss Marie Lasley, both of Kansas City, Kan., June 9.

JOHN STEPHEN WITKOWSKI, Niagara Falls, N. Y., to Miss Kubala, May 30.

AMBLER CASKIE PRUNER to Mrs. Ross Shotwell, both of Omaha, recently.

JOEL W. BAKER to Miss Mary Elizabeth Russell, both of Seattle, July 26.

Deaths

Malcolm A. Bliss, St. Louis; Chicago Medical College, 1891; an Affiliate Fellow of the American Medical Association; member of the American Neurological Association and the American Psychiatric Association; formerly a dentist; at one time instructor in clinical psychiatry, Washington University School of Medicine; formerly member of the board of managers of the State Eleemosynary Institutions of Missouri; served during the World War; for many years on the staffs of the City Hospital, City Sanitarium, St. Luke's, Jewish and DePaul hospitals; aged 71; was found dead, September 4, of coronary sclerosis.

Charles Victor Roman, Nashville, Tenn.; Meharry Medical College, Nashville, 1890; emeritus professor of ophthalmology, otology and laryngology and professor of medical history and ethics at his alma mater; past president of the National Medical Association; co-founder of the John A. Andrew Clinical Society, Tuskegee Institute, Tuskegee, Ala.; at one time director of the department of health, Fisk University; member of the board of directors of the George W. Hubbard Hospital; aged 70; died, August 25, of cerebral hemorrhage.

Frederick W. Sears, Syracuse, N. Y.; Syracuse University College of Medicine, 1886; member of the Medical Society of the State of New York; professor emeritus of hygiene and sanitation at his alma mater; past president of the Onondaga County Medical Society; district state health officer; formerly health officer of Syracuse; for many years on the staff of the Syracuse Memorial Hospital; aged 75; died suddenly, August 31, in the Murray Hospital, Butte, Mont., of cerebral hemorrhage.

James Joseph Mooney, Buffalo; Niagara University Medical Department, Buffalo, 1890; member of the Medical Society of the State of New York and the American Laryngological, Rhinological and Otological Society; fellow of the

American College of Surgeons; on the staffs of the Buffalo Hospital of the Sisters of Charity, St. Mary's Infant Asylum and the Buffalo City Hospital; aged 69; died, September 4, of myocarditis and cardiac decompensation.

Thomas Weston Chester, Hartford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; member of the Connecticut State Medical Society and the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; on the staff of the Hartford Hospital; aged 68; died, August 22, in Columbia, of coronary thrombosis.

James Harvey Seymour of Los Angeles; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; formerly professor of surgery and clinical surgery, University of Southern California Medical Department; fellow of the American College of Surgeons; visiting surgeon to the Los Angeles General Hospital; aged 64; died, August 13, in the California Hospital following an operation for intestinal obstruction.

George Christian Schaeffer, Columbus, Ohio; Miami Medical College, Cincinnati, 1896; formerly assistant professor of ophthalmology, Ohio State University College of Medicine; fellow of the American College of Surgeons; served during the World War; on the staffs of the Children's, Grant, Mount Carmel and White Cross hospitals; aged 64; died, August 12, in Laporte, Ind., of carcinoma.

Ralph Witt Staley of Cincinnati; Medical College of Ohio, Cincinnati, 1901; member of the American Urological Association; assistant professor of urology, University of Cincinnati College of Medicine; served during the World War; on the staffs of the Cincinnati General and St. Mary's hospitals; aged 55; died, August 29, of heart disease.

Joseph Henry Branham, Rehoboth Beach, Del.; College of Physicians and Surgeons, Baltimore, 1879; at one time professor of clinical surgery, University of Maryland School of Medicine, Baltimore; formerly on the staff of the Franklin Square Hospital, Baltimore; aged 77; died, August 19, in the Beebe Hospital, Lewes, of bronchopneumonia.

James Brown Kinnaird, Lancaster, Ky.; Bellevue Hospital Medical College, New York, 1882; member, for many years treasurer and at one time vice president of the Kentucky State Medical Association; formerly secretary of the Garrard County Medical Society; for many years member of the city council; aged 77; died, July 24, of arteriosclerosis.

Alto Freed Mahoney, Monroe, N. C.; University of Louisville (Ky.) School of Medicine, 1911; member of the Medical Society of the State of North Carolina; served during the World War; medical director and superintendent of the Ellen Fitzgerald Hospital; aged 47; died, August 29, in a hospital at Charlotte, of pernicious anemia.

John B. Bond, Martin, Tenn. (licensed in Tennessee in 1907); for many years director of the bureau of vital statistics, state department of health; formerly health officer of Obion County; at one time superintendent of the Western State Hospital, Bolivar; aged 60; died, September 2, in Nashville, of heart disease.

Irving Ferguson Barnes, Oyster Bay, N. Y.; University of the City of New York Medical Department, 1890; member of the Medical Society of the State of New York; for many years medical inspector of the local schools; aged 67; died, September 6, in a hospital at Winsted, Conn., of cerebral hemorrhage.

Charles Lane Hinchey of Rochester, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1907; served during the World War; aged 58; on the staffs of the Strong Memorial Hospital, Monroe County Hospital and the Rochester General Hospital, where he died, August 26, of heart disease.

George Roeder, Omaha, Neb.; Omaha Medical College, 1892; member of the Nebraska State Medical Association; veteran of the Spanish-American War; formerly on the staff of St. Francis Hospital, Grand Island; aged 72; died, August 29, of pneumonia, following a fractured arm sustained in a fall.

Montgomery Thomas McCulloch, Elkton, Va.; Medical College of Virginia, Richmond, 1907; member of the Medical Society of Virginia, and formerly councillor of the Tenth District; past president of the Botetourt County Medical Society; aged 54; drowned, July 14, while fishing.

John Hancock Fuchs of New Rochelle, N. Y.; Bellevue Hospital Medical College, New York, 1889; veteran of the Spanish-American War; aged 65; on the staff of the New Rochelle Hospital, where he died, September 5, of carcinoma of the cecum and intestinal obstruction.

Clarence Earl Smart, Granville, Ill.; Chicago College of Medicine and Surgery, 1917; member of the Illinois State Medical Society; served during the World War; on the staff of St. Margaret's Hospital, Spring Valley; aged 45; died suddenly, August 30, of cerebral hemorrhage.

Harry John Thompson, Indianapolis; Harvard University Medical School, Boston, 1894; served during the World War; on the staff of the Veterans' Administration Facility; aged 65; died, August 12, at his summer home in Culver, of injuries received in an automobile accident.

Jesse Nathaniel Roe, Riverside, Calif.; University of Buffalo School of Medicine, 1908; member of the California Medical Association; formerly on the staffs of the Memorial, Lafayette, General and City hospitals, Buffalo; aged 62; died, August 4, of coronary thrombosis.

Oscar La Borde, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1905; member of the South Carolina Medical Association; on the staffs of the Columbia and South Carolina Baptist hospitals; aged 55; died, July 31, of chronic myocarditis.

Edward J. Libbert, Aurora, Ind.; Cincinnati College of Medicine and Surgery, 1889; for more than six years mayor of Aurora; secretary and past president of the Dearborn-Ohio County Medical Society; aged 65; died, August 2, of heart disease.

Clarence Hugh Harwood, Charleston, Ill.; University of Louisville (Ky.) School of Medicine, 1910; formerly mayor; medical director and part owner of the Oakwood Hospital; aged 51; was killed, September 1, in an automobile accident.

Warren F. Eckles, York, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; member of the Nebraska State Medical Association; on the staff of the Lutheran Hospital; aged 60; died suddenly, August 16, of angina pectoris.

John Willis Macy, Boston; State University of Iowa College of Medicine, Iowa City, 1928; member of the Minnesota State Medical Association; associated with the Lahey Clinic; aged 32; died, August 10, of ulcerative colitis.

Hansford Hall Milbee, Marshfield, Wis.; Trinity Medical College, Toronto, Ont., Canada, 1896; president of the Marshfield Clinic; aged 63; surgeon in chief at St. Joseph's Hospital, where he died, August 21, of heart disease.

Frank Joseph Patera, Chicago; Rush Medical College, Chicago, 1883; on the staff of St. Mary of Nazareth Hospital; aged 73; died, September 12, at Rhinelander, Wis., of hypertrophy of the prostate gland and chronic nephritis.

J. Ralph La Rue Redfield, Bangkok, Siam; Jefferson Medical College of Philadelphia, 1919; for many years connected with the public health department of the Siamese government; aged 49; died, July 17, of pneumonia.

Loftus Harley Francis, Cotati, Calif.; California Eclectic Medical College, Los Angeles, 1897; member of the California Medical Association; aged 75; died, July 27, of uremia, diabetes mellitus and adenocarcinoma of the prostate.

Jose Lisandro Medina, New York; University of the City of New York Medical Department, 1891; Nicaraguan vice consul; aged 70; on the staff of the French Hospital, where he died, August 25, of bronchopneumonia.

John W. Rodwell, Mocksville, N. C.; College of Physicians and Surgeons, Baltimore, 1895; member of the Medical Society of the State of North Carolina; aged 68; died, August 12, in a hospital at Charlotte, of nephritis.

Matthew Blair St. John, Bristol, Tenn.; Hospital College of Medicine, Louisville, Ky., 1903; aged 55; died, August 19, in the George Ben Johnston Memorial Hospital, Abingdon, Va., of acute dilatation of the heart.

Byron Francis Dawson, Los Angeles; University of Michigan Medical School, Ann Arbor, 1886; Jefferson Medical College of Philadelphia, 1897; aged 76; died, August 21, of arteriosclerosis and nephritis.

Joseph William Forshey, Lowell, Ohio; Starling Medical College, Columbus, 1903; member of the Ohio State Medical Association; aged 64; died, August 16, of heart disease, arteriosclerosis and hypertension.

Earl Wayne Gayer, Rochester, N. H.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; aged 52; died, August 16, of uremia, diabetes mellitus and chronic nephritis.

Rowland Rodman Robinson, Wakefield, R. I.; Harvard University Medical School, Boston, 1888; veteran of the Spanish-American War; aged 72; died, August 26, of carcinoma of the liver.

Abraham Le Witt, Hartford, Conn.; Cornell University Medical College, New York, 1900; member of the Connecticut State Medical Society; aged 62; died, August 11, of arteriosclerotic heart disease.

Samuel S. Gross, Denton, Kan.; Kentucky School of Medicine, Louisville, 1894; Ensworth Medical College, St. Joseph, Mo., 1909; aged 59; died, July 21, in Lawson, Mo., of a self-inflicted bullet wound.

Frederick Kenan, Upper Sandusky, Ohio; Starling Medical College, Columbus, 1906; past president of the Wyandot County Medical Society; aged 59; died, August 15, of coronary embolus.

Levi Samuel Long, St. Joseph, Mo.; Baltimore Medical College, 1892; formerly on the courtesy staff of the Missouri Methodist Hospital; aged 62; died, August 10, of cerebral hemorrhage.

Martin A. Kleinhans, Milwaukee; Milwaukee Medical College, 1902; aged 60; died, August 4, in St. Mary's Hospital, of chronic myocarditis, carcinoma of the sigmoid and intestinal obstruction.

John Joseph De Vereaux, Warrenton, Mo.; Barnes Medical College, St. Louis, 1907; also a pharmacist; served during the World War; aged 53; died, August 18, of coronary occlusion.

Paul Greene Rowand, New Canaan, Conn.; University of Vermont College of Medicine, Burlington, 1934; aged 24; died, July 3, in Montreal, Que., Canada, of aneurysm of the circle of Willis.

Oscar Charles Reeve, Oakland, Calif.; University of California Medical Department, San Francisco, 1905; aged 58; died, July 19, of Buerger's disease, arteriosclerosis and coronary disease.

Constantine S. Kryszinski, Chicago; Hering Medical College, Chicago, 1909; for many years on the staff of St. Elizabeth's Hospital; aged 47; died, August 1, of carcinoma of the lung.

Robert Lee Hammond, Frederick, Md.; University of Maryland School of Medicine, Baltimore, 1882; aged 72; died, August 20, of chronic nephritis, arteriosclerosis and myocarditis.

Thomas P. Birdsall, Newburgh, N. Y.; New York Homeopathic Medical College, 1878; aged 78; died, August 2, of cerebral arteriosclerosis, chronic nephritis and myocarditis.

Alfred Preston Bowen, Lynn, Mass.; Harvard University Medical School, Boston, 1904; formerly on the staff of the Lynn Hospital; aged 57; died, August 22, of heart disease.

Frank Eyre, North Henderson, Ill.; University of Pennsylvania School of Medicine, Philadelphia, 1876; aged 80; died, August 18, of heat exhaustion and myocarditis.

Richard Alexander Feild, Enid, Okla.; Bellevue Hospital Medical College, New York, 1880; aged 80; died, August 14, of pulmonary edema following cerebral hemorrhage.

Linneus Alton Roberts, Boston; Dartmouth Medical School, Hanover, N. H., 1893; aged 66; died, August 23, in the Charlesgate Hospital, Cambridge, of embolism.

Harvey Toor Olsan, Los Angeles; University of California Medical School, San Francisco, 1930; aged 29; died, July 5, of teratoma of the testicle with metastasis.

Oral De Witt Cunningham, Rockford, Ill.; State University of Iowa College of Medicine, Iowa City, 1924; aged 36; died, September 10, of agranulocytic angina.

J. Frank Heath, La Harpe, Kan.; University Medical College of Kansas City, Mo., 1905; aged 65; died suddenly, September 1, at Lane, of coronary thrombosis.

Marion Balfour Rockwell, Amherst, Mass.; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1899; aged 61; died, August 15, of carcinoma.

Jonathan Alfred Kackley, Pleasant City, Ohio; Columbus Medical College, 1882; aged 77; died, August 23, in the Wells Hospital, Cambridge, of heart disease.

L. William Ray, St. Louis; University Medical College of Kansas City, 1901; aged 64; died, July 23, in the Firmin Desloge Hospital, of heat prostration.

George Edward Routh, St. Paul; Miami Medical College, Cincinnati, 1878; aged 87; died, July 23, of myocarditis, bronchopneumonia and arteriosclerosis.

William Isaac McCowan, Navarre, Ohio; Medico-Chirurgical College of Philadelphia, 1909; aged 53; died, July 22, of carcinoma.

Louise Ross, Washington, D. C.; Boston University School of Medicine, 1907; aged 61; died, August 9, of pyelitis.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Dr. Gardner's Kidneyaid.—G. S. Cheney Co., Inc., Boston. Composition: Essentially pipsissewa leaves, althea root, sassafras bark and triticum. For Bright's disease, kidney, liver, bladder and blood disorders. Fraudulent therapeutic claims.—[N. J. 20936; June 1934.]

Ferrac.—Greenville Products Co., Greenville, Ala. Composition: Essentially sulphates of iron, aluminum, lime, magnesium, sodium and potassium, with water. "Tonic." Fraudulent therapeutic claims.—[N. J. 20937; June 1934.]

Exto-Rac.—Greenville Products Co., Greenville, Ala. Composition: Essentially sulphates of iron, aluminum, lime, magnesium, sodium and potassium, with water. For eczema, sores, douching purposes, etc. Not antiseptic. Fraudulent therapeutic claims.—[N. J. 20937; June 1934.]

Radium Cone No. 3.—Radium Cone Co., Long Beach, Cal. Composition: A brick containing radium, yielding 32.6 millimicrocuries of radon when left in one gallon of water eighteen hours. For indigestion, systemic poisons, rheumatism, etc. Fraudulent therapeutic claims.—[N. J. 20944; June 1934.]

P. C. Ointment.—Pacific Coast Proctological Clinic, Los Angeles. Composition: Essentially zinc oxide and volatile oils, including menthol, camphor and tar oils, in a petrolatum base. For hemorrhoids, rectal ulcers, boils, carbuncles, etc. Fraudulent therapeutic claims.—[N. J. 20945; June 1934.]

Nofal.—Lifol Co., Tulsa, Okla. Composition: Essentially coal tar creosote, rosin soap, alcohol and water. For eczema, falling hair, pyorrhea, etc. Fraudulent therapeutic claims.—[N. J. 20948; June 1934.]

THE CLAYTON E. WHEELER FRAUD

Another Piece of Mail-Order Quackery
Debarred from the Mails

Clayton E. Wheeler, M.D., of San Francisco and Los Angeles has for some years been carrying on a piece of mail-order quackery of the "gland-rejuvenation" type. In October, 1928, the California State Board of Medical Examiners revoked Wheeler's license to practice. In November, 1928, Judge Griffin vacated and set aside the Board's order. In May of this year, after an extensive hearing, the Post Office Department declared Wheeler's mail-order scheme a fraud and debarred it from the United States mails.

The first record in the files of the Bureau of Investigation of the Wheeler quackery was a full-page advertisement appearing in the Sunday magazine section of the Los Angeles Times. The advertisement purported to be a write-up by one Joseph D'Gee. According to this person—if there is such a person—Wheeler's treatments in chronic cases "gave favorable reaction immediately in some cases, bordering on the miraculous." According to the same report:

"Human efficiency is prolonged by improving physical strength and by the restoration of mental activity.

"The acuity of senses is regained and improved.

"Hardening of the arteries and high blood pressure are alleviated.

"Premature old age or actual senility is deferred.

"Mental depression is removed.

"Life's clock is turned back a number of years."

During the past ten years Wheeler has advertised extensively, his advertisements appearing not only in the Los Angeles Times, but in the San Francisco Examiner, Chronicle, Bulletin, Call and Post, and others. In addition to full-page newspaper advertisements, which must have cost Wheeler tens of thousands of dollars, he has put out booklets puffing himself and his alleged treatments. It should be mentioned at this point that in addition to his mail-order quackery, Wheeler apparently has conducted so-called clinics. In the case of the clinics, if his advertise-

ments are to be believed, his "treatment" consisted of the "injection in the walls of the abdomen of the gland needed."

As the injection treatment was obviously unsuited to the mail-order scheme, Wheeler sent to his dupes through the United States mails suppositories which were purported to contain certain glandular substances. The suppositories, which were to be used per rectum, according to Wheeler's own claim at the federal hearing, contained the following desiccated material:

Thyroid gland tissue.....	¾ grain
Whole pituitary tissue.....	1½ grains
Testicular substance.....	5 grains
Liver substance.....	5 grains
Prostatic substance.....	2 grains
Suprarenal Substance.....	1 grain

The quantities given were said to represent the amount in each suppository and totaled, it will be noted, 14¾ grains. The government analyst, however, who testified at the hearing declared that actually there was only 1½ grains of protein matter in the suppositories that Wheeler sent out, and in at least one of the samples examined, the animal tissue was found to be largely composed of striated muscle fibers and not glandular tissue at all!

In addition to twenty-six suppositories that constituted the "treatment," Wheeler also sent to his victims four tubes containing semi-liquid matter. The tube had a small rectal tip and the instructions were to use one tube a week, injecting the material into the rectum. According to the government analyst, the tubes contained some protein matter, with a small amount of phenol (carbolic acid) as a preservative. The suppositories, it should be added, contained, in addition to their animal tissue, some strychnine and brucin.

In Wheeler's booklets he published a picture of San Quentin prison and under it carried the statement: "Where Dr. Wheeler conducted research and gland experimental work with excellent results." It was brought out at the hearing that Wheeler never had any official connection with San Quentin prison and never conducted any research or experimental work in that institution. In fact, Wheeler admitted at the hearing that he had never performed any such operations at San Quentin.

Elsewhere in the same booklets Wheeler devoted a whole page to pictures of laboratory equipment which was described in the legend under the pictures as "Dr. Wheeler's Experimental Laboratory for Goat Serums." The facts of the matter were, according to information furnished by Dr. Pinkham of the California State Board of Medical Examiners, the pictures were actually those of a cocoa-butter suppository manufacturing plant of the A. E. Schmidt Company of San Francisco. The equipment had no more to do with "goat serums" than it had to do with making diphtheria anti-toxin.

Still elsewhere in the same booklets were pictures of Catalina Island and of some of the wild goats that are found there. Wheeler gave the impression that from 40,000 to 50,000 wild goats on Catalina Island had been made available to him for his gland work. On another page of the same booklet were pictures of Guadeloupe Island, showing huge numbers of "goats awaiting transportation." According to Wheeler, he had entered into a contract with "the owners of practically all the herds of wild goats on Guadeloupe Island" for his exclusive use. On still another page Wheeler reproduces a photograph of his private yacht—Yes, quackery pays!—in which he claimed to make "frequent trips to Guadeloupe Island." In this connection the following quotation from the memorandum of the Solicitor of the Post Office Department to the Postmaster-General in the Wheeler case is of interest:

"With respect to the statements in respondent's advertising literature relative to huge herds of wild goats on Catalina Island being made available to him, it appears that the testicular substance which Dr. Wheeler claims to use, does not come from such herds. The statement in the literature with respect to obtaining goats from the Island of Guadeloupe is also false, as Dr. Wheeler admitted to the post office inspector that he was not obtaining goats from that island."

The advertising, of course, carried the usual collection of testimonials. From these the public was led to believe that Wheeler's treatment would not only restore youth, but would cure pernicious anemia, arthritis, asthma, bronchitis, rheuma-

tism, lumbago, bronchial trouble, diabetes, paralysis agitans, sciatica, high blood pressure, heart trouble and other disorders and diseases.

It is worth noting in this connection that Wheeler claimed—via the testimonials—to cure angina pectoris. The government report shows that Wheeler did not believe sufficiently in his own magic to use it upon himself. Wheeler has suffered from angina pectoris for several years, having three or four attacks yearly, but always relies on the treatment prescribed by physicians for the relief of his attacks!

Following the hearing, Judge Karl A. Crowley, Solicitor for the Post Office Department, declared that Wheeler's scheme was one for "obtaining money through the mails by means of false and fraudulent pretenses, representations and promises." He recommended the issuance of a fraud order against "Clayton E. Wheeler, A.B., M.D., Dr. C. E. Wheeler, Dr. Clayton E. Wheeler, Dr. Clayton E. Wheeler, Surgeon, Clayton E. Wheeler, M.D." at San Francisco and Los Angeles. Acting Postmaster-General W. W. Howes issued such an order May 2, 1934.

Correspondence

A DEFENSE OF SUPRAPUBIC PROSTATECTOMY

In a recent contribution to THE JOURNAL (Young, H. H.: Transurethral Resection of the Prostate, THE JOURNAL, June 9, p. 1913) a slight error credits me with a death rate of 40 per cent following the operation of suprapubic prostatectomy. The error would not be worth comment had it not elicited from a number of kindly disposed urologists protests that exhibit a misconception of certain social phenomena that underlie the ancient dispute between the prostatectomists, perineal and suprapubic, as well as the modern antagonism between the champions of prostatectomy and those of prostatic resection.

Operations owe their initial vogue to advertisement. The adjective "conservative" attributed by Dr. Young to the operation of perineal prostatectomy, for example, conveys an aroma of sexual immortality most enticing to the aging male. In the history of prostatic surgery there have been a large number of operative procedures (most of them covering incompetence to do a successful prostatectomy) popularized through the enthusiasm of their originators. The medical journals of a generation ago tell us that castration was then an ideal! Thereafter came Bottini, Chetwood, perineal prostatectomy, the Young punch, and so on.

But, vain mortals, we do not report our failures! No one with a 40 per cent prostatectomy mortality will be rushing into print. We cease to perform those operations that give us bad results and often enough we find it untactful to publish any criticism of them. Thus castration, the Bottini and the Chetwood operations—not to mention the moribund—have died what might be termed a natural death.

Alas, it seems as though perineal prostatectomy, the most beautiful of all the prostatectomies, is also doomed! Surely no one would prefer a two-stage suprapubic prostatectomy, even the modern, clean operation, with its longer hospitalization and correspondingly higher mortality (for to Dr. Young himself we owe the observation that the senile prostatic must be got out of bed) to the beautiful dissection of which Dr. Young is master—except for the fact that in other than the most skilful hands the perineal operation is too uncertain. We present our regrets to Proust, to Albarran, to Wildbolz, to Hinman, to all the other honest gentlemen who have labored so well between "wind and water." They have opened a delightful operative field, which with the disappearance of perineal prostatectomy, vesiculectomy, radium implantation, threatens to become a lost region.

But prostatic retention must be treated by many surgeons who have not had the good fortune to learn or the constant opportunity to practice perineal operation with due respect for the rectum and for the sphincters. Such men must operate "above the bone." They must cling to that operation which alone provides fool-proof drainage; in which no slightest slip entails the dangers of rectal perforation, urinary dribbling, prostatic sepsis; and which gives an adequate insurance against pelvic infection.

Dr. Young mentions again (*loc. cit.*) his surprising record of 198 successive perineal prostatectomies without a death. Other operators, perineal, suprapubic, resecting, have usually stopped at 100 deathless cases, for there comes a time when one attempts too much and the record falls. The wise prostatic operator will do the best he can for each patient by whatever operation he prefers, considering what the patient's life will be worth to him if he survives, as compared to its worth without operation.

As a matter of fact, none of us operate on all our prostatic patients. Some of them escape operation to die of intercurrent disease, some die of their retention before operation is reached. Operative statistics are but part of the picture, sometimes an insignificant part except so far as they conserve our professional vanity. The social aspects of the disease are, on the contrary, of the greatest interest. What operation can best be done by the greatest number of operators? What should be our treatment for the wealthy, for God's friends, the poor?

My impression as to the answer to the first question has been suggested. Time will tell. But as to the second—which gets us back to the "40 per cent mortality"—I have more positive views. During the period in command of the Bellevue Hospital Urological service (1915-1924) I felt that the prostatics who entered that city institution, wrecked by privation and utterly bad risks as many of them were, should be afforded treatment that would send them out cured, if at all. They could not afford post-hospital care. Many of them had no families; many, indeed, no proper homes. To discharge them from the hospital with catheter or suprapubic tube seemed as pitiful as to send them forth dribbling or with a cloaca. A study of our Bellevue statistics led to the publication of "The Prospects of the Prostatic" (Keyes, E. L.: *Pennsylvania M. J.* 33:672 [July] 1930). Evidently our elucidation at that time was inadequate. We venture to try again.

THE PROSPECTS OF THE PROSTATIC WITHOUT OPERATION

The following data are from the case books of private patients treated by my father or by Dr. Fuller (and a few by Dr. Chetwood or myself) before 1900. Operations were few and performed only in advanced cases. The operative mortality was about one in three. (Freyer, passing his finger nonchalantly from rectum to suprapubic wound *but providing "stove-pipe" drainage*, was the first to bring the mortality of suprapubic prostatectomy within reasonable limits.) Our cases number about 240.

The expectation of life from the first symptom to chronic complete retention was

For patients under 50 years of age at onset.....	6 years
For patients between 50 and 60.....	4 years
For patients over 60.....	2 years

No attempt was made to estimate the expectation of catheter life. It seemed brief and miserable.

One hundred and twenty patients (about 50 per cent) had acute complete retention of urine at some time, and in about half of them this was the initial symptom.

Twenty-seven of these acute retentionists resumed approximately normal bladder function. They averaged 57 years of age at the time of the acute retention. This usually occurred within the year, though four patients insisted that they had gone ten years between retentions.

Fifty-seven went into incomplete retention. Their average age at the time of the acute retention was 60 years. The oldest of this group was 73.

Thirty-six remained in complete retention. The average age was 70.

These age differences are attributable rather to progressive weakening of the bladder muscle with age than to increasing size of the prostate. The rate of growth of prostatic hypertrophy varies greatly, but the gland seems usually to attain its maximum size at about the seventieth year. Conceivably sexual peace settles on it by this time—the palpable size of the prostate being dependent in some measure on congestion.

PROSTATIC MORTALITY BEFORE AND
AFTER PROSTATECTOMY

At the Bellevue Hospital between 1915 and 1924 there were eighteen operating surgeons on the staff, including the residents who were doing their first prostatectomies. The favored operation was two-stage prostatectomy, though many one-stage operations and a few perineal operations were done. As stated, every effort was made not to send the patients out with catheter or suprapubic tube. There were 175 prostatics—

- 175 prostatics
- 26 not operated on, of whom 14 were relieved and 12 died
- 98 suprapubic drainage, of whom 33 died and less than a dozen left the hospital with permanent drainage; the remainder had prostatectomy
- 110 prostatectomies, in which 40 died. (Is this the "40 per cent"?)

The total mortality at Bellevue, therefore, for eighteen operators, many of them beginners, and on the worst possible material, was 35 per cent for the prostatectomies and 49 per cent for the prostatics.

Six years passed before I could face publication of this record. Then, learning that in the city hospitals of two other large cities the prostatic (not the operative) mortality was, respectively, 45 and 47 per cent, and having got some notions that promised to better this sad state of affairs, I published the statistics together with a more recent series, consolatory in character, the work of myself and three other surgeons at St. Vincent's Hospital.

The patients in this St. Vincent's series were mostly private patients. Almost all were operated on by two-stage prostatectomy.

- There were 76 prostatics
- 10 were not operated on, of whom 3 died and 7 left the hospital relieved
- After suprapubic drainage 4 died and 1 refused prostatectomy
- 61 prostatectomies resulted in 53 cures, 5 partially relieved, 3 deaths

This brief series can therefore be reported as showing 5 per cent prostatectomy mortality, or 14 per cent mortality among prostatics, or as 70 per cent cures; 10 per cent left the hospital and 10 per cent died before prostatectomy; 10 per cent died or were not wholly relieved by prostatectomy.

"The Prospects of the Prostatic" achieved its purpose of drawing attention to the prostatic problem. Dr. Stevens has markedly improved the prostatic prognosis at Bellevue. He has kindly permitted me to publish his results for 1926-1934. They are as follows:

- 813 prostatics, of whom 188 (22.6 per cent) died
- 614 were operated on, of whom 131 (21.3 per cent) died
- 199 were not operated on and 57 died shortly after admission
- 56 had only a vasotomy, of whom 27 died
- 15 perineal prostatectomies, after which 3 (20 per cent) died
- 208 one-stage prostatectomies, after which 19 (9.6 per cent) died
- 272 suprapubic cystotomies, after which 60 (22 per cent) died and
- 33 returned home, while:
- 172 had suprapubic cystotomies, of whom 19 (10 per cent) died

In the year 1931 I published a technic for two-stage prostatectomy, recording 113 prostatectomies (personal) with 6 (5 per cent) deaths (Keyes, E. L.: The Preventable Infections Incident to Preparing for Prostatic Operations, *New England J. Med.*, 204:906-910 [April 30] 1931). Beer has noted that the

5 per cent mortality in his clinic is not far from the normal expectancy.

With clean suprapubic wounds our results both as to stay in the hospital and mortality are constantly improving. We can now teach prostatectomy without disaster. My associate Dr. McLellan has performed his first thirty-four two-stage prostatectomies with one death due to cancer of the rectum.

Upon this harmony irrupts the criticism of Dr. Young:

With the passage of time the ultimate mortality of the suprapubic route has been shown to be much too high. The preliminary cystotomy alone has presented a sizable mortality. Keyes has frankly acknowledged a mortality of 40 per cent in his series of suprapubic prostatectomies. . . .

We feel he leaves a false impression.

EDWARD L. KEYES, M.D., New York.

[The statement by Dr. Keyes was referred to Dr. Hugh H. Young, who replies:]

To the Editor:—When I stated that Dr. Keyes' mortality was 40 per cent, I was in error, and I apologize. I should have said his clinic, as he states that "in a hospital in which a series of patients operated upon under my eye by 18 different surgeons, there were 175 patients, chiefly operated upon by two-stage prostatectomy and 85 (49 per cent) did not leave the hospital alive. Among these 26 were not operated upon, and 12 died. Ninety-eight were drained suprapubically and 33 died. One hundred and ten prostates were removed with 40 deaths." Again, in his textbook, he states, "In free city hospitals . . . the total mortality approaches 50 per cent." In another paper he says, "At Bellevue Hospital . . . the mortality is 49 per cent."

Dr. Keyes says, "Dr. Young mentions his surprising record of 198 successive perineal prostatectomies without a death. Other operators . . . have usually stopped at 100 deathless cases. . . . The wise operator will do the best he can for each patient . . . considering what the patient's life will be worth to him, if he survives, as compared to its worth without operation."

The suggestion is that I picked my cases so as to avoid mortality. Dr. Lloyd G. Lewis has assisted me in studying again the period between Feb. 20, 1919, and Sept. 18, 1922, during which I carried out 198 perineal prostatectomies without a single death, all patients leaving the hospital. Eighteen were between 75 and 85 years of age; ninety-eight had cardiac disease. We found that during this period there were nine of my patients who were not subjected to prostatectomy. Eight of the patients received no operative treatment. Three left to be operated on at home. The fourth, aged 82 years, senile, had a bad heart and kidneys and was sent home to die in a few days. The fifth had dementia and had only slight prostatic obstruction; he was consigned to the psychiatric department. The sixth was one whose symptoms were so slight that no operation was advised. The seventh and eighth died of uremia, and autopsy showed pyonephrosis. Another severely ill patient had suffered false passage of a catheter before admission. Suprapubic cystostomy for drainage was carried out. He died ten days later, and autopsy showed abscesses, retrovesical and renal. This total of 207 cases of benign prostatic hypertrophy represents all of my own patients who were in the hospital during this period. Among the 207 cases there were three deaths (1.4 per cent).

During the same period of two and a half years, 269 cases of prostatic hypertrophy were admitted to the public wards and the private services of the three other members of the visiting staff. Of these, 257 patients were subjected to perineal prostatectomy by eighteen different operators, with twelve deaths (4.7 per cent). Three had suprapubic cystostomy for drainage with no deaths. Ten received no operative treatment, with six deaths. These were cases that failed to respond to

preliminary treatment. Therefore, among the total number of "prostatics" (269 cases) cited there were eighteen who died, a total mortality of 6.6 per cent. It is interesting to note that the number of surgeons was the same as the eighteen referred to by Dr. Keyes, "who operated under his eye" on 110 patients by suprapubic prostatectomy with forty deaths, and that the total mortality for the 175 "prostatics" was 49 per cent.

If public ward patients operated on by the visiting staff are excluded, during this period ninety-two public ward patients were operated on by fifteen residents, assistant residents or interns, with four deaths, a mortality of 4.1 per cent. In addition, they performed two suprapubic prostatectomies with no deaths. There were six public ward patients too ill for operation, and four of these died. If these are added to the record of the residents, the total of these public ward "prostatics" admitted during this 2½ year period is, therefore, 100, and the total number of deaths eight, or 8 per cent, as compared with the 49 per cent reported by Dr. Keyes.

It is only fair to state that I have had "unlucky" periods with a varying mortality. In a twenty year period that was carefully studied (Young, H. H.: *Surg., Gynec. & Obst.* 36: 589 [May] 1923) I performed 1,049 perineal prostatectomies with a mortality of 3.4 per cent. Fifty per cent of these patients had some form of cardiovascular disease, and 144 were between 75 and 95 years of age.

Dr. Keyes remarks: "The beautiful dissection of which Dr. Young is master . . . in other than the most skilful hands, the perineal operation is too uncertain." Thanks, but why too uncertain for any but the "most skilful hands?" Our fifteen residents and interns, doing their first work on the prostate, had a mortality of 4.1 per cent, as already referred to.

Again: "They [the surgical profession] must cling to that operation which alone provides fool-proof drainage, and in which no slightest slip entails the dangers of rectal perforation, urinary dribbling. . . ." In 1,264 operations by nineteen operators there have been nine rectal injuries (0.7 per cent), hardly enough to be a bugaboo. Surely the up-hill suprapubic drainage is no more fool proof than the down-hill perineal route, which drains the prostatic cavity directly to the outside. In fact, it is one of the great reasons why perineal prostatectomy is safer than the suprapubic. If suprapubic drainage is fool proof, how about its 33 per cent mortality in the ninety-eight cases he reports? As to dribbling: In 450 cases of perineal prostatectomy, I found only three cases of incontinence (Young, H. H.: *The Ultimate Results of Prostatectomy*, Memoirs and Bulletins of the International Congress, London, 1911).

Again, "Alas, it seems as though perineal prostatectomy, the most beautiful of all the prostatectomies, is doomed!" The perineum "threatens to become a lost region" to surgery. "Prostatic retention must be treated by many surgeons, who have not had the good fortune to learn . . . the perineal operation. . . . Such men must operate above the bone."

If perineal prostatectomy is doomed, along with it will go other perineal operations, such as those for cancer of the prostate, stones in the prostate, ruptures of the prostatic urethra, cysts of the prostate, abscesses and tuberculosis of the prostate and seminal vesicles, and many other rarer conditions, which can be accurately attacked only through the perineum. Is the radical operation for carcinoma of the prostate, by which over 50 per cent of the cases have been cured, to be given up? Are surgeons to leave unaided those extensive cases of genital tuberculosis, with involvement of the seminal vesicles and prostate, a considerable percentage of which have been cured, even though it was necessary to remove also the kidney in one third of the cases? Are those young men, carrying hundreds of stones in the prostate, and with grave symptoms, both local and sexual, to be left in their misery,

simply because the surgeon unblushingly states that the perineum is for him a terra incognita, and that he is unable to master the anatomy and physiology of this region, which many a hospital intern has learned without much difficulty? Should the surgical profession, because of ignorance or ineptitude, give up perineal prostatectomy, "the most beautiful of all prostatectomies" according to Dr. Keyes, regardless of the fact that it has been conclusively shown, not only by studies of the records of eighteen operators in my service, but also by the reports of Cecil, Hinman, Davis, Deming, Phifer, Wildbolz and others that the mortality is much less than that reported by Dr. Keyes? Should not every urologist pretending to competence in all urologic surgery be the master of the perineum, through which alone so many diseases can be attacked?

Why this constant reiteration of the difficulties of the perineal route? The technic is not only "beautiful" but indeed simple. The principal requisites are that the patient be in a proper position, with the pelvis flexed, the perineum elevated, so that the operator may see every step of the operation; that the central tendon be isolated by blunt dissection on each side, and that it be divided well away from the rectum, which should be constantly visible; that the recto-urethralis muscle be isolated, picked up with forceps and divided close to the membranous urethra, well away from the rectum, under visual guidance. The operator should then divide the posterior layer of Denonvilliers' fascia close to the apex of the prostate and then push it backward, carrying with it the rectum, which is thus efficiently protected by this strong fascia. If this technic is followed, there is practically no danger of injuring the rectum. The external sphincter can thus be avoided, eliminating incontinence. For these reasons I dubbed my operation "conservative," and because the ejaculatory ducts were avoided. Dissection between the two layers of Denonvilliers' fascia separates not only the prostate but also the seminal vesicles and ampullae of the vasa deferentia from the rectum, thus making not only conservative perineal prostatectomy but also the radical operation for cancer, and total extirpation of the vesicles, vasa deferentia and lateral lobes of the prostate for tuberculosis easy to perform without any danger of injuring the rectum. It is only necessary for the surgeon to have anatomic knowledge and good eyes to recognize the surgical landmarks, muscles and fascia, and that he have sufficient pride to avoid inexcusable mistakes. It is wise for all surgeons, before attempting operations through the perineum, to practice on the cadaver. This should give the knowledge and skill required for accurate operative technic.

As noted in the statistics, suprapubic drainage is rarely employed. A retained catheter is usually sufficient. Urethrotomy through the bulbous urethra is a safer substitute for suprapubic drainage, which, Dr. Keyes has shown, is accompanied by so high a mortality. With proper care the urethral catheter is usually entirely satisfactory.

The principal factors in the safe treatment of "prostatics" are:

great care in preoperative treatment and instrumental study in each case; gradual decompression, by which immediate emptying of overdistended bladders, so often accompanied by collapse, uremia and early death is avoided; forced internal hydrotherapy and appropriate cardiovascular therapy to stimulate renal function; accurate knowledge of the conditions present by phenolsulphonphthalein tests, blood chemistry, cystoscopy, and other means; continuation of the preoperative treatment until renal and cardiovascular studies indicate that the optimum of improvement has been reached, and operation may be carried out as safely as possible; the use of intravenous therapy—salt solution or dextrose to stimulate renal function, and 1 per cent mercurochrome in 12 to 15 cc. doses into the veins, to combat septicemia; the early removal of all packs and tubes from the wound, which is frequently lavaged with mild antiseptics, such as boric acid and mercurochrome; the avoidance of urethral instrumentation (if possible) during convalescence.

It is by the gradual development of these safeguards that the low mortality of perineal prostatectomy, even in serious cases, has been attained. Such results with perineal prostatectomy are not solely attainable by one institution and its graduates but can be accomplished by all who take the proper interest, time and trouble to learn the anatomy and the operative technic of the perineal route, and the laboratory and clinical studies that insure success. These comments apply also to those who have deserted suprapubic prostatectomy to take up transurethral resection, even in large hypertrophies, manifestly an incomplete operation in such cases.

HUGH H. YOUNG, M.D., Baltimore.

SURGICAL TRADE CODE FORBIDS REBATES

To the Editor:—As secretary of the American Surgical Trade Association, which sponsored the Code of Fair Competition for the Surgical Distributors Trade, approved on Aug. 24, 1934, I wish to call the attention of the members of the medical profession to certain provisions of this code, which are of special interest to members of the medical profession.

This code contains the trade practice provisions prohibiting what is generally called commercial bribery which are found in almost all codes of fair competition. These provisions are contained in section I of article VIII of the Code of Fair Competition for the Surgical Distributors Trade and read as follows:

Section 1. No member of the trade shall give, permit to be given, or offer to give, anything of value for the purpose of influencing or rewarding the action of any employee, agent or representative of another in relation to the business of the employer of such employee, the principal of such agent, or the represented party, without the knowledge of such employer, principal or party. Commercial bribery provisions shall not be construed to prohibit free and general distribution of articles commonly used for advertising except so far as such articles are actually used for commercial bribery as hereinabove defined.

At the public hearing at Washington, D. C., before the deputy administrator assigned to this code, the giving of commissions to physicians for referring patients to surgical appliance dealers was discussed at length. It was the consensus of those discussing the practice that the giving of commissions to physicians added to the cost to the patient of such articles: that such patients are generally of limited or no earning capacity and that such practice was probably the most indefensible form of commercial bribery.

While probably the general prohibition of commercial bribery covers the giving of secret commissions to physicians, so as to remove any doubt on this point a specific provision was placed in the section on commercial bribery of the Surgical Distributors Trade Code declaring that physicians offering or recommending to their patients the purchase of products of the trade are the agents of their patients. This provision of the code is as follows:

For the purposes of this Section, physicians, surgeons, and other professional men and women shall be considered agents or representatives of their patients and/or clients when they offer or recommend the purchase of products of this trade.

The Code of Fair Competition of the Surgical Distributors Trade, therefore, makes a practice which was previously highly unethical now unlawful and punishable by a fine of \$500 for each violation under the provisions of the National Industrial Recovery Act.

I ask your aid in bringing this provision to the attention of the medical profession as widely as possible so that there will be no violation of this provision of the Code of Fair Competition of the Surgical Distributors Trade through lack of knowledge on the part of members of the medical profession.

FRED B. HOVEY, Chicago.

Secretary, American Surgical Trade Association.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SNAKE-BITE

To the Editor:—Are poisonous snakes known to live in New Jersey near the Delaware Water Gap and in New York in the Catskill Mountains? Is antivenom serum effective? What firm produces the most reliable serum? What animals are used to produce antivenom serum? This is important for anaphylaxis; I have in view a family sensitive to horse serum. Please omit name.

M.D., New York.

ANSWER:—In both places, the timber rattlesnake and the copperhead are found. In case of snake-bite, local treatment should first be given. A tourniquet is applied, not too tightly, above the site of the bite and should be moved upward as the swelling spreads. Short cross-shaped incisions are made at the site of the fang marks and others an inch apart around the edge of the swelling. As the swelling spreads, further incisions are made. Suction is applied to these incisions, either by a suitable mechanical apparatus or by the mouth, if this is free from sores. Venom is not absorbed from an intact mucous membrane and is destroyed in the stomach if swallowed. The suction is continued for fifteen minutes and repeated at hourly intervals for several hours. The wound must be carefully covered between times with a clear cloth or gauze soaked in 2 per cent salt or epsom salt or an antiseptic that does not coagulate albumin. A physician or hospital should be reached as soon as possible. Violent exercise, even fast walking, and alcoholic stimulants are to be avoided, as they increase the rate of absorption of the poison.

Antivenin is injected as soon as the local treatment is initiated. Not less than the full contents of one syringe should be given at once and, in case the snake is large or the victim is a child, two or more should be given immediately. About half of the dose is injected subcutaneously in a ring about the local swelling, to antagonize the local effects of the venom; the remainder in a muscle high up on the bitten limb or subcutaneously over the abdomen or between the shoulder blades. If constitutional symptoms are not relieved within an hour, further injections of antivenin should be given as indicated.

Antivenin against the bites of North American snakes is made by the Mulford Biological Laboratories, Sharp and Dohme (Glenolden) Philadelphia, supplied as Antivenin (Nearctic Crotalidae) or North American Anti-Snakebite Serum. It is prepared only from horse serum. It is a polyvalent antivenin, prepared against the venoms of all the poisonous snakes of North America, except the unimportant coral snake. It is effective if given in adequate dosage. From one to four syringes will be sufficient in most cases for such poisonous snakes as occur in the northern part of this country.

INJECTION OF VARICOSE VEIN

To the Editor:—About three months ago, I had injected 3 or 4 minims (0.2 cc.) of 5 per cent sodium morrhuate into a leg vein, when the vein suddenly disintegrated, allowing the solution to become free in the tissues. The patient had so much pain that she refused to allow any protective measures. Since then an excruciatingly painful ulcer has formed, which refuses to heal. The patient says it is more painful and troublesome than the four year old varicose ulcer which I did succeed in closing. Please advise on the treatment of this obstinate ulcer. Also give pointers on the prevention of such an accident and the steps to be taken at the time of such a rupture. What can I do for the extreme pain locally? Please omit name and address.

M.D., New York.

ANSWER:—From the description it is not quite clear whether the injection of sodium morrhuate was deposited outside the vein or whether an actual necrosis of the wall of the vein took place at the site or at some distance from the injection. The latter mishap does not occur suddenly but several hours or days after the injection. When the patient complains of a sudden pain during or right after the injection, the solution in all probability is deposited in or outside the vessel wall. In such an event it is wise to stop further injections immediately and inject 5 cc. of blood taken from an adjoining vein into the area of skin, which blanches and balloons out. A protective dressing is applied and an electric pad is used to hasten absorption of the hard mass. Should the skin break down, an immediate excision not only of the ulcer but of the entire indurated mass results in a primary union. When excision is delayed until secondary infection takes place, this must first be cleared up by hot boric acid dressings and immobilization. One per cent nupercaine ointment may alleviate the pain. The success of complete excision and primary closure requires surgical experience and may necessitate skin grafts.

ARTHRITIS WITH DIABETES

To the Editor.—I have a diabetic patient, a man, aged 62, who has an acromioclavicular bursitis (left) and a neuritis involving the left upper extremity. The neuritic symptoms began about four months ago and disappeared under treatment with sodium salicylate and control of the diabetic condition. About one and one-half months ago the patient fell on his left shoulder. Since that time he has complained of severe pains in the left shoulder, forearm and wrist and at the insertion of the deltoid, and sensations of pins and needles in the finger tips. The pains travel from one place to another. There is marked limitation of motion of the shoulder because of pain. The patient describes the pain in the arm and forearm as a continuous gnawing and drawing sensation. When heat from a therapeutic lamp is used the pain almost ceases, but it returns as soon as the heat is removed. The pain is so severe and annoying that only about one to two hours of sleep is gotten at night and that is due to the use of strong narcotics, as pantopon and morphine sulphate. Iron cacodylate intravenously (five doses) and diathermy treatments over a period of three weeks gave no results. On one occasion partial relief from the gnawing pain was obtained by the use of sodium salicylate, 10 grains (0.65 Gm.), acetylsalicylic acid, 5 grains (0.3 Gm.), amidopyrine, 3 grains (0.2 Gm.), and codeine, one eighth grain (0.008 Gm.), every two hours as required. The relief lasted during the period of medication, but when the symptoms of overdosage (ringing in the ears) developed, medication was stopped and the pain returned. Roentgen examination reveals a small amount of calcification of the bursa. Do you think that nonspecific protein injections such as intravenous administration of typhoid vaccine would be of help, considering the age of the patient? What treatment would you advise and what is the prognosis? At this time the diabetic condition is uncontrolled. There is a small amount of atrophy of the muscles in the arm which I think is due to nonuse. Sensations are normal, the neurologic examinations are negative. As I have stated, the salicylates relieved the neuritic pain for one day, but the pain in the shoulder due to the bursitis was not affected. It seems that the neuritic pangs are the ones that prevent sleep. The electrocardiogram gave no evidence of coronary disease, there was a left ventricular preponderance. The roentgen examination of the spine was negative. Please omit name.

M D, New York

ANSWER.—The appearance of arthritis in patients with disturbed sugar metabolism is interesting and the relation of the two conditions is unknown. The diabetes must be kept under control. Osteo-arthritis involving the cervical spine, especially the fifth and sixth vertebrae, is not always demonstrable by roentgen examination, especially in the early stages. There may be an exudate in the vertebral foramina caused by pressure on the spinal nerve roots.

The treatment includes a combination of factors that may be effective. Vaccines are worth trying and should be given in small doses at intervals of from four to five days, until the pain is under control. All drugs except codeine by mouth or salicylates in large doses by rectum should be stopped.

In the treatment of this case the application of heat and arm traction should be considered. If this is unsuccessful, gentle manipulation under ether anesthesia following gas induction should be done. Physical therapy, including radiant heat, gentle massage and diathermy should follow. If diathermy exaggerates the symptoms, it should be discontinued.

STERILITY

To the Editor.—A woman, aged 36, in good physical condition, married five years, conceived first in 1930 and aborted ten weeks later. She aborted again the following year and since then has failed to conceive altogether. The Rubin test was done on two occasions and was found negative. The husband is highly emotional but otherwise in good health. Semen examination under a slide shows active spermatozoa for over two hours. It may be important to add that the woman received a curettage after the first abortion but not after the second. What would be the rational procedure in such a case? Would it be worth while to try artificial impregnation? What knowledge can be obtained from a morphologic study of the spermatozoa? How is such a specimen prepared? Kindly omit name.

M D, New York

ANSWER.—No information is given concerning the condition of the pelvic organs. Not infrequently in such cases there is a hypoplasia of the uterus. In some of these patients, injections of anterior pituitary hormone and thyroid preparations prove helpful. It is assumed that by a "negative" Rubin test the inquirer implies that the tubes are patent to gas. If the tubes are impermeable, artificial impregnation should not, of course, be considered. A good deal of information can be obtained from a careful study of the spermatozoa. Excellent articles on this subject have been published by G. L. Moench (*Am. J. Obst. & Gynec.* 25:410 [March] 1933; *J. Lab. & Clin. Med.* 17:297 [Jan.] 1932). Most likely some spermatozoa are capable of fertilizing an ovum but are incapable of producing a full term child. Unfortunately there is as yet no way of detecting such defective spermatozoa. A curettage is not essential although, as most physicians know, pregnancy not infrequently follows a dilation and curettage. If the spermatozoa appear normal and the tubes are patent, the contents of the cervical canal should be aspirated after coitus to see if there are actively motile sperm in and beyond the cervix. Not infre-

quently, normal spermatozoa fail to traverse the cervical canal. In such cases, if the cervical secretion cannot be altered by treatment, artificial insemination should be tried. This should be carried out under aseptic precautions a few times during each midinterval between menstrual periods. The patient and her husband should be informed that many inseminations will most likely have to be made.

ACNE OF EXPOSURE TO CHLORINE

To the Editor.—A white man, aged 25, single, in perfect health until eight months ago, has worked for several years in a chemical plant in which a dye for rayon is manufactured, this is called Aocolor-1169. The present illness began eight months ago, at which time acne developed on the back of the neck, along both arms and over the entire back. This condition has become progressively worse, so that the entire area is covered with red nodules just beneath the surface of the skin. Apparently these areas are small cysts, as they contain cystic material, which then become infected, with the formation of pus. Culture shows a mixed group of organisms; biopsy confirms it. In the preparation of Aocolor 1169 the following chemicals are used: hydrogen, benzene, chlorine gas, hydrochloric acid and gas. It is called a di phenyl process. To date, the following treatments have been used with little success: x rays, autogenous vaccine, incision of the small abscesses followed by swabbing with phenol (carbolic acid), painting with gentian violet, acriflavine hydrochloride and mercurochrome, and covering with irradiated petrolatum. Could you possibly suggest something else or some reference that might be of help, also some explanation as to the cause of this condition? Kindly omit name and address.

M D, Georgia.

ANSWER.—The description furnished is regarded as that of "chlor-acne." The inclusion of chlorine gas in the listing of chemicals utilized in the manufacturing process furnishes the probable causative agent. So long as exposure is perpetuated, the condition probably will persist. The well established case, even after further exposure is terminated, is subject to the well known vicissitudes attending acne treatment. Since exposure has been terminated, as good results are to be expected from the general line of treatment specified in the query as from any other form of treatment. Possibly something may be gained by the use of a diet low in carbohydrates. Apart from the already established case, control is linked up with prevention. In the workroom wherein this condition probably was incurred, such devices and measures should be instituted as will eliminate exposure to such substances as benzene, chlorine gas and hydrochloric acid. Additional comment may be found in Prosser White's "The Dermatogoses."

USE OF SODIUM HYPOCHLORITE FOR WOUND IRRIGATION

To the Editor.—Will you please give me the correct technique for using sodium hypochlorite solution in the irrigation of infected wounds. Please do not print my name.

M D., North Carolina.

ANSWER.—Physiologic solution of sodium hypochlorite should be made according to the method described in the U. S. Pharmacopeia under *Liquor Sodii Chloridi Physiologicus*. A solution somewhat similar to the U. S. P. preparation may be made by diluting the proprietary preparation *Hyclorite*, which has been accepted for inclusion in New and Nonofficial Remedies.

A preliminary cleansing of the skin and wound is necessary. Excision of all lacerated or devitalized tissue should be done. All pockets of the wound should be explored and Carrel rubber tubes introduced for instillation of the solution. Ordinarily counter drains are not required.

The drainage tubes are of fine pure rubber approximately 15 to 25 cm. long having a diameter of 5 mm. and a lumen of 3 mm. The ends are tied off with linen or silk, and beginning at the distal end from six to twelve small holes approximately 0.5 mm in diameter are pierced at intervals of 0.5 cm. These may be made with a special punch, the two sides being pierced at the same time and the direction being staggered.

The number of tubes used must be decided by the size and depth of the wound. All parts of the wound should be bathed by the solution coming out of the tubes. To prevent the tubes from bunching in the wound, strips of gauze are placed between them, which helps also to retain the solution.

For superficial wounds the Carrel tubes are covered with Turkish toweling, and strips of gauze are placed between the tubes. A large pad of nonabsorbent cotton may be placed around the extremity. Simple wet compresses are sometimes used and changed frequently in superficial wounds.

The skin should be protected by covering with strips of gauze impregnated with petrolatum.

Intermittent irrigation every two hours day and night with just enough solution to fill the wound has been most satisfactory. This is not always possible, and good results may be

obtained by less frequent irrigation, although it is not so efficient in sterilization.

The wounds should be redressed daily, the skin being cleansed and the tubes renewed. In certain conditions the change of dressings may be delayed for two or three days, provided the irrigations are kept up.

Bacteriologic films are made of the wound discharge from day to day and, when sterile, deep wounds may be sutured.

CHRONIC PROSTATITIS

To the Editor.—Four months ago a patient, aged 55, experienced discomfort in the perineal region, especially when sitting. This discomfort he compares to a sensation of two raw surfaces in contact with an anterior rectal wall. At times there is a sensation of distention in the scrotum. Eighteen months ago he was treated for a small ulceration on the verumontanum. Examination of the prostate reveals a normal sized left lobe and median bar, but the right lobe is slightly enlarged. The entire gland was somewhat hard but rather smooth, and a tenderness was elicited by massage. The prostatic secretion, after massage, showed a moderate number of pus cells. There has been no difficulty in urination and no retention. Examination of the scrotum shows a small varicocele. Examination reveals no hemorrhoids or rectal pathologic changes. A urologist made a cystoscopic examination and found no pathologic change other than some enlargement of the median bar. I began treatment by passing a number 26 sound every ten days, massaging the prostate twice weekly and applying infra red rays to the perineum. A small amount of improvement was noted at intervals during the first two months. The treatment was continued until three weeks ago, when I began giving the patient intramuscular injections of Proteolac (Searle). A dosage of 5 cc. was used for the first three injections at intervals of four days, then 10 cc doses were given at the same intervals. Today he received his seventh injection. I have massaged his prostate on the days when he has received injections. No relief has been noted, except on one occasion five days ago, following a sounding, massage and an injection of proteolac. A smear of the prostatic secretion one week ago showed numerous pus cells. The treatment has not cleared the secretion of pus cells or given the patient permanent relief. Potassium iodide and bromides have been prescribed with no benefit. Please advise me as to the possible cause and the treatment of the patient's discomfort. I have made a diagnosis of chronic prostatitis.

M. D., Kansas.

ANSWER.—The diagnosis of chronic prostatitis seems correct in view of the symptoms given and the physical changes found. The fact that there is some hypertrophy of the median bar would indicate prolonged inflammation. Patients with chronic prostatitis that remains so resistant to the usual forms of treatment will frequently, with a more careful study of the posterior urethra, be found to have deep seated small prostatic abscesses. These drain through what appear to be dilated prostatic ducts and can at times be seen to exude thick, purulent material. The openings of these ducts are usually located just lateral to the verumontanum, toward the bladder sphincter.

Treatment should consist of dilation of the openings of these ducts with a blunt instrument such as a stiff electrode to secure freer drainage of the small pockets of pus. If these pockets are deeply situated, it may be necessary to enlarge the openings by incision with the Collings electrode. The incision should be carried through the sphincter and median bar in much the same way that an incision is made through the rectal sphincter in treating fistula in ano. If the median bar enlargement interferes with proper drainage, the walls of the incision should be cut away so that when the patient voids, the urine washes out the contents of these abscess pockets. The fact that the verumontanum remains enlarged and inflamed is another indication that chronic infection of the described type is probably present.

Intravenous and oral medication is usually of little avail in this type of case, in which the chronic inflammation persists because of the factor of faulty drainage.

BILATERAL ITCHING OF EARS

To the Editor.—A patient, aged 40, a married woman, in good health, has been troubled for one year with intensive bilateral itching of the external auditory meatus and auricle. In the beginning, an acute eczematous condition was present, but now there is only a slight red induration. The usual ointments for eczema, stimulating and soothing, with and without phenol, have been tried, with very little effect. The itching is present every day and is so intense that the patient seems completely unable to resist scratching it. There is no history of frost-bite or anything that would appear to be an etiologic factor. Can you suggest additional treatment?

MALCOLM B. WILCOX, M.D., Holdrege, Neb

ANSWER.—The problem in the case cited is to reduce itching to the point at which the patient can resist the temptation to scratch, then to increase her self control and break the habit of scratching. Two methods suggest themselves. The patient may be given a general sedative such as bromides, which will make her less nervous and make it easier to resist scratching. The danger of skin eruptions from bromides, which restrains

many physicians from their use in similar cases, is much less than from the newer sedatives which have so largely supplanted the bromides, and is slight for short courses of medication. The intake of chlorides should be reduced as much as possible to facilitate the absorption of the bromides. After the soothing effect has been obtained, the dose can be reduced to three-fourths the amount and maintained for a week or two. A simple soothing ointment, as zinc oxide ointment or zinc oxide paste, should be applied once or twice a day. Only oil should be used for cleansing. Careful abstention from scratching should be insisted on.

Roentgen rays may be used to good advantage to the extent of two full erythema doses. This dosage should not be exceeded. One-fourth erythema dose, unfiltered or through a light aluminum filter, should be given once a week until the itching ceases. This often gives permanent relief. Cessation of scratching is as important as it is with the other plan of treatment.

ADDICTION TO BARBITAL

To the Editor.—I am interested to know whether you have any further data on amytal compound, sodium amytal and pentobarbital sodium as to their being habit forming or causing any undesirable after-symptoms. My reason for inquiring is based on a case, the history of which is as follows. A man about 50 years of age had been addicted to the use of morphine off and on for many years. He gave insomnia as the original cause for the addiction. He seemed to be in fairly good condition when he came to me one year ago after having been taken off the morphine habit one month before. He was suffering at this time with extreme insomnia, spasms and drawing of the muscles, and he was nervous and despondent. I started him on treatment with amytal in large doses, three capsules of sodium amytal, three capsules of amytal compound and three capsules of pentobarbital sodium (Abbott) given in two doses at 7 and 10 p. m. This seemed to give him instant relief with good nights of six to eight hours' sleep and very little after-effects in the morning. This was continued for six months, at which time he started to lose steadily in weight from 185 to 150 pounds (84 to 68 Kg.). Also suffering from chills and headache from early afternoon until time for his first dose of medicine, again he would be free from these disturbing factors as if by magic. These symptoms have been increasing in severity and it is with difficulty that he can be held off until time for the first dose of medicine. Please give me your most sincere judgment as to whether or not this medicine would be habit forming under these circumstances and if it would cause any of the symptoms I have referred to in this letter. I have had blood tests, that is, sugar, nonprotein nitrogen, Wassermann, red and white blood cell counts, roentgenograms of the lungs, a heart and a gastric series and cannot find any cause for the symptoms. This case is a most unusual one and I am anxious to know whether the medicine has played any part in these symptoms. Please omit city and name if printed in THE JOURNAL.

M. D.

ANSWER.—Addiction to barbituric acid derivatives is mentioned in Seifert's Nebenwirkungen der modernen Arzneimitteln, although this is not specifically described for amytal or for pentobarbital. Habituation to amidopyrine (a constituent of "amytal compound") has also been observed. The reaction described is probably caused by addiction to any one or all of the three compounds administered. This may be determined by separate administration of each of the three substances, with observation of the degree of relief of symptoms at each trial.

PILONIDAL CYSTS AND SINUSES

To the Editor.—Will you kindly let me know the frequency of occurrence of pilonidal cysts, also whether anyone has reported on the frequency with which they occur in mental defectives and whether or not their occurrence has ever been regarded as one of the stigmas of degeneracy.

C. STANLEY RAYMOND, M.D., Wrentham, Mass

ANSWER.—It is generally agreed that the pilonidal sinus or cyst is of congenital origin.

The site of the sinus, which usually produces symptoms in early adult life, is frequently marked by a dimple over the sacrococcygeal region seen in infancy. The occurrence of this dimple in infants and children under 4 years of age has been reported at from 20 to 39 per cent and in adults at from 4 to 30 per cent. Sinuses or fistulas have been found in 36 per cent of infants in 300 consecutive births. The occurrence of the sinus in the hospital records may be seen from the Massachusetts General Hospital, where 119 patients were admitted during eight years. Eighty per cent of these were males, in which it occurs more frequently. Some believe that there is a distinctive individual type in which this condition is most frequently found, characterized by obesity, hairiness and glandular dysfunction. There may be a familial tendency. The most support is given to the theory that this sinus is the result of a malfusion of the inferior end of the neural canal with its attachment to the skin. Others believe it is a faulty coalescence of the midline, a sequestration dermoid, or a traction dermoid fistula by a pull of the underlying tissue on the median

raphe. Recent support to it arising as a remnant of the preen gland in many birds is of interest. No figures have been found as to its occurrence in mental defectives or in persons with other physical anomalies.

EMBOLUS AND THROMBUS

To the Editor—Please be kind enough to differentiate between an embolus and a thrombus. The patient is presumed to have a mural thrombus following a coronary occlusion, which on breaking loose plugs the popliteal artery at the junction of the anterior tibia. Is the resulting obstruction an embolus, an embolic infarct or a thrombus? After amputation of the leg above the knee, the vessel in the amputated part is opened and traced. In the popliteal artery at the junction of the anterior tibia is an old organized drab colored fibrous obstruction giving evidence of having existed for several days. It is adherent to the vessel wall. Higher up in the popliteal artery at approximately opposite the knee joint is evacuated a black clot, soft, which is emptied out of the vessel easily, retaining its form and having on it projections that lead into small branches. The clot at the anterior tibia is presumed to have occurred first, and the second one the result of obstructed circulation below. What do you call them in their relation to the mural thrombus?

H. R. SUGG, M.D., Clinton, Iowa

ANSWER—An embolus is an insoluble foreign body free in the blood stream, which it may obstruct when impacted in its channel. A thrombus is a blood clot, in the heart or blood vessels, which remains at the site of its formation. Basing the answer on the correspondent's presumption, the resulting obstruction is an embolus. The mural thrombus, which is assumed to have occurred in the left cardiac ventricle following the coronary occlusion, was detached as a whole or in part, becoming an embolus. The embolus lodged in the popliteal artery at its junction with the anterior tibial and was found as the "drab-colored obstruction." The soft black clot is a propagated thrombus formed in the stagnant blood proximal to the embolic obstruction in the popliteal artery.

ORDER OF PROPHYLACTIC VACCINATIONS AGAINST INFECTIONS

To the Editor—In THE JOURNAL, April 21, page 1326, in answer to a question concerning the timing of immunization against infectious diseases, you recommend immunization against whooping cough. May I ask whose product you recommend, if it is on the market? Will you also please state the dosages and time intervals? Further on in the answer you state that the Schick test should preferably be performed in the spring or autumn. Will you please state the reasons? Kindly omit name.

M.D., Ky.

ANSWER—Among others, the pertussis vaccine (Sauer) prepared by Eli Lilly & Co. may be regarded as reliable. The dosage, which is given on the package, is 1 cc. subcutaneously in the upper deltoid region of each arm, followed in one week by 1.5 cc. subcutaneously in the biceps region of each arm and one week later by 1.5 cc. in the triceps region of each arm.

It should be noted that in the answer referred to it is stated that the Schick test should be made four months or more after a single injection of alum toxoid against diphtheria. This test is made in order to determine whether the child gives a negative test, that is, whether it is protected against diphtheria, and that in any case smallpox vaccination may now be done. It may be of advantage to vaccinate against smallpox in the spring so that the child may be protected during its wanderings in the summer; and the autumn is a good time for vaccination against smallpox in order to protect the child, as it may enter school then.

THERAPEUTICS OF THEOBROMINE

To the Editor—1. Are the diuretic effects of theobromine alkaloid more pronounced when given intravenously than when given by mouth? Give low and high limits of dosage for intravenous use. What are the symptoms of overdosage? 2. What is the relative efficiency of theobromine alkaloid and some of its combinations, such as theobromine sodium salicylate and theobromine calcium salicylate, when the drugs are used intravenously? 3. What is the water solubility of theobromine alkaloid? What is the most soluble salt of this drug? 4. What are the signs of abnormal reactions encountered with full dosage of theobromine and its preparation? 5. Are theobromine or its preparation incompatible for intravenous use in combination with methenamine, sodium iodide, sodium salicylate, or with any of these used with it singly? 6. What is the relative efficiency in the liberation of formaldehyde in the urine of 1 Gm. of methenamine given by mouth and the same dose given intravenously?

G. D. M. LAMBDIN, M.D., Electra, Texas

ANSWER—1. Because of its slight solubility, theobromine alkaloid is not used as such; and it certainly could not be given intravenously. For theobromine sodiumsalicylate the dosage on intravenous administration ranges from 0.3 to 1 Gm. given in 10 per cent solution. Symptoms of overdosage are headache, dizziness, restlessness, nausea, vomiting and epileptiform convulsions.

2. Theobromine alkaloid could not be used intravenously, because of its insolubility. Theobromine sodiumsalicylate and theobromine calcium salicylate are probably equivalent on intravenous administration.

3. The solubility of theobromine is very slight, while that of theobromine sodiumsalicylate is as great as 1:1 when freshly prepared. It absorbs carbon dioxide from moist air, which liberates theobromine and hence makes it less soluble. A small amount of sodium salicylate will clear a strong solution.

4. Anorexia, nausea, vomiting, diarrhea, headache, dizziness, somnolence, palpitation, dyspnea, collapse. It may cause generalized erythema.

5. There is no incompatibility in these agents singly or combined.

6. There is no difference in the efficiency of methenamine on oral or intravenous administration, as the degree of liberation of formaldehyde depends on the degree of acidity of the urine. The intravenous use is not to be recommended.

NUMBNESS OF ARMS

To the Editor—I have a woman patient, aged 42, who is apparently normal in every way and robust in build, who is greatly troubled by numbness in both arms coming on during sleep. On awakening, massage and exercise for several minutes are required to restore sensation. This began six years ago, at first occasionally after hard work, now for a year every night. She is less affected if she lies on her back, but if she lies on either side the upper arm is also affected. Recently carrying a basket on either arm at a right angle has brought on the numbness, which is relieved by allowing both arms to hang down by the side. The arms ache after the numbness has passed off. There is no swelling, except of the fingers slightly at times. There is no redness, blueness nor paleness during the attacks. The patient does not have numbness in the lower limbs. Formerly only the hands and forearms were affected but recently it has been extending up to the shoulders. The patient has a sore spot with tenderness over the external condyle of the humerus on the left arm. She has a good grip in both hands. She is awakened every two or three hours by the numbness. If she lies continuously on her back she can sometimes pass the night without an attack. What is the probable diagnosis as to the cause and is there any treatment? Please omit name.

M.D., Missouri.

ANSWER—The occurrence of the numbness in certain postures and under certain conditions suggests the existence of some source of pressure that operates only under these conditions. It is certainly indicated that the presence of cervical ribs as a source of pressure should be eliminated by taking roentgenograms. Failing a positive finding by this means, the only remaining recommendation is that a thorough neurologic examination should be made.

BILATERAL EPIDIDYMITIS

To the Editor—About three weeks ago I noticed that my left testicle was tender. Later in the day it was slightly enlarged and rather painful. By the third day I was unable to be on my feet, as it caused much pain and swelling. Then the right testicle became very tender, slightly enlarged and somewhat painful. Now, after three weeks, I am able to be on my feet, but both testicles are still tender. The left one remains about three times the normal size, the right one slightly under twice the normal size, and I just do not get my "pep" back. The pulse is twelve beats under normal. Several physicians have attended me. I have had calomel purges, local poultices and medicines. I have been charted up at a hospital and nothing wrong was found except a slight enlargement of the prostate, which, it was decided, might be causing the trouble. I have never had venereal disease, am 65 years old, and my urinary function is normal. If you can help me with diagnosis and treatment, I will be thankful. Please omit name and address.

M.D., Colorado.

ANSWER—A diagnosis without examination is difficult. The history suggests a bilateral epididymitis secondary to a prostatitis and seminal vesiculitis. There may be a beginning hyperplastic change of the prostate underlying this. Rest and heat will in all probability clear up the acute phase of this condition. Later investigation as to the underlying cause and its correction should be carried out.

SYMPTOMS AFTER NEPHRECTOMY

To the Editor—I have a patient, a man of 39, who had nephrectomy performed about nine years ago for tuberculosis of the left kidney. Except for painful and frequent micturition, he has no complaints and appears to be in good health. Urinalysis shows a moderate amount of albumin and pus cells. What treatment would you outline for the relief of his symptoms? Would tuberculin injections be of value in this case? Please omit name.

M.D., Ohio.

ANSWER—The patient may have an involvement of the remaining kidney, and this should be studied. If the symptoms are due entirely to bladder lesions, which are frequently associated with tuberculosis of the kidney and continue for a long time after the removal of the diseased organ, the bladder should be treated locally. Instillations into the bladder of 2

per cent phenol (carbolic acid) solution frequently give relief and in all probability have some influence on the healing of the ulcerations. Tuberculin injections may be of some value, but this remedy should be used by one who is familiar with its administration. In the hands of the inexperienced, it may do more harm than good.

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To the Editor—Perhaps you can straighten me out on this question recently asked me by a dentist: Why is it that an infiltration or conduction local anesthesia will permit grinding and extracting in the bicusps but will not permit touching the pulp, when an intraosseous injection of the same solution will allow the pulp of the bicuspid to be painlessly removed? Does the pulp have a separate innervation from small nerve filaments passing from the alveolus through the cementum and dentin, or what? If published, please omit name.

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ANSWER.—So far as is known, the only nerve fibers entering the dental pulp pass through the canals in the apex of the tooth root. No one has ever reported the finding of nerve fibers passing through the cementum on the side of the root into the dentin. From the practical standpoint the question was referred to the department of surgery, which answered as follows:

In either infiltration or block local anesthesia not all of the sensory fibers may be controlled. For example, block anesthesia of the third division of the fifth nerve at the mandibular foramen, sufficient anesthesia may be produced for surgical purposes and yet the filaments supplying the pulp of an individual tooth may not be necessarily anesthetized. The fifth nerve is a large nerve and a block anesthetic may be sufficient for gross surgery. Then, too, the time element is important. The pulp of a tooth may be sensitive shortly after the analgesia has spread to the tissues supplied by the particular branch. If sufficient time is allowed, the analgesia will probably deepen to exclude all pain.

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ANSWER.—Intra-uterine death is frequently due to thyroid dysfunction. This patient should have one or more tests of the basal metabolism to ascertain the condition of the thyroid. If an abnormality of thyroid function is diagnosed it should be treated. More frequently, a hypothyroidism is discovered and an extract of thyroid should be prescribed. The Wassermann and Kahn reactions of the blood of the patient and her husband should be repeated to rule out latent syphilis, which must be treated if it is discovered.

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To the Editor—A patient with chronic arthritis of the distal phalangeal joints rather suddenly developed a Heberden's node during an acute exacerbation. This remains after several weeks as a slightly movable painless tumor about 5 mm in diameter. It feels like a tense cyst. What is the best treatment? Can it be excised safely?

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ANSWER.—A gouty diathesis should be excluded in this case. Enucleation and examination for biurate crystals would be indicated in the situation described.

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To the Editor—Kindly advise me whether it is possible for a man with complete severance of the spinal cord at the fifth dorsal vertebra to have an erection of the penis. I have a patient completely paralyzed from the nipples down following an injury to the back who gets an occasional erection. Kindly omit name.

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ANSWER.—Yes, it is possible for the patient to have erections when the lesion is as high as it is in this case.

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IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. L. T. McLaughlin, State Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque

OREGON: Basic Science. Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Georgia June Examination

Mr. R. C. Coleman, joint secretary, State Examining Boards, reports the written examination held by the Georgia State Board of Medical Examiners, June 14-15, 1934. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine (1934)	82.8, 83.8, 84.4, 84.6, 84.9, 85, 85.1, 85.6, 85.8, 86.3, 86.4, 86.8, 86.9, 87.1, 87.2, 87.7, 87.8, 87.8, 87.9, 87.9, 88, 88.1, 88.2, 88.3, 88.5, 88.6, 88.6, 88.6, 88.7, 88.9, 88.9, 89.2, 89.3, 89.3, 89.4, 90.7, 91, 97	(1933)	89.5,
University of Georgia School of Medicine (1934)	85.3, 85.9, 86, 86.1, 86.2, 86.4, 86.5, 86.6, 86.8, 87.2, 87.5, 87.5, 87.6, 87.8, 87.8, 87.8, 88, 88, 88.1, 88.1, 88.4, 88.5, 88.6, 88.6, 88.7, 88.9, 89.1, 89.1, 89.3, 89.3, 89.5, 89.5, 90.6, 91.1, 91.5	(1933)	84.9,
University of Nebraska College of Medicine (1933)		(1933)	88.6
University of Texas School of Medicine (1931)		(1931)	91.6

Eight physicians were licensed by reciprocity from June 18 to July 17. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine (1931)		(1931)	Mississippi
University of Louisville School of Medicine (1928)		(1928)	Kentucky
Tulane University of Louisiana School of Medicine (1933)		(1933)	Alabama
University of Minnesota Medical School (1930)		(1930)	Minnesota
Albany Medical College (1898)		(1898)	S. Carolina
Jefferson Medical College of Philadelphia (1928)		(1928)	Vermont
University of Tennessee College of Medicine (1920)		(1920)	Tennessee
Medical College of Virginia (1930)		(1930)	Tennessee

Arizona July Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 5-6, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. Four physicians were licensed by reciprocity. The following schools were represented:

PASSED		Year	Per
School		Grad.	Cent
University of Illinois College of Medicine.....	(1933)		76.1
University of Kansas School of Medicine.....	(1933)		80.7
University of Michigan Medical School.....	(1932)		83.1
Baylor University College of Medicine.....	(1933)		76.4
FAILED		Year	Per
School		Grad.	Cent
College of Medical Evangelists	(1933)		74.7
George Washington University School of Medicine.....	(1933)		72.3
LICENSED BY RECIPROCITY		Year	Reciprocity
School		Grad.	with
University of Illinois College of Medicine.....	(1929)		California
University of Michigan Medical School.....	(1927)		Minnesota
Western Reserve University School of Medicine.....	(1923)		Ohio
Marquette University School of Medicine.....	(1926)		Wisconsin

Book Notices

Chinese Medicine. By William R. Morse, M.D., LL.D., F.A.C.S., Dean of Medical School, Head of Department of Anatomy and Associate in Surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan Province, West China. No. 11, *Ch'o Medica: A Series of Primers on the History of Medicine*. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$2.50. Pp. 185, with illustrations. New York: Paul B. Hoeber, Inc., 1934.

This volume of the series of primers on the history of medicine under the editorship of E. B. Krumbhaar covers what is probably the longest continuous phase of medical history in human civilization. Chinese medicine in the national cultural sense is still a living and going concern serving [?] as many sick human beings as any other school of medicine even today. This school exists not only in the old civilization of China but also in some other parts of the world where Chinese herb doctors flourish. Devotees of the Chinese cult are not confined to the yellow race or the Flowery Kingdom; thousands of supposedly grateful patients recently followed the bier of a much advertised Chinese doctor in a western city.

The primer of Dr. Morse is from the pen of one familiar with Chinese life, philosophy and civilization, as well as Chinese medicine in both its theory and its practice. He is the head of the department of anatomy and associate in surgery in the Medical College of the West China Union University at Chengtu, Szechwan Province. His primer differs greatly from Wong and Wu Lien-Teh's recently published *History of Chinese Medicine* in that there is no attempt to show the accomplishments of Chinese medicine, no elaborate history of the classic writers and no discussion of the transition into the modern period. It is rather an exposition of the underlying philosophy of Chinese civilization in its definite relations to the basic principles on which Chinese medical theory and practice rest. The point of view is frankly objective and critical without a trace of prejudice or display of the curious and unusual.

The Chinese culture is based on agriculture. Its medicine rests on a mystic cosmogony, with a strong admixture of alchemy. It is entirely lacking in the quickening influences of the critical, open-minded experimental method. It rests on an elaborate, shrewd and cunning logic, but as far as medicine is concerned either the premises are false or the conclusions are wrong. Medicine in China was at its zenith during the Han dynasty (170 A. D.) but the creative urge was smothered by intricate reasoning veiled in mysticism. It has become a tapestry of empiricism in which magic and religion, superstition and spiritism, credulity and ignorance, deception and quackery form a large part. To the Yang and Yin theory of the dualistic concept of nature there is added the basic idea of the five elements, which combine in a mystical array of relations the influences of which are held to determine the functions of the body and all the hygienic and therapeutic measures for the control of health and the causes and cure of disease. To this

there is added a celestial ministry of the ancestral gods, the King of Remedies and the specialists, including Tung Pin, the Aesculapius of Chinese medicine, and Chang Chung Ching, who rates as Hippocrates. Minor gods control the various organs of the body and various diseases from diarrhea to toothache. Worry, poverty and disease are the heritage of China's millions. Fear of the unknown has intermingled their religion, ethics and medicine on the groundwork of their cosmogony.

The author reviews Chinese medicine and pathology but concludes with the statement that some of their conclusions were good guesses but are unsubstantiated by proof. His opinion of Chinese anatomy is not much better. It is controlled by numerical and logical concepts, not by observation. The Chinese "Father of Anatomy," clad in a silken gown, with his three or four inch fingernails, painting illustrations for a treatise of anatomy, does not match well with the tens of years of expert dissection of John Hunter. There is no physiology worthy of the name, and the diagnosis rests on an exaggerated evaluation of the pulse. About 156 volumes have been written by Chinese specialists on the pulse, but few are of more than historical value. Materia medica and therapeutics have their font and origin in Chinese cosmogony. Their contributions include hydrotherapy, psychotherapy, smallpox inoculation, regulation of diet, hot tea, moderation and ephedrine. However, Chinese internal medication is a phantasmagoria, though the "incurable" sometimes recover under their treatment, which proves nothing. The author concludes that there are undoubtedly very valuable medicines in the Chinese armamentarium but that their methods are unscientific, irrational and ineffective.

Needling, or acupuncture, is explained with detailed diagrams. Its purpose is to puncture and penetrate at certain definite points one or more of certain twelve hypothetical, invisible, undetectable channels or *ch'in* which, according to theory, contain the vital Yang and Yin. The needling adjusts the balance between these opposed principles and thus restores health. Moxibustion on the spot of puncture is used to supplement the treatment. If infection results it is due to the disease, not to the treatment!

In an attempt to balance the scales perhaps about all one can say is that in early days a thousand or more years ago and before that time, China's healers did make a contribution to medical science, and, for that age and civilization, their practices were above those of many nations. It cannot be gainsaid, for instance, that China discovered some excellent remedies. At the present time their medical procedures are of merely academic interest to the medical and scientific historian and of perhaps more interest to the philosopher and metaphysician. As far as modern scientific medicine is concerned, speaking broadly, their procedures are of no actual value unless along the line of suggestive and psychologic therapeutics.

A Textbook of Orthopedic Surgery for Nurses. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Orthopedic Surgery, Northwestern University Medical School. Second edition. Cloth. Price, \$3.25. Pp. 389, with 200 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This treatise on orthopedic surgery fulfils the purpose expressed in the preface, "to outline a series of principles which will make the nurse competent to care for the orthopedic patient, to assist the orthopedic surgeon in all branches of his work." The subject of orthopedic nursing has been inadequately dealt with in most of the nursing schools of the past. This has been due in part to the fact that books on orthopedic surgery have for the most part been too advanced to be suitable for the student nurse. Dr. Lewin has written in a simple, straightforward style, and the arrangement of the book, beginning with a brief statement on the general orthopedic considerations, embryology, anatomy and physiology of the bones and joints and their related structures first creates a background for a better understanding of the chapters that deal with the clinical problems. At all times this excellent book keeps the nursing point of view foremost. The author emphasizes the fact, which orthopedic surgeons have come to recognize, that the final result in the treatment of the patient depends as much on good nursing care as it does on the doctor himself. In the average general hospital the orthopedic patient is dreaded by the nurses on the floors, particularly if that patient requires care in plaster casts. This dread is based almost entirely on the fact that the nurses

per cent phenol (carbolic acid) solution frequently give relief and in all probability have some influence on the healing of the ulcerations. Tuberculin injections may be of some value, but this remedy should be used by one who is familiar with its administration. In the hands of the inexperienced, it may do more harm than good.

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GEORGIA: Atlanta, Oct. 9-10. Joint Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-34 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McLaughlin, State Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

OREGON: Basic Science. Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.

Georgia June Examination

Mr. R. C. Coleman, joint secretary, State Examining Boards, reports the written examination held by the Georgia State Board of Medical Examiners, June 14-15, 1934. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....(1933)			89.5.
(1934) 82.8, 83.8, 84.4, 84.6, 84.9, 85, 85.1, 85.6, 85.8, 86.3, 86.4, 86.8, 86.9, 87.1, 87.2, 87.7, 87.8, 87.8, 87.8, 87.9, 87.9, 88, 88.1, 88.2, 88.3, 88.5, 88.6, 88.6, 88.6, 88.7, 88.7, 88.9, 88.9, 89.2, 89.3, 89.3, 89.4, 90.7, 91, 97			
University of Georgia School of Medicine.....(1934)			84.9.
85.3, 85.9, 86, 86.1, 86.2, 86.4, 86.5, 86.6, 86.8, 87.2, 87.5, 87.5, 87.6, 87.8, 87.8, 87.8, 88, 88, 88.1, 88.1, 88.1, 88.4, 88.5, 88.6, 88.7, 88.9, 89.1, 89.1, 89.3, 89.3, 89.5, 89.5, 90.6, 91.1, 91.5			
University of Nebraska College of Medicine.....(1933)			88.6
University of Texas School of Medicine.....(1931)			91.6

Eight physicians were licensed by reciprocity from June 18 to July 17. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine.....(1931)			Mississippi
University of Louisville School of Medicine.....(1928)			Kentucky
Tulane University of Louisiana.....(1933)			Alabama
University of Minnesota Medical School.....(1930)			Minnesota
Albany Medical College.....(1898)			S. Carolina
Jefferson Medical College of Philadelphia.....(1928)			Vermont
University of Tennessee College of Medicine.....(1920)			Tennessee
Medical College of Virginia.....(1930)			Tennessee

Arizona July Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 5-6, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year	
		Grad.	Per Cent
University of Illinois College of Medicine.....	(1933)		76.1
University of Kansas School of Medicine.....	(1933)		80.7
University of Michigan Medical School.....	(1932)		83.1
Baylor University College of Medicine.....	(1933)		76.4
School	FAILED	Year	
		Grad.	Per Cent
College of Medical Evangelists	(1933)		74.7
George Washington University School of Medicine.....	(1933)		72.3
School	LICENSED BY RECIPROCITY	Year	
		Grad.	Reciprocity with
University of Illinois College of Medicine.....	(1929)		California
University of Michigan Medical School.....	(1927)		Minnesota
Western Reserve University School of Medicine.....	(1923)		Ohio
Marquette University School of Medicine.....	(1926)		Wisconsin

Book Notices

Chinese Medicine. By William R. Morse, M.D., LL.D., F.A.C.S., Dean of Medical School, Head of Department of Anatomy and Associate in Surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan Province, West China. No. 11, *Chlo Medica: A Series of Primers on the History of Medicine*. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$2.50. Pp. 185, with illustrations. New York: Paul B. Hoeber, Inc., 1934.

This volume of the series of primers on the history of medicine under the editorship of E. B. Krumbhaar covers what is probably the longest continuous phase of medical history in human civilization. Chinese medicine in the national cultural sense is still a living and going concern serving [?] as many sick human beings as any other school of medicine even today. This school exists not only in the old civilization of China but also in some other parts of the world where Chinese herb doctors flourish. Devotees of the Chinese cult are not confined to the yellow race or the Flowery Kingdom; thousands of supposedly grateful patients recently followed the bier of a much advertised Chinese doctor in a western city.

The primer of Dr. Morse is from the pen of one familiar with Chinese life, philosophy and civilization, as well as Chinese medicine in both its theory and its practice. He is the head of the department of anatomy and associate in surgery in the Medical College of the West China Union University at Chengtu, Szechwan Province. His primer differs greatly from Wong and Wu Lien-Teh's recently published *History of Chinese Medicine* in that there is no attempt to show the accomplishments of Chinese medicine, no elaborate history of the classic writers and no discussion of the transition into the modern period. It is rather an exposition of the underlying philosophy of Chinese civilization in its definite relations to the basic principles on which Chinese medical theory and practice rest. The point of view is frankly objective and critical without a trace of prejudice or display of the curious and unusual.

The Chinese culture is based on agriculture. Its medicine rests on a mystic cosmogony, with a strong admixture of alchemy. It is entirely lacking in the quickening influences of the critical, open-minded experimental method. It rests on an elaborate, shrewd and cunning logic, but as far as medicine is concerned either the premises are false or the conclusions are wrong. Medicine in China was at its zenith during the Han dynasty (170 A. D.) but the creative urge was smothered by intricate reasoning veiled in mysticism. It has become a tapestry of empiricism in which magic and religion, superstition and spiritism, credulity and ignorance, deception and quackery form a large part. To the Yang and Yin theory of the dualistic concept of nature there is added the basic idea of the five elements, which combine in a mystical array of relations the influences of which are held to determine the functions of the body and all the hygienic and therapeutic measures for the control of health and the causes and cure of disease. To this

there is added a celestial ministry of the ancestral gods, the King of Remedies and the specialists, including Tung Pin, the Aesculapius of Chinese medicine, and Chang Chung Ching, who rates as Hippocrates. Minor gods control the various organs of the body and various diseases from diarrhea to toothache. Worry, poverty and disease are the heritage of China's millions. Fear of the unknown has intermingled their religion, ethics and medicine on the groundwork of their cosmogony.

The author reviews Chinese medicine and pathology but concludes with the statement that some of their conclusions were good guesses but are unsubstantiated by proof. His opinion of Chinese anatomy is not much better. It is controlled by numerical and logical concepts, not by observation. The Chinese "Father of Anatomy," clad in a silken gown, with his three or four inch fingernails, painting illustrations for a treatise of anatomy, does not match well with the tens of years of expert dissection of John Hunter. There is no physiology worthy of the name, and the diagnosis rests on an exaggerated evaluation of the pulse. About 156 volumes have been written by Chinese specialists on the pulse, but few are of more than historical value. *Materia medica* and therapeutics have their font and origin in Chinese cosmogony. Their contributions include hydrotherapy, psychotherapy, smallpox inoculation, regulation of diet, hot tea, moderation and ephedrine. However, Chinese internal medication is a phantasmagoria, though the "incurable" sometimes recover under their treatment, which proves nothing. The author concludes that there are undoubtedly very valuable medicines in the Chinese armamentarium but that their methods are unscientific, irrational and ineffective.

Needling, or acupuncture, is explained with detailed diagrams. Its purpose is to puncture and penetrate at certain definite points one or more of certain twelve hypothetic, invisible, undetectable channels or *ch'in* which, according to theory, contain the vital Yang and Yin. The needling adjusts the balance between these opposed principles and thus restores health. Moxibustion on the spot of puncture is used to supplement the treatment. If infection results it is due to the disease, not to the treatment!

In an attempt to balance the scales perhaps about all one can say is that in early days a thousand or more years ago and before that time, China's healers did make a contribution to medical science, and, for that age and civilization, their practices were above those of many nations. It cannot be gainsaid, for instance, that China discovered some excellent remedies. At the present time their medical procedures are of merely academic interest to the medical and scientific historian and of perhaps more interest to the philosopher and metaphysician. As far as modern scientific medicine is concerned, speaking broadly, their procedures are of no actual value unless along the line of suggestive and psychologic therapeutics.

A Textbook of Orthopedic Surgery for Nurses. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Orthopedic Surgery, Northwestern University Medical School. Second edition. Cloth. Price, \$3.25. Pp. 389, with 200 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This treatise on orthopedic surgery fulfils the purpose expressed in the preface, "to outline a series of principles which will make the nurse competent to care for the orthopedic patient, to assist the orthopedic surgeon in all branches of his work." The subject of orthopedic nursing has been inadequately dealt with in most of the nursing schools of the past. This has been due in part to the fact that books on orthopedic surgery have for the most part been too advanced to be suitable for the student nurse. Dr. Lewin has written in a simple, straightforward style, and the arrangement of the book, beginning with a brief statement on the general orthopedic considerations, embryology, anatomy and physiology of the bones and joints and their related structures first creates a background for a better understanding of the chapters that deal with the clinical problems. At all times this excellent book keeps the nursing point of view foremost. The author emphasizes the fact, which orthopedic surgeons have come to recognize, that the final result in the treatment of the patient depends as much on good nursing care as it does on the doctor himself. In the average general hospital the orthopedic patient is dreaded by the nurses on the floors, particularly if that patient requires care in plaster casts. This dread is based almost entirely on the fact that the nurses

feel at a loss to know just what to do in making the patient comfortable and in the prevention of bed sores. The book is well illustrated and can be recommended not only for student nurses but also for the graduate nurse who is assigned to the care of orthopedic cases, the visiting nurse, and the medical student.

Annual Review of Biochemistry. Edited by James Murray Luck. Volume III. Cloth. Price, \$5. Pp. 558. Stanford University, California: Stanford University Press, 1934.

The third volume of this valuable series is as welcome and excellent as the previous Annual Reviews. The advisory committee has adopted the wise policy of attempting to obtain only true reviews of the most important papers with the most direct bearing on the subject rather than to prepare elaborate and noncritical compendiums. As a result, certain special and important papers may not be included in current issues of the Review, but it is to be expected that such papers may be included in special reviews at a later date. The present volume follows the same general plan as in previous issues with the exception that several timely special reviews have been included and several new contributors have been added or substituted. The four new reviews, that is, the chemistry of the sterols, bile acids and other natural fats and oils by O. Rosenheim and H. King, another on biochemical and nutritional studies in the field of dentistry by Martha Koehne and R. W. Bunting, a third on the biochemistry of malignant tissue by E. Boyland and a fourth on the metabolism of carbohydrates and organic acids in plants by W. Ruhland and J. Wolf, are especially welcome at this time. Among the new contributors are A. Bertho, on biologic oxidations and reductions; W. Pauli, on the chemistry of the amino acids and proteins; K. Kotake, on the metabolism of proteins and amino acids; S. Brody, on nutrition, and H. Lundegardh, on mineral nutrition of plants. It is particularly gratifying to see that the certain special chapters are repeated, although some of them may have been omitted in the second volume. Among these are R. O. Gortner's treatment of water in its biochemical relationships, H. D. Kay's review on phosphorus metabolism, L. Ruzicka's summary on terpenes, saponins and closely related compounds, M. Stephenson's review on the chemistry of bacteria, and J. L. Bollman and F. C. Mann's statement on the liver and bile. No worker in biochemistry, no matter how specialized his field may be, can afford to be without this series of reviews.

X-Ray and Radium Injuries: Prevention and Treatment. By Hector A. Colwell, M.B., Ph.D., M.R.C.P., and Sidney Russ, C.B.E., D.Sc., F.Inst.P. Cloth. Price, \$4.75. Pp. 212, with 2 illustrations. New York & London: Oxford University Press, 1934.

In 1915 Dr. Colwell, pathologist and radiologist, and Professor Russ, physicist, wrote a timely monograph entitled "X-Ray, Radium and the Living Cell." They have now written a much needed monograph, essentially a compilation, which gives in a concise manner all obtainable knowledge, both clinical and experimental, relative to injuries of all kinds caused by x-rays, radium and radioactive substances. The little book is divided into fourteen chapters and an appendix in which are discussed general consideration of protection; injuries to the skin, respiratory tract, circulatory system, alimentary tract, generative system, urinary tract, nervous system, eye, ear, bone, cartilage, muscle, connective tissue, suprarenals, thyroid, thymus, mammary gland and subdivisions of all these parts; radiation sickness; changes produced by the prolonged action of gamma radiation; poisoning by radioactive substances; x-ray and radium quackery; recommendations of the British X-Ray and Radium Protective Committee, and methods of dosage. It is thus seen that the work is quite comprehensive. The authors review the literature in addition to giving their own experience and they clearly differentiate at all times between facts, theories, beliefs and impressions. They have collected a large amount of data concerning early and late, mild, severe, serious and fatal injuries to various parts of the body in man and have added all the important knowledge gained by animal experimentation, of which there is considerable. The experimental work on cancer, early and late injuries to the viscera, heredity and toleration are especially interesting and important. Because of authenticity, comprehensiveness and conservatism, there is little to criticize. The clinical and histologic discussions of many

injuries are not elaborate, but those who desire dissertations are referred to reliable articles and books that deal with limited subjects in great detail. A reasonable number of well selected photomicrographs and clinical illustrations would be a valuable addition, although they would make the book larger and more expensive; furthermore, they are contained in the works to which the readers are referred. The index, while answering essential requirements, might be more detailed. For instance, "cataract" is not in the index but it is, of course, described in the section dealing with eye injuries. The literary style used permits rapid assimilation by any physician; therefore the book is of value to general physicians, specialists, scientists and research workers.

Four Leaf Clovers. By Frederick E. Keller, M.D. Cloth. Price, \$1.75. Pp. 148. Philadelphia: Dorrance & Company, Inc., 1934.

Only a few of the poems by Dr. Keller are of particular medical interest; for the most part they deal with the topics that have concerned poets since the beginning of time. The one entitled "Nurse" will have a special appeal for the medical reader:

—
Along some quiet corridor she goes,
With quickened step, to pause beside a bed
To take the pulse and touch the fevered head
Of some one in distress; soothe the woes
Of woman in travail; her instinct flows
In sympathetic words; another led
From fear to confidence; a baby fed
Or given tender care as mother knows.
Among the many forms of humankind
A barrier 'tween life and death she stands.
Now sad, now happy as the time demands;
Be this a token of her helpful kind—
She lives to serve the sick, a deed divine,
Far, far beyond this earth her glories shine.

Vitality. By Boris Sokoloff, M.D., ScD. Cloth. Price, \$2. Pp. 181. New York: E. P. Dutton & Company, Inc., 1934.

The purpose of this book is to popularize recent advances in knowledge of the problems of vitality. The first part deals with vitality of man and of lower animals and with "the gland of life"—the cortex of the suprarenal, the hormone of which is "the hormone of vitality." The second part describes the source of vitality, more particularly lactic acid (acid-base equilibrium, the fuel of the brain, lactic acid as a general antiseptic, the conservatism of lactic acid). The third part is headed "the crisis of vitality—cancer." Here is a chapter on Napoleon's case and a discussion of the revolt of cells and of vitality and cancer. The book has points of interest. Vital phenomena are discussed and explained in apparently simple and convincing language. There can be no question about the confidence of the author in his explanations and reasoning. In most cases, however, the generalizations are more definitive than warranted by existing knowledge.

Les ultravirus: Pathogènes et saprophytes. Techniques d'étude, caractères physiques et biologiques, maladies à ultravirus—Clinique, anatomo-pathologie, épidémiologie, immunité. Par le Dr. Paul Hauduroy, préparateur à la Faculté de médecine de Paris. Paper. Price, 60 francs. Pp. 462. Paris: Masson & Cie, 1934.

The new edition of M. Hauduroy's book on ultraviruses should be welcomed by all those who are interested in this rapidly expanding field of microbiology or wish to acquaint themselves with it. Although the author makes no attempt at completeness, he has succeeded in bringing together most of the recent and important contributions relating to these organisms. The volume is divided into three main divisions. The first treats critically and instructively various technical procedures, such as the preparation and use of porcelain and diatomaceous earth filters and celloidin membranes. There are discussions of cataphoresis and adsorption phenomena and their usefulness and limitations in the manipulation of viruses. Brief chapters are also devoted to tissue culture and staining methods. The second and major part of the book deals with the specific virus diseases of plants, bacteria, insects, birds and mammals. The discussions of the filtrable forms of bacteria have been, for the most part, omitted from this edition. The material concerning each virus is treated under various subheads, and good bibliographies are appended to most of the chapters. Whereas the former edition contained more than 150 references, the present

one contains more than 1,500. Particular emphasis is laid on the physical and physiologic characteristics of the pathogenic viruses. The last portion of the work deals in a more general way with virus physiology and the epidemiology and immunity of virus diseases. The final chapters contain discussions, admittedly highly speculative but none the less interesting, regarding the nature and probable origin of pathogenic and saprophytic viruses. The book contains an index but no illustrations.

Outlines of Nursing History. By Minnie Goodnow, R.N. Fifth edition. Cloth. Price, \$3. Pp. 517, with 162 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

This outline is now in its fifth edition. It is much used as a teaching textbook by many nurses' training schools. The present edition is fully revised and brought up to date. The book gives the history of nursing throughout the world. It is supplemented by a series of appendixes relative to registration, nursing organizations, nursing periodicals and much additional material of practical importance to the nurse in her work.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., Professor of Pathology in the University of Bristol, and Lawrence P. Garrod, M.A., M.D., B.Ch., Bacteriologist and Lecturer in Bacteriology, St. Bartholomew's Hospital. Second edition. Cloth. Price, \$4. Pp. 457, with 69 illustrations. Philadelphia: P. Blunkson's Son & Company, Inc., 1934.

This book appeared first two years ago. It is now revised and expanded to include recent advances in knowledge in various fields of pathology. Silicosis, cancer of the lung, monocytic leukemia, the suprarenal in Addison's disease, the pituitary, and the structural changes in deficiency diseases are cited as examples of topics that have received special attention in this edition. There are seventeen chapters in all. The book contains helpful summaries of the current advances in pathology.

Life in the Making. By Alan Frank Guttmacher, Associate in Obstetrics, Johns Hopkins University. With the assistance of Ellery Rand. Cloth. Price, \$2.75. Pp. 297, with 8 illustrations. New York: Viking Press, 1933.

The author of this volume has a special ability in making clear to any fairly intelligent reader the biologic processes associated with reproduction both in man and in animals. The publisher has done well in printing a book that is easily readable and artistic. The book is divided into six parts covering the basic biologic factors, sex rhythms, disturbances of the male and female development, determination of sex, sterility and fertility, and multiple births. The volume is enlivened with numerous quotations from literature, with epigrams and with case reports. It should be read with great interest not only by the public but also by physicians, who are frequently asked questions which this book answers.

Collens System of Diet Writing Including: Diet Calculator, Obesity Chart, 100 Menu Prescription Forms. By William S. Collens, B.S., M.D., Chief Diabetic Clinic, Israel Zion Hospital, Brooklyn, N. Y. Fabrikoid. Price, \$5.00. Loose-leaf. New York: Form Publishing Company, [n. d.]

This book includes a diet calculator, an obesity chart and 100 menu prescription forms. The diet calculator and the obesity chart provide considerable amounts of data on circulating wheels, so that it is simple for the physician to make up diets containing given amounts of protein, fat and carbohydrate to meet the necessities of cardiorenal disease, neuroses or epilepsy. The obesity diets are calculated to provide menus for the various meals of the day containing definite amounts of protein, fats and carbohydrates and also to meet minimum caloric requirements. The volume should be most useful to general practitioners who feel the need of preparing special diet lists for individual patients in their office practice.

The Doctor and Citizenship. By Thurman D. Kitchin, M.D., President, Wake Forest College. Cloth. Price, \$1.50. Pp. 89. Boston: Christopher Publishing House, 1934.

Here is a reprint of essays by the president of Wake Forest College. Most of these have appeared in *Southern Medicine and Surgery*. The essays deal with such topics as the citizenship of the physician, education, lay control of medicine, cancer, and the qualities of a doctor. They show breadth of culture and a thorough familiarity with the modern medical point of view.

Erblehre und Rassenhygiene im völkischen Staat. Herausgegeben in Gemeinschaft mit namhaften Fachgelehrten von Professor Dr. Ernst Rüdin, Direktor des Kaiser-Wilhelm-Instituts für Genealogie und Demographie der Deutschen Forschungsanstalt für Psychiatrie in München. Paper. Price, 14 marks. Pp. 385, with 64 illustrations. Munich: J. F. Lehmanns Verlag, 1934.

This book contains twenty-two articles by nineteen authors on different phases of genetics, eugenics, and race and sterilization problems. The opening article, by the Bavarian minister of the interior, is highly political. The succeeding chapters on the hereditary basis for race hygiene by a botanist, and race origins by an anthropologist, are good but demonstrate the deplorable tendency of the whole book to adapt scientific facts to promulgated laws. It is unfortunate that so many well trained scientists find it necessary to attempt to reconcile important and valuable facts to an abortive political project.

A Life Against Death. By Kenelm Winslow. Boards. Price, \$3. Pp. 292. Seattle, Washington: Lowman & Hanford Company, 1933.

This autobiography records the life of Dr. Winslow from birth and boyhood in Boston and in New England through a period spent in Florida. He then discusses his medical training in the Massachusetts General Hospital and his early days as a student and teacher and as an intern. The book then goes on to describe his early practice on the Cape, removal to the West, a period of special study in the Mayo Clinic, and his adventures in the World War. The volume is distinctly personal and offers some interesting anecdotes of medical life.

American Pocket Medical Dictionary: Containing the Pronunciation and Definition of All the Principal Terms Used in Medicine, Surgery, Dentistry, Veterinary Medicine, Nursing, and Kindred Sciences With Over 60 Extensive Tables. Edited by W. A. Newman Dorland, A.M., M.D. Fifteenth edition. Fabrikoid. Price, \$2; indexed, \$2.50. Pp. 920. Philadelphia & London: W. B. Saunders Company, 1934.

Now in its fifteenth edition, this is one of the most popular pocket medical dictionaries available. It has been entirely reset from new type and increased in size by nearly 100 pages. Over 5,000 new terms have been added and many definitions revised to meet new uses. Significant of the growth of the medical vocabulary is the fact that this volume has gradually increased in size from a little over 500 pages to over 900 pages.

Human Sex Anatomy. By Robert Latou Dickinson, M.D., F.A.C.S. A Topographical Hand Atlas. Medical Aspects of Human Fertility Series Issued by the National Committee on Maternal Health, Inc. Cloth. Price, \$10. Pp. 145, with 175 illustrations. Baltimore: Williams & Wilkins Company, 1933.

In this atlas the author makes available a large number of black and white drawings relative to the development of the sex organs of man and woman and of the application of these organs to purposes of reproduction. The data are not generally available in any other work, so that its development by Dr. Dickinson constitutes a scientific service.

Medicolegal

Malpractice: Failure to Administer Antitetanic Serum.

—On August 20 Mrs. Thompson stepped on a stick of wood, which turned up and inflicted a wound on the top of her foot. Home remedies were applied and in a few days the inflammation that developed after the accident seemed to have subsided. Ten days later, however, on August 30, her jaws became stiff, she had a pain in her face and neck and she was unable to swallow. She consulted the defendant-physician and told him of her symptoms and gave him a history of the injury to her foot. After examining the foot, the defendant prescribed no treatment. He negated the fear expressed by the husband that the patient was suffering from tetanus and attributed her present condition to a cold. He advised her that if she became any worse by morning to go to a hospital. About eleven that night the patient had a convulsion. Early the following morning the defendant was called and in accordance with his instructions the patient was taken to a hospital, where she was attended by another physician. This physician made a diagnosis of tetanus, opened and treated the wound, and gave antitetanic serum. The patient grew steadily worse and died the following

day. The husband, as administrator of his wife's estate, sued the defendant, alleging that the death of his wife was caused by the defendant's negligence. At the close of the plaintiff's evidence, the trial court directed a verdict in the defendant's favor and the plaintiff appealed to the Supreme Court of Iowa.

The sole question for determination, said the Supreme Court, is whether or not the evidence presented facts from which the jury should have been allowed to determine whether or not the death of the patient was caused by the defendant's negligence. In malpractice cases it is not sufficient for the plaintiff to show that the defendant did or neglected to do a particular act and that following this commission or omission unfavorable conditions or happenings occurred. The plaintiff must establish a causal connection between the negligence and the unfavorable condition or happening that followed. To show this causal connection, the plaintiff called four expert witnesses. All of these physicians agreed that the proper treatment for an injury from which tetanus might be expected to result is to open and clean the wound and to administer a prophylactic dose of antitetanic serum. None testified, however, that any treatment that the defendant might have administered on the afternoon of August 30, the day the defendant was first called on the case, would have prevented the patient's death, which occurred two days later. One witness stated that even had the defendant-physician given antitetanic serum when he was first called, the fatal outcome of the case would probably not have been averted. To say that the patient's death was caused by anything done or omitted by the defendant, in the opinion of these witnesses, would be pure conjecture and speculation.

The plaintiff placed considerable stress on the testimony of one of the experts that the death rate in cases of tetanus in which the wound is properly taken care of and antitetanic serum given, is about one in four. The mere suggestion, said the court, that a certain percentage of these cases show a recovery can be of no value to the plaintiff, without further evidence tending to place this case in the number of those in which recovery takes place. This witness further testified, however, that by prophylactic treatment he meant treatment administered immediately after the wound was inflicted, that the resistance of a particular individual and the virulence of the germs would make a difference in the results, that the only hope of a cure depends on early treatment, and that the outcome in any case is speculative and conjectural.

The testimony of the expert witnesses, said the court, failed to show any probability that the death of the patient would not have resulted from tetanus regardless of any negligence or malpractice on the part of the defendant. It unmistakably established the fact that any attempt to attribute the death to any act or omission to act on the part of the defendant, rather than to the disease, would be pure speculation and conjecture. If, concluded the court, the attempt to fix the cause of the death of the patient would be speculation and conjecture on the part of experts themselves, it must be clear beyond all doubt that the question should not be submitted to a jury.

The judgment of the lower court was accordingly affirmed.—*Thompson v. Anderson (Iowa)*, 252 N. W. 117.

Workmen's Compensation Acts: Death Following Vaccination an Accidental Injury.—William Tucker was employed by the Spicer Manufacturing Company, Feb. 26, 1930. Eight days later he was ordered by his foreman to report to the first-aid plant hospital located on the premises. He did so and was there vaccinated by the company physician. Fifteen or twenty minutes thereafter he resumed his work. His left arm gradually became so inflamed, swollen and painful that at the end of five days he was unable to continue his employment. He died, March 29, 1930. It was agreed that the death resulted directly from the vaccination. His widow filed claim against the company with the industrial commission and from an order disallowing the claim she appealed to the court of common pleas of Lucas county. There the trial resulted in a verdict for the widow and eventually the case came before the Supreme Court of Ohio.

The question presented for consideration, said the Supreme Court, is whether, under the combination of circumstances in the case, the death of the employee resulted from an accidental physical injury arising out of or in the course of employment.

That the employee received a physical injury seems clear, said the court. The process of vaccination necessitated a scarifying and laceration of the skin and flesh. This constituted a physical injury to the tissues of the arm. The company, in contending that the vaccination was not an accident, argued that the employee's death resulted simply because he was one of those individuals whose system could not withstand the introduction of vaccine. The widow, on the other hand, insisted that the death may have been caused either in this wise or by other infection entering the vaccination wound. Irrespective of which thing happened, said the court, it was manifestly unforeseen, unusual and unexpected, and therefore accidental. The court quoted with approval from the case of *Texas Employers' Ins. Ass'n v. Mitchell* (Texas), 27 S. W. (2d) 600, as follows:

The bodily injury sustained by Mrs. Mitchell was not due, as involved in the finding of the jury, to rheumatism or any other independent disease, but was directly attributable to the infection following the vaccination of her left arm, as must be presumed, taking the evidence most favorable to appellee. The every [very] act of vaccination itself cannot be said to have been an "accident" in the ordinary sense of the word, as it was foreseen, expected, and intended. Mrs. Mitchell went to the doctor's office for that very specific purpose. But the infection and its immediate entry into the system through the vaccination wound was the intervention of an unlooked for circumstance sufficiently constituting the element of accident. There was no intention to have the wound become infected. The vaccination wound and the infection following the vaccination combined to immediately cause and bring about the bodily injury. Therefore such injury would appear, and sufficiently so, to be an injury of accidental nature effected through accidental means.

The court was of the opinion that the employee's injury arose out of or in the course of his employment. It was agreed that the employee would have been discharged if he had not been vaccinated. In other words, it was impossible for him to continue his employment without complying with the company's order. The peremptory nature of the foreman's instruction, observed the court, was shown by the fact that the moment the employee received his order he left his work and went to the plant hospital. Within fifteen or twenty minutes the process of vaccination was completed and he returned to his work. This absence from work resulted in no deduction from his pay. Under this combination of circumstances, concluded the court, it could not be said that the injury did not arise out of and in the course of the employment. The judgment in favor of the widow was accordingly affirmed.—*Spicer Mfg. Co. v. Tucker (Ohio)*, 188 N. E. 870.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, New York, Oct. 30-31. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.
- American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Melency, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.
- Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 8-10. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Nov. 1-3. Dr. Ralph A. Reis, 104 South Michigan Boulevard, Chicago, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 2-3. Dr. Lawrence D. Thompson, 3720 Washington Boulevard, St. Louis, Secretary.
- Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.
- Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Inter State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.
- Omaha Mid-West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.
- Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

9: 697-840 (Aug.) 1934

- Acute Pulmonary Congestion and Cardiac Asthma in Patients with Mitral Stenosis. S. McGinn and P. D. White, Boston.—p. 697.
- Large T Waves in Precordial Leads in Cardiac Infarction. F. C. Wood and C. C. Wolferth, Philadelphia.—p. 706.
- Q & T Types of Electrocardiograms: Their Comparative and Complementary Value in Indicating Occurrence of Acute Myocardial Infarction. A. R. Barnes, Rochester, Minn.—p. 722.
- Correlation of Initial Deflections of Ventricular Complex with Situation of Acute Myocardial Infarction. A. R. Barnes, Rochester, Minn.—p. 728.
- *Electrocardiographic Pattern Observed Following Acute Coronary Occlusion Complicated by Pericarditis: Report of Cases. A. R. Barnes, Rochester, Minn.—p. 734.
- Velocity of Pulmonary and Peripheral Venous Blood Flow and Related Aspects of the Circulation in Cardiovascular Disease: Their Relation to Clinical Types of Circulatory Failure. G. P. Robb and Soma Weiss, Boston.—p. 742.
- Pulmonary Heart Disease in Pneumoconiosis. J. M. Dyson, Hazelton, Pa.—p. 764.
- *Effect of Generalized Anoxemia on Electrocardiogram of Normal Subjects: Its Bearing on Mechanism of Attacks of Angina Pectoris. L. N. Katz, W. W. Hamburger and W. J. Schmitz, Chicago.—p. 771.
- Electrocardiographic Observations on Carotid Sinus Reflex. L. H. Sigler, Brooklyn.—p. 782.
- *Action of Quinine and Quinidine on Patients with Transient Ventricular Fibrillation. S. P. Schwartz and A. Jezer, New York.—p. 792.
- Venous Pressure in Thyroid Dysfunction. J. S. Golden and W. A. Brans, Chicago.—p. 802.

Electrocardiogram in Coronary Occlusion Complicated by Pericarditis.—Barnes states that the electrocardiograms of patients in whom acute coronary occlusion is complicated by pericarditis differ from the type of RST changes associated with uncomplicated, acute coronary occlusion. The typical feature of the electrocardiogram, seen in coronary occlusion associated with pericarditis in its early stages, consists of elevation or upward rounding of the RST segment in all leads. This may be followed by inversion of the T wave in all leads. In some instances it is followed by the development of a T pattern that can be classified definitely as a late relic of acute coronary occlusion. In the stage when the RST segment is elevated in all leads, the Q pattern may be typically developed, not only indicating infarction but also pointing to the situation of the infarct in the left ventricle.

Effect of Anoxemia on Electrocardiograms.—Katz and his associates found that the induction of generalized anoxemia in normal subjects produced a diminution in the amplitude of the T wave, at times leading to its inversion. At the same time the ST segment was depressed and at times became negative. Similar changes were produced by generalized anoxemia in patients suffering from angina pectoris. These electrocardiographic changes occurred without the appearance of anginal pain in the normal subjects and in four of six patients suffering from angina pectoris. However, two of the six patients with angina pectoris did develop typical mild anginal pain. The authors therefore conclude that some process in addition to anoxemia (or ischemia) is concerned in the production of the pain of angina pectoris. This process is a variable which prevents the accurate prediction of the occurrence of pain during induced anoxemia. Because of the variability in the results and of the hazard to the patient, the use of induced anoxemia as a test for the presence of angina pectoris is of questionable value.

Quinine and Quinidine in Ventricular Fibrillation.—Schwartz and Jezer administered quinine dihydrochloride and quinidine sulphate intravenously in graded doses to two patients with auriculoventricular dissociation who were subject to tran-

sient seizures of ventricular fibrillation. The drugs were injected when the basic idioventricular rate did not vary more than five beats per minute over a period of several hours prior to their use and when premature ventricular beats interrupted the basic rhythm. The number of these was counted for each minute during the hour preceding the injections. The tests were carried out at a time when it was definitely known that the patients had been free from syncopal seizures for at least twenty-four hours prior to the injections of the drug. Such patients with transient seizures of ventricular fibrillation responded variably to the same dose of both quinine dihydrochloride and quinidine sulphate at different times. The intravenous administration of small doses of quinine dihydrochloride (maximal dose $1\frac{3}{4}$ grains, or 0.11 Gm.) and quinidine sulphate (maximal dose one-third grain, or 0.02 Gm.) resulted in the development of either a prefibrillatory mechanism or transient periods of ventricular fibrillation within from one to nine minutes after the injection. Once the prefibrillatory mechanism is precipitated by the administration of the drug, recurrent periods of transient ventricular fibrillation may follow for several hours at a time. The intravenous injection of these drugs resulted in a more rapid appearance of ventricular fibrillation when premature ventricular beats were already present prior to the onset of the experiment. Since the intravenous use of these drugs precipitated transient periods of ventricular fibrillation in patients who are subject to such seizures, the use of such drugs by this method is contraindicated in such patients.

American Journal of Cancer, New York

21: 757-1036 (Aug.) 1934

- Experimental Alteration of Malignancy with Homologous Mammalian Tumor Material: I. Results with Intratesticular Inoculation. A. E. Casey, New York.—p. 760.
- *Id.: II. Intracutaneous Inoculation of Preserved Material. A. E. Casey, New York.—p. 776.
- Carcinogenicity of Chrysene and Oleic Acid. A. C. Bottomley and C. C. Twort, Manchester, England.—p. 781.
- *Bone Formation in Metastases of Osteogenic Sarcoma: Report of Case with Metastases to the Brain. W. G. Harding 2d, Walroonga, Australia, and C. B. Courville, Los Angeles.—p. 787.
- Primary Sarcoma of the Great Omentum. S. Sanes and F. E. Kenny, Buffalo.—p. 795.
- Malignant Melanoma: Case Report. H. A. Ball, San Diego, Calif.—p. 805.
- The Probability of the Chance Occurrence of Multiple Malignant Neoplasms. J. C. Bugher, Ann Arbor, Mich.—p. 809.
- Is Cancer Becoming More Prevalent? C. Bolduan and L. Weiner, New York.—p. 825.
- Tumors of Breast Related to Estrin Hormone. C. F. Geschickter, D. Lewis and C. G. Hartman, Baltimore.—p. 828.

Experimental Alteration of Malignancy.—Casey carried out experiments to determine whether a homologous tumor material that enhanced every observed phase of the rabbit tumor following intratesticular inoculation would have similar effects following intracutaneous inoculation into the flank. Groups of rabbits injected in the skin of the flank with the material and inoculated into the same or neighboring areas two weeks later with tumor were compared with control groups inoculated with the tumor alone. The results for the control animals confirmed previous experience that the rabbit tumor, although malignant following intratesticular inoculation, is a spontaneously regressing, nonmetastasizing growth following intracutaneous inoculation into the flank. Nevertheless, in the experimental animals treated with the homologous material a higher incidence of and more rapidly growing and lingering local tumors occurred. Distant metastases were discovered in a large proportion of the animals. The preserved material, in enhancing both the primary and the metastatic phases of the malignant change, is therefore not dependent on intratesticular inoculation and is able to overcome the natural resistance of the skin of the rabbit to this tumor. Sex and immaturity are not barriers to the action of this material.

Bone Formation in Metastases of Osteogenic Sarcoma.—Harding and Courville report a case in which all the metastatic foci of osteogenic sarcoma contained bone in a developmental or adult form. In the liver and the lungs some portions of this osteoid tissue were heavily impregnated with calcium, either distributed regularly, as in the case of adult bone, or deposited irregularly in excess, as is common in

abnormal calcification. The nodule in the occipital lobe, which had been roentgenographically visible, contained an abundance of calcium. The nodule in the left central region, separated from the bone by an intact dura and pia-arachnoid, revealed only the earliest evidences of calcium deposit, although osteoid tissue was more or less evenly and abundantly distributed throughout the entire mass. The greater abundance of calcium in the nodule in contact with dura and bone would seem to favor Grieg's view to the extent that a local source of calcium facilitates the process of adult bone formation even though it is not entirely necessary. This nodule was slightly larger and was probably the older of the two.

American J. Obstetrics and Gynecology, St. Louis

28:161-318 (Aug.) 1934

- Treatment of Dysmenorrhea by Resection of Presacral Sympathetic Nerves: Evaluation of End Results. V. S. Counseller and W. M. Craig, Rochester, Minn.—p. 161.
- Pregnancy in Tuberculosis. G. T. Palmer, Springfield, Ill.—p. 173.
- *Method of Study and Treatment of Menstrual Disturbances of Endocrine Origin. C. A. Elden, Rochester, N. Y.—p. 179.
- Choice of Methods for Pregnancy Diagnosis. Leita Davy and R. A. Nason, Madison, Wis.—p. 186.
- Uterine Obstruction in Carcinoma of Cervix. L. S. Drexler and W. E. Howes, New York.—p. 197.
- Plea for Alexander Method of Shortening Round Ligaments for Retroversion of Uterus. L. J. Ladin and J. O. Smigel, New York.—p. 206.
- Infrequent Complications of Uterine Cancer, with Certain Clinical Observations. L. C. Scheffey, Philadelphia.—p. 214.
- Endometriosis in Laparotomy Scars. E. A. Schumann and W. E. Parke, Philadelphia.—p. 222.
- Lateral Pelvic Roentgenogram: Interpretation of Its Obstetric Value. J. B. Jacobs, Washington, D. C.—p. 227.
- Changes in Cervical Mucous Membrane and Decidual Reaction in Cervix During Pregnancy. H. B. Levey, Kansas City, Mo.—p. 234.
- *Pupillary Sign in Ruptured Ectopic Pregnancy. U. J. Salmon, New York.—p. 241.
- Granuloma of Cervix. W. B. McGee, New Orleans.—p. 244.
- Pregnancy in an Atretic Uterine Horn. J. M. Nokes, University, Va.—p. 250.
- Death from Delayed Chloroform Poisoning. P. F. Olson and D. C. Beaver, Rochester, Minn.—p. 254.
- Fatal Eclampsia at the Fifth Month with Complete Necropsy. R. D. Porter, Jenkintown, Pa.—p. 257.
- Prenatal Prevention of Potential Hemorrhagic Disease of the New-Born: Supplementary Report. I. N. Kugelmass and J. E. Tritsch, New York.—p. 259.
- Treatment of Functional Uterine Bleeding with Extract of Placenta. A. Gabriellianz, Chicago.—p. 262.
- Congenital Rhabdomyoma of Heart. C. H. Ill and J. W. Gray, Newark, N. J.—p. 264.
- Ovarian Pregnancy. S. M. Dodek, Washington, D. C.—p. 268.
- Placenta Praevia Complicating Twin Pregnancy. J. F. Gallagher and L. D. Heaton, Fort Sam Houston, Texas.—p. 270.
- Tuberculosis and Adenomyoma. A. F. Lash, Chicago.—p. 272.
- Secondary Lymphogranulomatosis Vulvae. A. F. Lash, Chicago.—p. 274.
- Tuberculosis of Fallopian Tubes, Uterus and Uterine Cervix. C. D. Hauch, Chicago.—p. 276.
- Tuberculous Salpingitis Discovered Incidental to Salpingostomy. A. B. Hunt, Chicago.—p. 277.
- Microscopic Visualization of Cervix Uteri. H. A. Sacks, Chicago.—p. 278.
- Banti's Disease Complicating the Puerperium. Dorothy L. Ashton, Philadelphia.—p. 280.
- Acute Thyroiditis Complicating the Puerperium. P. B. Wahrsinger, New York.—p. 281.
- Lithopedion. C. G. Johnson and S. H. Wills, New Orleans.—p. 282.
- Ruptured Uterus Following Classic Cesarean Section with Normal Birth During Interval. P. V. Fava, Newark, N. J.—p. 284.
- Secondary Abdominal Pregnancy. E. C. Sage and C. R. Kennedy, Omaha.—p. 285.

Menstrual Disturbances of Endocrine Origin.—From a study of sixty cases of menstrual disturbances of endocrine origin, Elden states that it is obvious that there is no relation between the type of menstrual disturbance and the endocrine gland involved primarily. Often an impression from the history as to the gland involved primarily is wrong, as is borne out when the case is studied thoroughly. Diagnosis of menstrual disturbances should not be made on laboratory observations alone. One needs only to consider that a low basal metabolic rate may be due to either thyroid or pituitary. A low blood sugar content may be due to the suprarenals or the pancreas. Hypothyroidism and hyposuprarenalism are at times similar. It is therefore necessary to get all the clinical, physical and laboratory data together in order to establish a diagnosis. The subsequent course of the patient on specific therapy is the criterion of correct diagnosis. In order that menstrual disturbances may be treated correctly, the whole endocrine

system should be investigated before treatment is instituted. Treatment is directed at the involved gland and varies according to the nature of the disturbance.

Pupillary Sign in Ruptured Ectopic Pregnancy.—During the course of the routine physical examination of a patient suspected of having a ruptured ectopic pregnancy, Salmon noticed a unilateral dilatation of the pupil. At laparotomy about a liter of fresh blood was found in the peritoneal cavity and the bleeding traced to a ruptured tubal ectopic gestation. After operation the pupils were found to be equal in size and remained so throughout the patient's convalescence. At the time of admission it was noted that the patient complained of severe right shoulder pain, and it was felt that the dilated pupil might, like the shoulder pain, be caused by the intra-abdominal hemorrhage. Accordingly, during the following ten months the pupils were carefully examined in all patients suspected of having an ectopic pregnancy. During this period sixteen patients with ruptured ectopic pregnancy were operated on, and in four of these, preoperatively, a unilateral dilatation of the pupil was noted, the dilatation disappearing in all cases after operation. In the four patients that had manifested a dilated pupil, shoulder pain was a prominent symptom. However, the dilated pupil and the shoulder pain were not always on the same side.

American Journal of Psychiatry, New York

91:1-240 (July) 1934

- Modern Psychiatry and Mental Healing. G. H. Kirby, New York.—p. 1.
- Schizophrenia in Only One of Identical Twins: Case. J. Kananin, Howard, R. I.—p. 21.
- Bell's Mania: Acute Delirium. S. H. Kraines, Chicago.—p. 29.
- Concerning Cause of Death in Certain Psychoses. G. M. Davidson, Ward's Island, N. Y.—p. 41.
- Some Psychologic Concepts Related to View of Mental Health. W. Line, Toronto.—p. 51.
- Physical Therapy. H. F. Hoffman, Allentown, Pa.—p. 59.
- Wet Packs and Prolonged Baths: Clinical Study of Reactions to These Forms of Therapy. J. A. Kindwall and G. W. Henry, White Plains, N. Y.—p. 73.
- Syphilis in Shakespeare's Tragedy of Timon of Athens. A. H. Woods, Iowa City.—p. 95.
- Hughlings Jackson's Views on Degrees of Automatic Action, as Applied to Case of Catatonia. M. Levin, Harrisburg, Pa.—p. 109.
- Effects of Sodium Amytal on Metabolism. W. Dameshek, A. Myerson and J. Loman, with assistance of Caroline Stephenson, Boston.—p. 113.
- Insanity in Its Medicolegal Relations to Some Notable Criminal and Civil Cases: Tests of Responsibility. J. J. Kindred, New York.—p. 137.
- Blood Pressure and Pulse Rate, Their Relationship to Convulsions and Frequency of Convulsions Under Influence of Oxygen Insufflation in Cryptogenic Convulsive States. J. Notkin, New York.—p. 147.
- Atropine Treatment of Postencephalitic Parkinsonian Syndrome. F. M. Adams and P. L. Hays, Vinita, Okla.—p. 151.
- Psychic Disturbances After Head Injuries. P. Schilder, New York.—p. 155.
- Sequelae of Head Injury: Psychogenic Factor. I. Strauss and N. Savitsky, New York.—p. 189.

American Journal of Public Health, New York

24:813-924 (Aug.) 1934

- Effect of a Confidential Inquiry on Recorded Mortality from Syphilis and Alcoholism: Survey in the Westchester County Health District. M. Nicoll Jr. and Marjorie T. Bellows, White Plains, N. Y.—p. 813.
- Study of Granite Cutting and Granite Cutters in Vicinity of New York City. Adelaide Ross Smith, New York.—p. 821.
- Diphtheria Studies: I. Significance of Schick Test in the Adult. C. C. Young, W. E. Bunney, Minna Crooks, G. D. Cummings and F. C. Forsbeck, Lansing, Mich.—p. 835.
- Official Reporting of Childhood Type of Tuberculosis. Jessamine S. Whitney, New York.—p. 850.
- Outfit for Rapid Collection of Blood Samples. G. D. Cummings and F. C. Forsbeck, Lansing, Mich.—p. 852.
- New Mechanism of Defence Against Bacteria Through the Use of Certain Foods. L. Arnold, Chicago.—p. 854.
- Elements Involved in Determining the Qualifications of Health Officers. E. L. Bishop, Nashville, Tenn.—p. 859.
- Epidemiologic and Clinical Study of an Influenza Epidemic in a College Community. C. E. Shepard, Stanford University, Calif.—p. 861.
- Standard Blood Agar Plate in the Control of Scarlet Fever: Experience of a Rural Health Unit. H. R. O'Brien and R. P. Fowler, Oberlin, Ohio.—p. 870.
- Medical Supervision in Public Schools. W. L. Gould, Albany, N. Y.—p. 873.
- Use of Laymen in Official Public Health Nursing Programs: City. J. D. Dowling, Birmingham, Ala.—p. 880.
- Qualifications and Training of Local Health Officers. T. Parran Jr. and D. M. Griswold, Albany, N. Y.—p. 887.

Annals of Internal Medicine, Lancaster, Pa.

8: 115-242 (Aug.) 1934

- Biliary Dyskinesia. A. C. Ivy and P. Sandblom, Chicago.—p. 115.
Proliferative and Exudative Tuberculosis, with Reference to Their Relationship to Various Fractions Derived from Tubercle Bacillus. F. M. Pottenger, Monrovia, Calif.—p. 123.
Further Studies on Granulopenia: Report of Twelve Cases. S. R. Roberts and R. R. Kracke, Atlanta, Ga.—p. 129.
*Drug Idiosyncrasy, with Especial Reference to Amidopyrine as Cause of Agranulocytic Angina. T. Fitz-Hugh Jr., Philadelphia.—p. 148.
Diaphragmatic Hernia. C. A. Hedblom, Chicago.—p. 156.
The Q Deflection in Normal and Abnormal Human Electrocardiograms. C. Shookhoff and A. H. Douglas, Brooklyn.—p. 177.
Certain Basics of Physical Therapy. T. P. Sprunt, Baltimore.—p. 192.
The Diabetic Child: Etiologic Factors. H. J. John, Cleveland.—p. 198.
Psychologic Considerations in Treatment of Neuroses. A. H. Jackson, Washington, Conn.—p. 214.
Medical Aspects of National Health Insurance. G. Fleming, Montreal.—p. 220.

Drug Idiosyncrasy and Agranulocytic Angina.—In Fitz-Hugh's series of twenty-six patients, seventeen are known to have ingested amidopyrine just before and/or during the disease. A few well established negative instances, however, prove that amidopyrine cannot be accepted as the sole cause. Some of these nonamidopyrine cases may possibly be caused by idiosyncrasy to other drugs and substances (quinine, dinitrophenol, orthiodoxybenzoate, neoarsphenamine, bacterial vaccine) or to a similar abnormal reaction (anaphylactoid) to foods, exogenous or endogenous toxins whether chemical or bacterial, or hormone substances or a conditioned deficiency. If the causal mechanism is of idiosyncratic or allergic nature, it must represent a special blood and bone marrow sequence of events heretofore unrecognized and different from the ordinary clinical and hematologic phenomena usually ascribed to such mechanism. From the standpoint of leukocyte behavior the mechanism seems to be more like that of acute anaphylactic shock in laboratory animals than human allergy. The therapeutic implications of the author's observations suggest the advisability of more specific attempts at elimination and detoxification, especially with regard to the liver as a possible seat of allergic disturbances.

Archives of Internal Medicine, Chicago

54: 161-314 (Aug.) 1934

- Chronic Rheumatic Diseases of the Spine. J. L. Miller, Chicago.—p. 161.
*Periarthritis Nodosa (Necrotizing Arteritis) Associated with Rheumatic Heart Disease: Note on Abdominal Rheumatism. C. K. Friedberg and L. Gross, New York.—p. 170.
Some Cytologic and Serologic Aspects of Infectious Mononucleosis. C. A. Stuart, A. M. Burgess, H. A. Lawson and H. E. Wellman, Providence, R. I.—p. 199.
Concentration of Serum Protein in Different Types of Edema: Illustrative Cases. H. M. Hand, San Francisco.—p. 215.
*Cardiac Output in Relation to Cardiac Failure. T. R. Harrison, B. Friedman, G. Clark and H. Resnik, Nashville, Tenn.—p. 239.
Anemia: Classification and Treatment on Basis of Differences in Average Volume and Hemoglobin Content of Red Corpuscles. M. M. Wintrobe, Baltimore.—p. 256.
Pernicious Anemia: Parenteral Treatment with Extracts Prepared from Digested Equine Liver and from Self-Digested Stomach. A. E. Meyer, Rockford, Ill.; O. Richter and H. Legere, Chicago.—p. 281.
*Curability of Hay Fever After Preseasonal Pollen Treatment. I. C. Walker, Boston.—p. 289.
Modifying Action of Calcium and Sodium Bicarbonate on Salicylate Intoxication. H. E. Thompson and C. A. Dragstedt, Chicago.—p. 308.

Periarthritis Nodosa and Rheumatic Heart Disease.—Friedberg and Gross observed a significant association of periarthritis nodosa with rheumatic heart disease. Of eight cases of typical periarthritis nodosa verified at necropsy, four presented evidence of rheumatic heart disease: a history of rheumatic fever and the clinical observation of rheumatic cardiovascular disease. Postmortem examination revealed characteristic gross and histologic features of rheumatic fever, including the presence of Aschoff bodies in every case. In addition to the eight cases, the diagnosis of periarthritis nodosa was made in five other cases at postmortem examination, two of which presented clinical evidence of rheumatic valvular disease. Postmortem examination revealed a verrucous endocarditis of the mitral valve in both cases and a large thrombotic mass involving an aortic commissure in one of them. Both cases ran the febrile course of a general infection accompanied by clinical evidences of glomerulonephritis. The evidence in the literature for the association of rheumatic fever and periarthritis nodosa is only of suggestive value. Aside from their four cases the authors have been unable to discover

any others in which there was unquestionable rheumatic heart disease associated with periarthritis nodosa. It seems probable that many cases of periarthritis nodosa previously reported might have been regarded as presenting rheumatic cardiac lesions had they been studied from this point of view. In three of the four cases the symptoms of the final illness were due both to an acute attack of rheumatism and to the lesions of periarthritis nodosa. In the fourth case there were no obvious evidences of active rheumatic infection. Nevertheless, an acute rheumatic lesion was found in the heart. They conclude that they were not dealing with two unrelated diseases but that the periarthritis nodosa was one of the manifestations of the rheumatic infection. In two cases an attack of scarlet fever occurred within eight weeks preceding the final illness. Because of the brief interval between the attack and the obvious development of rheumatic heart disease as well as periarthritis nodosa, it may well be conjectured whether scarlet fever did not stand in some etiologic relationship to these diseases. This association could be employed to reason that not only the rheumatic fever but the periarthritis nodosa was intimately associated with the preceding infection by the scarlatinal organism. In one case, in addition to the periarthritis, the clinical and pathologic features of malignant nephrosclerosis were added to those of rheumatic fever. Fahr maintained that malignant sclerosis is the result of the activity of one or more of several toxic or infectious agents. In two cases the abdominal symptoms, so common in periarthritis nodosa, dominated the clinical picture sufficiently to lead to an exploratory operation. The authors suggest that, when acute abdominal symptoms are present in a patient suffering from rheumatic fever, complicating periarthritis nodosa should be considered. This complication is offered as an organic basis for some of the instances of so-called abdominal rheumatism.

Cardiac Output in Relation to Cardiac Failure.—Harrison and his associates studied the cardiac output of patients with cardiac disease by the acetylene method, modified in such a way as to allow the detection of inaccurate results. The cardiac output per minute of patients with congestive heart failure is usually from 10 to 30 per cent less than that of normal subjects but may be within the normal range. Patients without circulatory disorders may have an equally low cardiac output. The level of the cardiac output per minute, whether considered as such or in relation to the metabolic rate, bears no relation to the presence or absence of congestive failure, for: 1. The range and the average values of the cardiac output are similar for compensated and decompensated patients. 2. In a given individual, clinical improvement and disappearance of congestive phenomena may be associated with an increase, a decrease or no change in this function. In general, the output of the heart per beat tends to be somewhat less during congestive failure. The metabolic rate is normal in some patients and elevated in others. The authors interpret these observations as indicating that the "forward failure" (diminished output) hypothesis, which ascribes the clinical manifestations of congestive heart failure to an insufficient supply of blood to the tissues, is erroneous. They discuss the "backward failure" (back pressure) theory and conclude that there is much evidence in favor of it and no valid evidence against it.

Curability of Hay Fever.—Walker states that preseasonal treatment for hay fever offers a cure, provided the proper pollen extract is used, careful tests are made, and judgment is employed in the manner of treatment. Of the author's 734 patients who received treatment preseasonally for various periods ranging from one to eight seasons, 190, or 26 per cent, have remained free from hay fever. To this number might be added sixty-eight more who are on trial and who are anticipated to remain free from hay fever, to make the total 258, or 35 per cent. Since the largest number of failures occurred after one season of treatment, only half as many after the second season and half as many after the third season as after the second, it is evident that many failures following one season of treatment would result in benefits after a second season, and the same for the third season, provided treatment was continued. The largest number and likewise the highest percentage of cases of permanent relief followed treatment that was given for three, four, five and six successive seasons. The most marked diminution in the cutaneous reaction occurred in

these groups, although the patients who were treated only one or two seasons ran a close second. Of the 190 patients who have remained free from hay fever since the omission of treatment, eight have been free for three years, thirty-one for four years, seventeen for five years, twenty-five for six years, six for seven years, twenty-two for eight years, three for nine years, forty for ten years, twenty for eleven years, eight for twelve years and ten for thirteen years, and all are still free from hay fever.

Archives of Pathology, Chicago

18: 157-294 (Aug.) 1934

- *Renal Glomerulus in Various Forms of Nephrosis. D. L. Wilbur, Rochester, Minn.—p. 157.
- Active and Passive Plect Formation of Joint Cartilage. E. Freund, Iowa City.—p. 186.
- *Histologic Changes in Knee Joint in Various Infections. C. S. Keefer, F. Parker Jr. and W. K. Myers, Boston.—p. 199.
- Thrombo-Angiitis Obliterans: Distribution of Lesion in Vessels of Leg. J. R. E. Morgan, Toronto.—p. 216.
- *Generalized Torulosis Associated with Hodgkin's Disease. Marion S. Fitchett, Norfolk, Va., and F. D. Weidman, Philadelphia.—p. 225.
- Influence of Various Diets on Experimental Amyloidosis in Mice. D. Y. Ku, Woosung, China, and M. A. Simon, Cleveland.—p. 245.
- Chemical Study of Arteriosclerotic Lesions in Human Aorta. Dorothy R. Meeker and J. W. Jobling, New York.—p. 252.

Renal Glomerulus in Various Forms of Nephrosis.—Wilbur made a histologic study of the glomeruli in kidneys in cases of simple nephrosis in which the diagnosis was made post mortem. Ten cases of acute simple nephrosis presented distinct glomerular changes consisting primarily of irregular thickening of the glomerular basement membrane and less often of an increase in the number and swelling of the endothelial and epithelial cells of the tufts. In the majority of cases these changes were considered independent lesions, the result of associated hypertension, arteriosclerosis or other complicating renal disease. They did not resemble the lesions seen in cases of clinical glomerular nephritis. In thirty-one cases of acute simple nephrosis the glomeruli showed, as a rule, normal tufts with occasional minor variations consisting of variable amounts of debris, usually granular, in the capsular spaces, swelling, degeneration, a slight increase in the number of the endothelial or epithelial cells of the tufts and occasionally slight, irregular thickening of the glomerular basement membrane. These changes were probably degenerative and not suggestive of or similar to those observed in cases of glomerular nephritis or lipid nephrosis. In thirteen cases of bile nephrosis in which the diagnosis was made at necropsy, the majority occurred in persons in whom the glomeruli appeared normal histologically, although a moderate amount of granular material was often noted in the capsular spaces. In six of these cases, slight swelling or proliferation of the endothelial cells of some of the tufts was observed. The epithelial cells of the basement membrane appeared normal essentially. These changes were slight and could not be correlated with the clinical observations. In three cases of chemical nephrosis the glomeruli appeared normal except for congestion, desquamation of many of the epithelial cells and granular material in the capsular spaces. The glomerular changes observed in two cases of eclampsia were similar to those described by Bell. In one case of hyperemesis gravidarum the glomeruli appeared normal, although granular material was noted in the capsular spaces. The renal lesion in eclampsia is probably secondary and, although it is distinct and probably degenerative, its nature cannot be stated at present.

Histologic Changes in Knee Joint in Various Infections.—Keefer and his co-workers studied the pathologic lesions of eight cases of infective arthritis due to streptococcus, gonococcus, meningococcus and pneumococcus infections and to an unidentified gram-negative coccus. The character of the change varied with the mode of infection, which occurred by way of the blood stream, by direct extension from an osteomyelitis or by direct extension from the skin overlying the joint. In the cases in which the infection of the joints occurred as a result of a hematogenous infection, the process began in the synovial connective tissue, with infiltration of polymorphonuclear, lymphoid and plasma cells about the blood vessels and between the strands of connective tissue. As the infection progressed, the synovial lining was destroyed and replaced completely by granulation tissue. Later the cartilage and bone were involved in the process and destroyed. When the bone was involved

primarily, the predominating lesions were a destruction of bone and the overlying cartilage. The inflammation of the synovia showed a progression from the superficial to the deeper layers. The changes were characteristic of an inflammatory process and could be distinguished readily from degeneration. Aside from the mode of infection, the type of infecting organism, the effect of pressure, the character of the cellular reaction and the presence of antiferment substances in the synovial fluid determine the final pathologic state.

Generalized Torulosis Associated with Hodgkin's Disease.—Fitchett and Weidman report a case of generalized torulosis associated with Hodgkin's disease. The presence of extensive renal involvement calls attention to the necessity for examination of the urine for torula cells as they have been observed in the urine at least once. Attention is called anew to the possibility that the intestine may serve as the primary portal of entry for torulosis. Cases of Hodgkin's disease showing meningeal symptoms demand examination for torular infection.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 449-512 (Aug.) 1934

- Muscle Training and Reeducation Exercises in Anterior Poliomyelitis. L. Hubbard, Warm Springs, Ga.—p. 453.
- Poliomyelitis: Personal Experience. R. D. Brown, Hammond, Ind.—p. 457.
- Dialhermy in Management of Medical Kidney Diseases. G. Kolischer, Chicago.—p. 459.
- Electrosurgery in Ophthalmology. M. H. Cottle, Chicago.—p. 463.
- Traumatic Myositis, with Hematoma and Calcification. J. C. Elsom, Madison, Wis.—p. 466.
- Radiathermy: Important Advance in Short Wave Therapy. D. Kobak, Chicago.—p. 469.
- New Type of Electrode for Dialhermy and Electrocardiography. P. E. Jonard, Brooklyn.—p. 473.
- Physical Therapy in Fractures. R. H. Kennedy, New York.—p. 474.
- The Gastro-Intestinal Tract in Chronic Rheumatism. E. F. Traut, Chicago.—p. 479.
- Treatment of the Colon as the Focus of Infection. R. L. Sexton, Washington, D. C.—p. 483.
- Enema and Colonic Lavage. H. W. Soper, St. Louis.—p. 487.
- Recent Hydrotherapeutic Observations in Arthritis. J. D. Currence, New York.—p. 490.

California and Western Medicine, San Francisco

41: 73-144 (Aug.) 1934

- Nephrotomy: Its Indications, Limitations and Terminal Results. E. Hess, Erie, Pa.—p. 73.
- Modern Obstetric Standards. Alice Freeland Maxwell, San Francisco.—p. 79.
- California State Medical Library: Report for Second Year. C. D. Leake, San Francisco.—p. 82.
- Heat Prostration: Its Treatment at Boulder Dam. R. O. Schofield, Boulder City, Nev.—p. 83.
- Nonorganic Convulsive Disorders of Childhood, with Especial Reference to Idiopathic Epilepsy. I. McQuarrie, Minneapolis.—p. 86.
- Urology in Medicine: Its Future Role. L. Michelson, San Francisco.—p. 91.
- Serum Preservatives. M. S. Marshall, San Francisco.—p. 94.
- Psittacosis. J. B. Luckie, Pasadena.—p. 98.
- Plague. W. H. Kellogg, Berkeley.—p. 103.
- Sarcoma of Testicle. T. A. Card and E. M. Bingham, Riverside.—p. 108.
- Problem of Dementia Praecox. D. A. Macfarlane, Berkeley.—p. 110.
- Compulsory Health Insurance. F. L. Hoffman, Philadelphia.—p. 114.
- Finding Health Insurance Facts. C. H. Rowell, San Francisco.—p. 116.

Colorado Medicine, Denver

31: 259-292 (Aug.) 1934

- Coronary Artery Disease in Hypothyroidism. H. A. Black, Pueblo, and R. H. Kampmeier, New Orleans.—p. 262.
- Black Widow Spiders: Warning. Frances E. Becker and F. E. D'Amour, Denver.—p. 265.

Delaware State Medical Journal, Wilmington

6: 175-198 (Aug.) 1934

- Septad of Mortality. A. C. Jost, Dover.—p. 175.
- Undulant Fever. C. A. Sargent, Dover.—p. 179.
- Id.: R. D. Herdman, Dover.—p. 181.
- Alum Precipitated Toxoid in Prevention of Diphtheria. E. F. Smith, Dover.—p. 182.
- Treatment of Pulmonary Tuberculosis. L. D. Phillips, Marshallton.—p. 184.
- Tuberculin Testing in Delaware Schools: Preliminary Report. Laura E. McClure, Marshallton.—p. 186.
- Value of Prenatal Care During Pregnancy. J. B. Derrickson, Frederica.—p. 189.
- Vital Statistics: Why? J. R. Downes, Newark.—p. 191.
- Public Works and Public Health: Opportunity for the Medical Profession. R. C. Beckett, Dover.—p. 192.

Indiana State Medical Assn. Journal, Indianapolis

27: 125 368 (Aug 1) 1934

- Newer Aspects of Radiotherapy, with Especial Reference to Carcinoma of Breast L A Smith, Indianapolis—p 325
Modern Phases of Nasal Sinus Abnormality W F Clevenger, Indianapolis—p 329
Primary Cancer of the Lung Report of Case in a Boy Aged Ten L K Gould, Fort Wayne—p 332
Burns of the Eye E O Atvis, Indianapolis—p 335
Bichloride of Mercury Poisoning L R Peterson, Indianapolis—p 337
Constitutional Factor in Disease E F Kaiser, Indianapolis—p 340
Apparatus for Suction Siphonage W D Little, F B Ramsey and J E Falcher, Indianapolis—p 344.

27: 369 424 (Sept. 1) 1934

- Puerperal Inversion of Uterus Report of Instance H F Thurston and F Teague, Indianapolis—p 369
Congenital Absence of Bile Ducts Report of Case E W Laboe, Fort Wayne—p 373
Diet and Fluids in Pregnancy P MacKenzie, Evansville—p 376
History of Birth Control in America C O McCormick, Indianapolis—p 385.
Relation of Medical Legislation to Medical Education W N Wishard, Indianapolis—p 391.

Iowa State Medical Society Journal, Des Moines

24: 425 468 (Aug.) 1934

- Oration in Medicine The Education of a Physician G B Crow, Burlington—p 425
Headache T A Ely, Des Moines—p 429
Nonspecific Immunotransfusions in treatment of Hemolytic Streptococcus Septicemia E E Kotke, Des Moines—p 431
Roentgen Ray Diagnosis of Nonopaque Foreign Bodies in Bronchi E L Rypins, Iowa City—p 436
Roentgen Visualization of the Liver and Spleen, with Thorium Dioxide Sol L G Ercksten, Dubuque—p 438
Indications for Thyroid Surgery T E Davidson Mason City—p 440

Johns Hopkins Hospital Bulletin, Baltimore

55: 85 170 (Aug.) 1934

- Pneumococcal Lipoid Nephrosis and Relation Between Nephrosis and Nephritis II Experimental Studies S S Blackman Jr Baltimore—p 85
Insomnia in Clinic Psychiatric Practice W Muncie, Baltimore—p 131
Urobilin Excretion of Infancy and Childhood Relation to Blood Destruction and Formation H W Josephs, Baltimore—p 154

Journal of Bacteriology, Baltimore

28: 111-220 (Aug) 1934

- Pleomorphism of Bacteria I Pleomorphism of Bacillus Paratyphi B I M Kritschewski and I W Ponomarewa Moscow, U S S R—p 111
Variations in Electrophoretic Mobilities of Brucella Groups Dorothea E Smith and Eleanor W. Joffe, Philadelphia—p 127
Cell Inclusions and Endospore Formation in Bacillus Mycoides I M Lewis, Galveston, Texas—p 133
Some Practical and Theoretical Aspects of Mold Metabolism O E May and H T Herriek, Washington, D C—p 145
Disagreement in Mitogenetic Experiments Problem in Bacterial Physiology O Rahm, Ithaca, N Y—p 153
Growth and Metabolism of Mixed Cultures of Ammonia Producing Micro Organisms J E Greaves, J D Greaves and Lola Hickman, Logan, Utah—p 159
Comparison of Lead, Bismuth and Iron as Detectors of Hydrogen Sulphide Produced by Bacteria C E Zobel and Catherine B Feltham, LaJolla, Calif—p 169
Note Regarding Lag Period B L Herrington, Ithaca, N Y—p 177
Isolation of Obligately Anaerobic Bacillus from Feces of New Born Infants and from Other Human Sources and Its Probable Identity with "Kopfechenbakterien" of Escherich, Rodella's "Bacillus III," and Bacillus Paraputrificus (Brenstock) I C Hall and M L Snyder, Denver—p 181
*Comparative Study of Certain Media Used in Presumptive Tests for Bacterium Coli M. P. Horwood and A Heifetz, Cambridge Mass—p 199
Bacteria Decomposing Alginic Acid S A Waksman Clifton N J, Cornelia L Carey and M C Allen—p 213

Comparison of Media Used in Presumptive Tests for Bacterium Coli.—In comparing certain media used in presumptive tests for Bacterium coli, Horwood and Heifetz found lactose broth to be the most sensitive when freshly isolated strains of fecal Bacterium coli were used. Brilliant green lactose peptone bile was second, the Dominick and Lauter medium third, and Salle's crystal violet lactose broth fourth. When suspensions of Bacterium aerogenes in water were employed, the same media were equally sensitive. When the waters were examined, lactose broth again proved to be the most sensitive presumptive test medium, with brilliant green lactose

peptone bile showing almost the same degree of sensitivity. The other media were less satisfactory. The Dominick and Lauter medium yielded the greatest proportion of completed tests and the brilliant green lactose peptone bile was almost as good. Numerically, brilliant green lactose peptone bile yielded more completed tests than any other medium. The superior results obtained with lactose broth as a presumptive test medium cannot be explained necessarily on the ground that it is more susceptible to spurious presumptive tests. The inferior results obtained with the other media may be due to the inhibition or destruction of the so-called weaker strains of Bacterium coli, which may have sanitary significance. In view of this possibility, lactose broth still seems to be the best presumptive test medium available. Efforts to improve its effectiveness by suitable buffering, by shortening the period of incubation and by other means should be made before it is abandoned. The excellent results obtained with brilliant green lactose peptone bile indicate its value in the sanitary water analysis.

Journal of Comparative Neurology, Philadelphia

60: 1 184 (Aug 15) 1934

- Taste Fibers and the Fifth Nerve Ruth E Wirtanen and J M D. Olmsted, Berkeley, Calif—p 1
Development of Nuclei and Tracts Related to Acoustic Nerve in the Pig R F Shaner, Edmonton, Alta—p 5
Innervation of Choroid Plexuses and Blood Vessels Within Central Nervous System S L Clark, Nashville Tenn—p 21
Observations on Peripheral Course of Sensory Fibers in First Four Cervical Nerves of the Cat J C Hinsey and K B Corbin, Palo Alto, Calif—p 37
Results of Unilateral Pyramidal Section in the Rat D H Barron, Albany, N Y—p 45
Mechanism of Vision XIII Projection of Retina on Cerebral Cortex of the Rat A S Lashley, Chicago—p 57
Development of Septum Mollae (Mammals Cat) B F Kingsbury, Ithaca, N Y—p 81
Interpeduncular Nucleus of the Brain of Necturus C J Herrick, Chicago—p 111
Experimental Study of Rootlets of Vagus Nerve in the Cat J O Foley and F S DuBois, University, Ala—p 137
Thalamic Projection to Central Gyrus in Macacus Rhesus A E Walker, Chicago—p 161

Journal of Immunology, Baltimore

27: 125 234 (Aug) 1934

- Studies on Tissue Reactions in Immunity XV. Union Between Specific Antigen and Skin of Protein Immunized Rabbits R L Kahn and Elizabeth B McDermott, Ann Arbor, Mich—p 125
Id XVI Capacity of Different Tissues of Protein Immunized Rabbits to Combine with Antigen R. L. Kahn, Ann Arbor, Mich—p 143
Changes in Caliber of Pial Vessels in Guinea Pigs During Anaphylactic Shock K H Finley, Boston—p 169
*Mechanism of Antibody Formation After Extirpation of Antigen Depot P. R. Cannon and K L Burt, Chicago—p 173
Studies of Scarlet Fever II Different Toxins Produced by Hemolytic Streptococci of Scarlatinal Origin S B. Hooker and Edna M Follensby, Boston—p 177
Comparative Value of Fresh and Aged Tetanus Toxoid as an Immunizing Agent Note Harriet Leslie Wilcox, New York—p 195
Pohonyichitis Active Immunization Method for Producing Detectable Amounts of Neutralizing Substance in Macacus Rhesus with Non infective Mixtures of Immune Serum and Virus S D Kramer, M Schaeffer and W H Park, New York—p 199
Formation of Precipitin for Group A Specific Carbohydrate of Streptococcus Hemolyticus in Rabbits Injected Intravenously and Subcutaneously D Seegal, V Heidelberg and Elizabeth L Jost, New York—p 211
Prozone Phenomenon in Specific Bacterial Agglutination F S Jones and Marion Orcutt, Princeton, N J—p 215

Antibody Formation After Extirpation of Antigen Depot.—Cannon and Burt made an attempt to determine the way by which the bacteria left the site of injection. The ears of rabbits, amputated within eight seconds after injection of a heavy suspension of staphylococci, were sectioned and stained with eosin-azure. Large masses of bacteria were seen in the loose subcutaneous tissues round blood vessels and a few bacteria were visible within the lumens of veins. Occasional cocci were seen also in lymph canals, but for the most part the micro-organisms appeared to seep into the veins and in that way became dispersed throughout the body. These observations furnish morphologic support to the conclusions reached by Roberts. Postulation of a new mechanism for the production of antibody after the removal of the antigen depot is

unnecessary, at least until proof is available that antibody formation may occur independently of the escape of antigen from the original depot.

Journal of Nutrition, Philadelphia

S: 125-252 (Aug. 10) 1934

- Iron and Copper Retentions in Young Children. Amy L. Daniels and Olive E. Wright, Iowa City.—p. 125.
- Influence of Previous Diet, Growth and Age on the Basal Metabolism of the Rat. Kathryn Horst, L. B. Mendel and F. G. Benedict.—p. 139.
- Studies on Effect of High Doses of Irradiated and Nonirradiated Ergosterol on the Albino Rat. J. T. Hauch, Chicago.—p. 163.
- Factors Which Determine Renal Weight: XVI. Nature of Protein Intake. E. M. MacKay and Lois Lockard MacKay, San Francisco.—p. 187.
- Utilization of Energy Producing Nutrient and Protein as Affected by Individual Nutrient Deficiencies: I. Effects of Cystine Deficiency. R. W. Swift, O. J. Kahlenberg, L. Voris and E. B. Forbes, State College, Pa.—p. 197.
- Disappearance of Vitamin C from Adrenals of Scorbutic Guinea-Pigs. A. E. Siehrs and C. O. Miller, Chicago.—p. 221.
- Spectrum Analysis of Milk Ashes. W. F. Drea, Colorado Springs, Colo.—p. 229.
- Adaptation of Paired-Feeding Method for Determination of Supplementary Value of Proteins. J. R. Haag, Corvallis, Ore.—p. 235.
- Calcium and Phosphorus Content of Some Alabama Vegetables. Edna R. Bishop, Auburn, Ala.—p. 239.
- Variation of Basal Metabolic Rate per Unit Surface Area with Age. M. Molitch and R. F. Cousins, Jamesburg, N. J.—p. 247.

Journal of Pharmacology & Exper. Therap., Baltimore

51: 371-506 (Aug.) 1934

- Comparative Actions of Sympathomimetic Compounds: Bronchodilator Actions in Perfused Guinea-Pig Lungs. M. L. Tainter, J. R. Pedden and Martha James, San Francisco.—p. 371.
- Studies on Coronary Circulation: IV. (A) Duration of the Coronary Dilator Action of Theophylline Ethylenediamine: (B) Effect of Insulin-Free Pancreatic Extract on Coronary Circulation. O. O. Stoland, A. M. Ginsberg, D. L. Loy and P. E. Hiebert, Lawrence, Kansas City, Kan.—p. 387.
- Colorimetric Method for Determination of Nitrite in Blood. E. J. Stieglitz and Alice E. Palmer, Chicago.—p. 398.
- Contribution to Pharmacology of Narcotine. N. Cooper and R. A. Hatcher, New York.—p. 411.
- Effect of Tissue Extract and Other Vascular Depressor Substances on Isolated Intestines. Jean D. Craven, Lexington, N. C., and F. D. McCrea, Durham, N. C.—p. 421.
- Effect of Dinitrophenol on Spontaneous Activity of the Rat. V. E. Hall and Margaret Lindsay, San Francisco.—p. 430.
- *Diffusible and Nondiffusible Calcium in Blood and Cerebrospinal Fluid of Cats Intoxicated with Bulbocapnine and of Human Beings Under Bromide Treatment. S. Katzenelbogen, with technical assistance of T. J. Czarski, Baltimore.—p. 435.
- Effects of Morphine and Its Derivatives on Intestinal Movements: III. Peristalsis. H. Krueger, Ann Arbor, Mich.—p. 440.
- Diuretic Action of Pituitary Extracts and Responsible Principle or Constituent. K. I. Melville and D. V. Holman, Montreal.—p. 459.
- Aconite: IV. Electrocardiographic and Pharmacologic Studies of Aconite and Its Alkaloids. J. B. Wolfe and J. C. Munch, Philadelphia.—p. 471.
- *Effect of Dinitrophenol on Circulation Time. H. Freeman, Worcester, Mass.—p. 477.
- Comparative Study of Hydrastine, Bicuculline and Adlumine. A. D. Welch and V. E. Henderson, Toronto.—p. 482.
- Note on Bicucine. A. D. Welch and V. E. Henderson, Toronto.—p. 492.

Calcium in Blood and Cerebrospinal Fluid.—Katzenelbogen carried out studies in cats before and after the administration of bulbocapnine and also in human beings with low and high bromide contents in the blood. The observations show that it is the diffusible serum calcium that chiefly makes the decrease of the total blood calcium during bulbocapnine intoxication. The distinct changes in the diffusible part of the blood calcium, however, do not reflect on the calcium content of the cerebrospinal fluid, although symptoms of intoxication are marked. The calcium studies in cats before administration of bulbocapnine and those in human beings with low bromide concentration in blood show that in normal conditions the content of cerebrospinal fluid calcium is essentially equal to the content of diffusible calcium in the blood. The observations in both bulbocapnine intoxication in cats and in human beings saturated with bromide suggest that intoxication is apt to alter the normal balance of equality between cerebrospinal fluid calcium and diffusible blood calcium. Such alteration appears to be caused primarily by a drop in the diffusible blood calcium, as seen in the bulbocapnine experiments.

Effect of Dinitrophenol on Circulation Time.—Freeman gave nine male schizophrenic patients showing no apparent organic disease dinitrophenol (1-2-4) in amounts of from 3 to

5 mg. per kilogram of body weight daily for seven weeks. These amounts were sufficient to raise the oxygen consumption rates a mean of 28 points, resulting in a significant mean decrease in the circulation time of 6.2 seconds. A new level having been reached, no further variation in the circulation time was observed with an increase in the oxygen consumption.

Kansas Medical Society Journal, Topeka

35: 289-328 (Aug.) 1934

- Unusual Hemorrhagic Disease Due to Hypocalcemia in Nutritional Anemia. M. Snyder, Salina.—p. 289.

Minnesota Medicine, St. Paul

17: 439-500 (Aug.) 1934

- Indications for Operative Interference in Middle Ear Suppuration. II. Newhart, Minneapolis.—p. 439.
- *Relief of Acute Asthma by Intravenous Administration of Concentrated Glucose Solution: Report of Cases. J. A. Lepak, St. Paul.—p. 442.
- Eye in Cardiovascular Disease. A. E. Smith, Minneapolis.—p. 445.
- Some Notes on the History of Epilepsy. G. R. Kamman, St. Paul.—p. 450.
- How One Learns to Write. J. M. Thomas, Minneapolis.—p. 456.
- Progress in Treatment of Carcinoma of the Stomach. W. Walters, Rochester.—p. 461.
- Sacro-Iliac Tuberculosis. C. K. Petter, Oak Terrace.—p. 465.
- Selection and Preparation of Prosthetic Patients for Operation. C. D. Crecy, Minneapolis.—p. 467.
- The Rise and Decline of Homeopathy. W. Ogden, St. Paul.—p. 472.

Intravenous Administration of Dextrose in Asthma.—Lepak treated four cases of bronchial asthma secondary to an infection of the upper respiratory tract by the intravenous administration of a 50 per cent solution of dextrose. The best results were obtained in the bedridden patients with 100 cc. of the dextrose solution given consecutively for two or three days. In the ambulatory type of patient, 50 cc. of the solution administered for several days gave encouraging results. A concentrated solution relieved the intensity as well as the frequency of the asthmatic attacks. The attacks of asthma sometimes were relieved completely for several months. The solution was heated to 95 F. to avoid constitutional reaction. This solution was administered slowly by syringe through a medium sized needle. Placing the arm in a horizontal position or even slightly lower than the forearm will aid in preventing the coagulation of blood in the vein. Occasionally, during the last part of the administration the patient may complain of soreness in the arm. The pain follows the course of the vein and is undoubtedly due to an irritation of the venous wall by the concentrated dextrose solution. It is possible that less concentrated solutions may give the beneficial pulmonary results and yet reduce the local danger of a thrombosis or phlebitis.

New England Journal of Medicine, Boston

211: 289-338 (Aug. 16) 1934

- Prolan in Treatment of Abnormal Uterine Bleeding. J. V. Meigs, Boston.—p. 289.
- Fetal Birth Injuries, with Especial Reference to Intracranial Lesions. P. B. Bland, Philadelphia.—p. 296.
- Radium Therapy in Uterine Hemorrhages of Benign Origin: Analysis of End Results of One Hundred and Fifty Consecutive Personal Cases. L. E. Phaneuf, Boston.—p. 304.
- Prevention and Control of Tuberculosis in Commonwealth of Massachusetts, with Especial Reference to Activities of the Massachusetts Tuberculosis League. F. T. Lord, Boston.—p. 312.
- Annual Report of Executive Secretary of the Massachusetts Tuberculosis League. F. Kiernan, Boston.—p. 314.
- Annual Report of the Educational Secretary of the Massachusetts Tuberculosis League. Jean V. Latimer, Boston.—p. 318.
- Arthritis as Possible Manifestation of Allergy to Insulin. A. S. Johnson, Springfield, Mass.—p. 321.

211: 339-384 (Aug. 23) 1934

- *Diabetes and Cancer. A. Marble, Boston.—p. 339.
- Care of Syphilis in the Outpatient Department of the Boston City Hospital. J. G. Downing, Boston.—p. 349.
- Another Case of Sporotrichosis in Connecticut. E. C. Weise, Bridgeport, Conn.—p. 353.
- How Can the Individual or Family Secure the Best of Medical Care and Pay for It? C. Frothingham, Jamaica Plain, Mass.—p. 357.
- Methods of Testing and Management of the Deafened School Child. E. P. Fowler, New York.—p. 364.
- Simplified Concept of Arthritis. H. K. Thompson, Boston.—p. 370.
- Restoration of Necropsied Bodies: Better Method. H. W. Williams and D. G. Henderson, Taunton, Mass.—p. 371.
- Diabetes and Cancer.**—Marble made an analysis of 256 cases in which malignant disease and diabetes were associated. These represent cases recognized among 10,000 diabetic patients.

Among the fatal cases, the average duration of diabetes was 7.1 years. The average duration of symptoms of cancer was 1.8 years. The conclusion is drawn that, in general, cancer develops in the diabetic patient and not diabetes in the patient having cancer. Evidence is lacking that cancer brings about the diabetic condition. A study of available data shows that the increasing percentage of cancer deaths to total deaths during the last two decades is greater among diabetic patients than among members of the general population. This is thought to be due, in part at least, to the fact that the increased longevity of diabetic patients during the last decade has placed relatively more diabetic than nondiabetic persons in the cancer age zone. It does not necessarily imply that the diabetic patient is any more likely to develop cancer than the nondiabetic person. The author's series includes thirty-three cases of carcinoma of the pancreas, of which twenty-one were diagnosed either at operation or at necropsy. The incidence of carcinoma of the pancreas was therefore extraordinarily high. It was 12.9 per cent of the total number of cases as contrasted with less than 5 per cent in the general cancer statistics reported by others. The average duration of symptoms of cancer in the twenty-one proved cases of carcinoma of the pancreas was one year; in these cases the average duration of diabetes was 3.4 years. The latter figure represents the shortest duration of diabetes of any group of diabetic patients under observation. Thus a possible relationship between cancer of the pancreas and diabetes is suggested. Figures from the literature, however, tend to indicate that diabetes is relatively uncommon in cases of carcinoma of the pancreas.

Ohio State Medical Journal, Columbus

30: 473-544 (Aug. 1) 1934

- Studies in Hemolytic Jaundice. C. A. Doan, B. K. Wiseman and L. A. Erf, Columbus.—p. 493.
Pyloric Stenosis. R. D. Hostetter, Dayton.—p. 505.
Significance of Abdominal Pain from the Standpoint of the Urologist. F. W. Harrah, Columbus.—p. 509.

Pennsylvania Medical Journal, Harrisburg

37: 877-972 (Aug.) 1934

- Acute Nephritis in Children: Rational Treatment. J. D. Lytle, New York.—p. 877.
Small Volumes of Water Parenterally. W. J. Schatz, Allentown.—p. 886.
Management of Seropositive Latency in Syphilis. J. H. Stokes, Philadelphia.—p. 890.
Inoperable Vesicovaginal Fistula: Bilateral Transplantation of Ureters in Sigmoid Rectum. W. E. Lee and L. Herman, Philadelphia.—p. 894.
Jaundice: Observations of a Recent Epidemic in Roaring Creek Valley. H. F. Hunt, Danville; C. L. Johnston, Catawissa, and G. P. Moser, Ringtown.—p. 900.
Limitations of Official Medicine. T. B. Appel, Harrisburg.—p. 903.
Stria Malleolaris: Its Clinical Significance. G. W. Mackenzie, Philadelphia.—p. 906.
The Public Health Laboratory: Its Uses and Abuses. J. L. Laird, Philadelphia.—p. 910.
Traumatic Abdominal Emergencies. L. H. Landon, Pittsburgh.—p. 914.

Public Health Reports, Washington, D. C.

49: 959-980 (Aug. 17) 1934

- Production of Specific Immunity in White Mice by Intranasal Inoculation with Encephalitis Virus (St. Louis Type). C. Armstrong.—p. 959.
Review of the Federal Civil Works Projects of the Public Health Service. C. E. Waller.—p. 960.

49: 981-1010 (Aug. 24) 1934

- Tendencies in Standards of River and Lake Cleanliness. H. W. Streeter.—p. 981.
Recent Court Decisions on Milk Control. J. A. Tobey.—p. 993.

49: 1011-1050 (Aug. 31) 1934

- Maximal Temperatures and Increased Death Rates in Drought Area. S. D. Collins and Mary Gover.—p. 1015.
*Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by Virus Encountered in Studies of 1933 St. Louis Encephalitis Epidemic. C. Armstrong and R. D. Lillie.—p. 1019.

Lymphocytic Choriomeningitis Produced by Virus of St. Louis Encephalitis Epidemic.—Armstrong and Lillie describe a virus that was encountered during monkey-to-monkey transfer of infection from a patient who died during the 1933 St. Louis epidemic of encephalitis. From the patho-

logic picture produced by intracerebral inoculation of monkeys and mice, they designate the virus as the virus of experimental lymphocytic choriomeningitis. It is apparent to the authors that the virus is distinct from the 1933 St. Louis encephalitis strains for the following reasons: 1. Cebus monkeys and guinea-pigs refractory to encephalitis strains succumb to the choriomeningitis strains. 2. The usual incubation period of from four to ten days in monkeys is shorter than is usual with encephalitis strains (from eight to fourteen days). In white mice the reverse is true: from six to nine as compared to from four to eight days with the encephalitis virus. 3. Infected monkeys are less tremulous, less excitable, less active, more prone to refuse food and appear much more ill than do encephalitis-infected animals, while in white mice the more pronounced tremors, which pass into a striking tetanic, often fatal, convulsion, not observed in encephalitis mice, offer a striking contrast. 4. The virus is almost constantly found in the blood and spinal fluid of monkeys during the febrile stage, while the encephalitis virus has not been demonstrated in these fluids during this period. 5. The choriomeningitis virus fails to produce detectable symptoms in mice when introduced intranasally, while the encephalitis virus takes readily by this route. 6. The changes produced by the two viruses in mice and monkeys is usually readily distinguishable. 7. Cross neutralization tests indicate that the viruses are immunologically distinct. Furthermore, the choriomeningitis virus does not correspond in its characteristics with those described by various Japanese investigators who have reported the isolation, usually in rabbits, of strains of virus from cases occurring during the outbreaks of encephalitis in Japan, which were epidemiologically and clinically quite similar to that of St. Louis. 8. The virus does not possess the characteristics of a herpes virus; moreover, rabbits inoculated intracerebrally with the choriomeningitis virus without apparent results readily succumbed to intracerebrally administered herpes virus given thirty-four days later. Neither does it correspond with any described virus of which the authors are aware, for which reason they consider it to be a heretofore undescribed infectious agent of which the significance in nature is at present unknown.

South Carolina Medical Assn. Journal, Greenville

30: 157-178 (Aug.) 1934

- Conservative Treatment of Eclampsia. J. R. McCord, Atlanta, Ga.—p. 159.
Drugs That Forty-Five Years of Experience Have Taught Are Most Useful. J. H. McIntosh, Columbia.—p. 161.

Southern Medical Journal, Birmingham, Ala.

27: 667-746 (Aug.) 1934

- Intraventricular Tumors of the Cerebrum: Study of Eight Cases, Including Two Lateral Ventricle Meningiomas. E. F. Fincher Jr., Atlanta, Ga.—p. 667.
After Effects of Irritant Gases: Residual Pulmonary Lesions. A. R. Koontz, Baltimore.—p. 676.
Radium Treatment of Epithelioma of the Eyelid. H. Hailey, Atlanta, Ga.—p. 681.
Visualization of the Liver and Spleen as a Diagnostic Aid in Abdominal Conditions. J. E. Hirsch and B. F. Morton, Birmingham, Ala.—p. 683.
Roentgen-Ray Study of the Prostatic Urethra, with Especial Reference to Resection. W. W. S. Butler Jr. and C. H. Peterson, Roanoke, Va.—p. 690.
Thymic Dangers. R. E. de la Houssaye, New Orleans.—p. 694.
Thrombo-Angiitis Obliterans as a General Vascular Disease. T. P. Sprunt, Baltimore.—p. 698.
Traumatic Arteriovenous Aneurysm: Report of Case Involving Posterior Tibial Vessels of Both Legs, with a Summary Discussion of Literature on Arteriovenous Aneurysm. W. H. Parsons and W. G. Weston, Vicksburg, Miss.—p. 703.
Fractures of the Os Calcis. J. E. Stewart, St. Louis.—p. 711.
Rupture of the Bladder. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 713.
Experimental Pneumococcal Nephrosis and Its Relation to Glomerulonephritis. S. S. Blackman Jr., Baltimore.—p. 715.
Sinus Thrombosis and Thrombophlebitis Complicating Mastoiditis: Case Reports. E. G. Gill, Roanoke, Va.—p. 718.
Trachoma in the Native White Population of the United States. C. E. Rice and A. A. Drake, Rolla, Mo.—p. 728.
Transverse Rupture of the Aorta: Relationship to Sudden Death with Theories Concerning Etiology and Mechanics of Its Occurrence. J. C. Norris, Atlanta, Ga.—p. 733.
Teaching Bacteriology as a Part of the Function of the Department of Medicine. D. T. Smith, Durham, N. C.—p. 734.
Teaching of Bacteriology in a Department of Medicine. R. S. Mucken-tuss, St. Louis.—p. 735.
Classic Cesarean Section for Fulminating Eclampsia, with Subarachnoid Hemorrhage and Pyelitis. G. Baughman, Richmond, Va.—p. 738.

Tennessee State Medical Assn. Journal, Nashville

27: 283-330 (Aug.) 1934

Agranulocytosis: Report of Case, with Especial Reference to Certain Barbiturates as Cause of the Disease. W. H. Witt, Nashville.—p. 283.

*Peripheral Vasodilating Effect of Theobromine Given Orally and Intravenously. C. E. Newell, Chattanooga, and E. V. Allen, Rochester, Minn.—p. 291.

The Care of the Hyperthyroid. L. K. Gibson, Johnson City.—p. 297.

Psychopathic Personalities and the Law. J. P. Gilbert, Nashville.—p. 302.

Some Aspects of Otosclerosis. H. K. Cunningham, Knoxville.—p. 306.

Diabetes Insipidus: Its Treatment with Oral Administration of Pituitary Gland. F. T. Mitchell, Memphis, and B. T. Bennett, Bolivar.—p. 310.

Congenital Anomaly and Extrahepatic Ducts of Gallbladder. C. V. Crosswell, Memphis.—p. 316.

Peripheral Vasodilating Effect of Theobromine.—

Encouraged by the vasodilatation following the intravenous administration of theobromine, Newell and Allen made studies on the response of the temperature of the skin to the oral administration of theobromine. Twenty experiments were done on fifteen patients with thrombo-angiitis obliterans or thrombo-arteriosclerosis obliterans. The response of the cutaneous temperature to the oral administration of theobromine was less than 1 degree in five instances, and between 1 and 2 degrees C. in seven instances. There were only eight instances in which the increase in temperature of the skin exceeded 2 degrees C. Comparison was made with the vasodilatation following artificial induction of fever by the intravenous injection of typhoid vaccine in thirteen instances. The average increase in the temperature of the skin caused by theobromine was 1.8 degrees C., while that caused by artificially induced fever was 4.2 degrees C. The average duration of the increase in the temperature of the skin following the ingestion of theobromine was two hours. In this regard the drug is much less efficient than typhoid vaccine intravenously injected, for the vasodilatation induced by the latter ordinarily lasts for many hours. The oral administration of theobromine may be of some value in instances in which it is inadvisable to use methods of greater value (typhoid vaccine, sympathectomy). It may be used as an adjunct to these methods of treatment.

Wisconsin Medical Journal, Madison

33: 553-644 (Aug.) 1934

Maxillofacial Injuries. M. N. Federspiel, Milwaukee.—p. 561.

Id. R. P. Gingsass, Milwaukee.—p. 568.

Rationale of Bromide and Belladonna Therapy in Treatment of Peptic Ulcer. J. H. Rohlins, Madison.—p. 571.

Headaches from the Standpoint of the Neurologist. A. I. Rosenberger, Milwaukee.—p. 576.

*Calcification of Gallbladder: Report of Case. T. J. Snodgrass, Janesville.—p. 578.

Pellagra. E. F. Andre, Kenosha.—p. 581.

The Purposes of Prenatal Care. R. E. McDonald, Milwaukee.—p. 584.

Arteriovenous Aneurysm: Its Effect on the Heart: Brief Review of Literature and Report of Case. J. Dean and J. C. Dean, Madison.—p. 587.

Iodine in the Treatment of Exophthalmic Goiter. S. F. Haines, Rochester, Minn.—p. 592.

Ambulatory Treatment of Varicose Veins in the Clinics of Vienna and London. H. L. Miller, Milwaukee.—p. 595.

Treatment of Tuberculosis in General Practice VI. A. L. Banyai, Wauwatosa.—p. 597.

Calcification of Gallbladder.—Snodgrass reports a case of calcification of the gallbladder in which calcification of the whole wall occurred and in which only two large stones were present, one of which completely blocked the cystic duct. The final diagnosis was cholelithiasis, cholecystitis and calcification of the wall of the gallbladder. Robb believes that, if contraction and pressure atrophy can cause a calcification, a simple dilatation atrophy can do the same. He cites a specimen in which the gallbladder was markedly dilated and the cystic duct was blocked by only one gallstone. He explains the calcification on the basis of a blockage, resulting in a mucocele with consequent distention, loss of function leading to atrophy in the muscular strata, fibrous replacement and finally calcification. Calcification has taken place in the wall and the duct round the gallstone, and similar to the author's case the part of the cystic duct lower down remained normal, indicating, as Robb believes, that the stress of dilatation and of contraction and pressure atrophy are the chief causal factors in the calcification.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 241-290 (Aug. 11) 1934

Encephalitis. W. G. Wyllie.—p. 241.

Typhus Fevers in the Tropics. J. McGaw.—p. 244.

*Medicinal Treatment of Chorea (Calcium Aspirin). N. Mutch.—p. 246.

Thrombosis of the Penis and Urethral Hemorrhage. C. Morson.—p. 249.

Postral Drainage of the Lungs. H. P. Nelson.—p. 251.

Medicinal Treatment of Chorea.—Mutch believes that calcium acetylsalicylic acid (calcium aspirin) possesses the means of dealing simultaneously with the three etiologic factors of chorea: rheumatism, nervous strain and calcium deficiency. It supplies an adequate amount of calcium, produces a useful sedative effect on the brain, and combats the rheumatic element if given in appropriate doses. It dissolves readily in water (1 Gm. dissolves in 5 cc.) and forms a neutral solution suitable for administration by vein or subcutaneously, as well as by mouth. By crystallization from a solution of calcium chloride a form of calcium acetylsalicylic acid is obtained with a stability approximately equal to that of the parent acetylsalicylic acid itself. The author's nineteen patients were kept in bed. A light, mixed diet was given. The only drug employed (exclusive of aperients) was calcium acetylsalicylic acid (Coplans), dissolved in water and administered by mouth. The average daily dose varied up to 45 grains (3 Gm.) for a child 12 years of age. The rapidity of response did not vary accurately with the original severity of the choreic movements; mild cases sometimes proved more resistant than severe ones. The attack was not registered as over until the condition had so far improved that an average medical man would have had difficulty in diagnosing the case as one of chorea. Spontaneous movements had ceased. Voluntary movements were of average accuracy, and the patient could sustain a steady grip of the hand for a minute or more without fluctuation. The average time taken to control the chorea was seventeen days, and the limits were seven to forty-six days, respectively. The drug diminished the discomforts of the patients at all stages of treatment and did not produce any mental depression, undue drowsiness or digestive derangement. There was no relapse or secondary exhaustion when the drug was withdrawn finally.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

41: 509-668 (Aug.) 1934

Ancient and Modern. A. L. Robinson.—p. 509.

Antenatal Care in the Netherlands. J. G. Salomonson.—p. 533.

Terms of Admission and Training of Midwives at Government Training College for Midwifery in Rotterdam. Wesselink.—p. 562.

Regeneration of Uterine Mucosa in Connection with Myomas and Endometriosis. de Snoo.—p. 568.

New Technic in Dealing with Superior Rectovaginal Fistulas. N. M. Bey.—p. 579.

Abdominal Hysterectomy: Notes on Three Hundred Cases. M. L. Treston.—p. 588.

*Early Rupture of Membranes in Treatment of Eclampsia. W. Stroganoff.—p. 592.

*Vesicovaginal Fistula Resulting from Simple Ulceration of Prolapse in an Old Woman: Case. May Ratnayake.—p. 597.

Acquired Atresia of Vagina and Its Cure by Plastic Operation: Case. May Ratnayake.—p. 599.

Multiple Fibromyomas of Uterus in Association with Ovarian and Anal Fibromyoma: Report of Case. Jocelyn Moore.—p. 602.

Rupture of Membranes in Treatment of Eclampsia.—

Stroganoff advocates early rupture of membranes in the treatment of eclampsia. By the early rupture he means rupture when the os is closed or not larger than 2 inches. The membranes should not be ruptured in the transverse position or in the presentation of the cord. Rapid delivery followed rupture of the membranes. Even when labor had not commenced, delivery occurred within an average of twenty-two hours and six minutes. There were seventy-four primiparous and twelve multiparous patients. The reduction in the number of fits following the rupture of membranes was unexpected. In fifty of eighty-seven cases not a single fit was observed to occur prior to delivery following rupture of the membranes. Of this number three patients had fits subsequent to delivery. In preeclamptic cases the effect of the operation was also favorable: only two of six patients had fits prior to delivery and the other four had fits only after delivery. The author believes

that the favorable results obtained by early rupture of the membranes may be explained by a number of theoretical considerations. Following the discharge of from 150 to 400 cc. of the amniotic fluid, the uterus becomes smaller and the pressure in it is lessened and, further, the absorption of the amniotic fluid containing certain ferments and extractive substances into the mother's circulation is thus reduced. Together with the decrease in the size of the uterus, the contents of the abdominal cavity are also reduced in volume and the intra-abdominal pressure in it is lowered, at least for a certain period of time, which results in the abdominal organs being better supplied with blood. The diaphragm descends somewhat lower and its excursions become less restricted, oxidation of the blood is improved and all the organs of the body, and especially those of the abdominal cavity, come under better conditions of nutrition and respiration. The heart is also under more favorable conditions. The changes are small, but their importance cannot be denied. It may be that nervous and, especially, vasomotor reactions due to the rupture of membranes, with all its consequences, are of still greater importance. The author believes that an insufficient oxygen content in the blood is a most important factor in the development of severe eclampsia. The technic consists in dilating the cervical canal and then rupturing the membranes. When the os admits one finger or more, the use of dilators is unnecessary.

Vesicovaginal Fistula.—Ratnayake presents a case of vesicovaginal fistula resulting from ulceration of a prolapse. Under open ether, the vaginal mucosa was raised off the bladder by the flap method, much difficulty being experienced owing to thick cicatricial tissue. The vesical wall with the fistula was exposed. The fistula, being small, was closed with a purse string of fine silk. The vaginal mucosa was approximated by a continuous catgut suture. A self-retaining catheter was introduced and continued to be used for seven days. The patient made a good recovery. The secondary operation for repair of the perineum was undertaken two weeks later with an uneventful convalescence. The author stresses the following points of the case: 1. Ulceration of a prolapse due to friction from clothing had extended so deeply at one spot as to involve the vesical wall and mucosa, resulting in the formation of a fistula. 2. The patient passed small quantities of urine frequently and was not conscious of the dribbling, except as what she called a watery discharge. 3. Healing of the ulceration produced sufficient cicatrization and shortening of the anterior vaginal wall to cure the prolapse partially. 4. The existence of the fistula was detected almost by accident. Failure to detect it would have resulted in an unsatisfactory operation for repair of the pelvic floor with leakage of urine interfering with healing. The value of a preliminary cystoscopic examination before repair of the pelvic floor is undertaken is stressed. Pyelography is invariably carried out at some clinics to eliminate the existence of kinking of a ureter and hydronephrosis.

Journal of Tropical Medicine and Hygiene, London

37: 209-224 (July 16) 1934

Pathogenic Factors in Ascariasis. R. Girges.—p. 209.
Pellagra in the Sudan. N. L. Corkill.—p. 214.

Lancet, London

2: 291-342 (Aug. 11) 1934

Toxemias of Pregnancy. Louise McIlroy.—p. 291.
Lymphadenoid Tissue of Upper Respiratory Tract. H. V. Forster.—p. 296.
Ancylostoma Anemia and Its Treatment by Iron. A. G. Biggam and P. Ghaliongui.—p. 299.
Subarachnoid Hemorrhage in General Practice. J. N. Gale.—p. 304.
Presbycusis and Its Treatment. M. Yearsley.—p. 306.
Pain of Herpes Zoster Treated with Pituitrin. F. H. Gillett.—p. 307.
Evipan Sodium as Anesthetic in Pulmonary Tuberculosis. M. Lask and J. H. Crawford.—p. 308.

Pain of Herpes Zoster Treated with Solution of Pituitary.—Gillett presents three cases in which solution of pituitary was used for the treatment of herpes zoster. He has found that the injection of solution of pituitary is an uncertain and by no means an infallible treatment. It appears to act most dramatically when the pain is most intense. He can at present offer no explanation of why this should be so, but the treatment is a valuable asset to the practitioner in his attempt to relieve a patient from the pain accompanying herpes zoster.

Practitioner, London

133: 129-224 (Aug.) 1934

General Medical Aspects of Holidays. H. Rolleston.—p. 129.
Common Minor Soft Tissue Injuries and Their Treatment. W. D. Doherty.—p. 132.
Medical Memoranda on Mountaineering. C. Wilson.—p. 141.
Health Cruises and Prophylaxis in Sea Sickness. T. G. Maitland.—p. 146.
Cruises and Climates: Notes. F. E. Storey.—p. 156.
Bathing. R. Cove-Smith.—p. 164.
Some Rare but Clinically Important Conditions. J. W. Linnell and H. A. Dunlop.—p. 174.
Surgical Aspects of Heart Disease. G. Slot.—p. 184.
Diathermy in the Treatment of Diseased Tonsils. J. A. L. Cook.—p. 194.
Walter Cromer: Physician to King Henry the Eighth. R. R. James.—p. 200.
Medicolegal Problems in General Practice: VIII. National Health Insurance: Legal Position and Obligations of the Insurance Practitioner. H. G. Dain.—p. 208.

Rare but Clinically Important Conditions.—Linnell and Dunlop discuss conditions that almost never occur in the experience of an average practitioner but that are worthy of serious consideration as being of surpassing interest. Chronic pulmonary tuberculosis of the adult type almost never occurs in young children. In disease of the cardiovascular system the mitral valves are almost never merely retracted through the effects of rheumatic endocarditis so as to cause a wider aperture than usual and thus simple regurgitation. Pain in the right side accompanied by marked pyrexia is almost never, if ever, due to acute appendicitis, if there have been rigors. The victim of a sudden perforation of the stomach or intestine is usually seized with excruciating abdominal pain and lies remarkably still. Retention of urine is not uncommon in hysterical states. Incontinence, on the other hand, in adult life, is almost never encountered in "functional" disorders and should always be looked on as a sign of organic disease affecting the central nervous system. A patient suffering from acute arthritis with fever, who is not considerably better after forty-eight hours of treatment by full doses of salicylates, almost certainly does not have rheumatic fever. Addison's disease should never be diagnosed in the presence of a high or even normal blood pressure. Almost never is the systolic blood pressure in Addison's disease, when diagnosable, above 100 mm. of mercury. A rash that itches to any degree is almost never syphilitic. A pustular rash that involves the trunk more than the face, the wrists and the hands is almost never due to smallpox. A malarial patient, continuously resident two years in a nonmalarial country, almost never suffers from malaria, however much he may protest to the contrary. The connection between acute rheumatism and erythema nodosum has never been proved, though till comparatively recently it has been generally accepted. Whatever its cause or causes may be, one thing is certain: almost never, if ever, does endocarditis result; it runs its course, whatever treatment is given, and clears up without sequelae. A "breakdown" is almost never due to overwork, so long as both work and environment are congenial. An unpleasant situation is almost always present and is to be looked for.

Japanese Journal of Experimental Medicine, Tokyo

12: 199-332 (June 20) 1934

Study on Decomposition of Some Monosaccharides by Mammalian Blood. H. Murata.—p. 199.
Pathogenic Agent of "Hasami Fever" (*Spirochaeta Autumnalis*). T. Abe.—p. 255.
Physical and Chemical Characteristics of Bacteriophage. K. Muramatsu.—p. 271.
The Purifying of Diphtheria Toxoids. S. Hosoya, T. Tanaka and K. Kagabe.—p. 277.
Investigations on *Bacillus Histolyticus*. T. Mita.—p. 285.
Mechanism of Hemo-Agglutination and Hemolysis and Also on Relation Between Them. H. Moriyama.—p. 299.

Japanese Journal of Gastroenterology, Kyoto

6: 1-12 (April) 1934

Significance of Liver in Metabolism of Lipoid Bodies: III. Changes in Lipoid Bodies in Blood and Bile When Various Kinds of Bile Acids Are Administered. Y. Asoda.—p. 1.
Significance of Pigments in Treatment of Infection of Bile Ducts: Report I. Experimental Studies in Treatment of Typhoid *Bacillus* Carriers. C. Takahashi.—p. 7.
Id. Report II. Experimental Studies in Treatment of Bile Ducts Infected by *Bacillus Coli*, *Staphylococcus Albus* and *Flavus*. C. Takahashi.—p. 10.

Journal de Chirurgie, Paris

44: 161-319 (Aug.) 1934

Chronic Bone Liquefying Abscess from Staphylococcus. P. Moulounguet and J. Rousset.—p. 161.

Total Gastrectomy in Man. J. Ducuing, C. Soula and R. Fränkel.—p. 175.

*Fractures of Anterior Edge of Lower Extremity of Radius. G. Rousseau and C. Adamesteanu.—p. 211.

Fractures of Anterior Edge of Lower Extremity of Radius.—Rousseau and Adamesteanu consider fractures of the anterior edge of the lower extremity of the radius with the preceding carpal subluxation that accompanies it a rare condition but a clinical entity that one is justified in studying. The exact etiology is uncertain, though it is a condition of adults. It has been reproduced experimentally on the cadaver by increasing the push of the anterior surface of the horizontally placed scaphoid against the anterior articular margin of the radius. The diagnosis is not impossible to make clinically but should have roentgenologic confirmation. Treatment in recent cases consists in rapid mobilization of the articulation to avoid joint stiffness. When combined with carpal subluxation, the deformity must first be reduced under general anesthesia. In old cases nothing is to be hoped from orthopedic treatment. Surgical intervention by the anterior route with osteotomy of the callus, reduction of the luxation and replacement of the detached fragment in good position must be done.

Paris Médical

2: 1-32 (July 7) 1934

Diseases of Nutrition in 1934. F. Rathery and M. Rudolf.—p. 1.

*Instability of Glycemia in Course of Cure by Insulin in Some Diabetic Children. P. Mauriac and M. Traissac.—p. 14.

Dystrophic Lymphatism of Childhood and Puberty. G. Mouriquand.—p. 17.

Beriberi, Obscure Disease of Alimentary Disequilibrium. Fabry.—p. 23.

Insulin Factor of Cietrization. P. Barral.—p. 28.

Instability of Glycemia in Diabetic Children.—Mauriac and Traissac report the cases of two diabetic children in whom a narrow margin existed between hyperglycemia and hypoglycemia and insulin shock. In both children (aged 3 and 7 years) glycosuria of several grams continued in spite of a diet of 120 Gm. of carbohydrate and 20 units of insulin, and 150 Gm. of carbohydrate and 18 units of insulin, respectively. In both, also, the smallest increase in insulin or the slightest decrease in carbohydrates sufficed to cause hypoglycemic symptoms. If, on the other hand, the insulin was reduced as little as 2 units the glycosuria increased markedly and was accompanied by signs of diabetes-polyuria, thirst and asthenia. This syndrome has been encountered by the authors only in infantile diabetes. They believe that the disorder thus revealed is essentially one of regulation and illustrates the complex neuroendocrine-sympathetic origin of such diabetes.

Schweizerische medizinische Wochenschrift, Basel

64: 721-740 (Aug. 4) 1934

Physical Therapy of Cardiac and Circulatory Diseases. Frey.—p. 721.

*Treatment of Gastric and Duodenal Ulcer with Modified Sippy Method. A. Albrecht.—p. 724.

Rupture of Spleen. H. Renfer.—p. 732.

Circulatory Disturbances and Their Significance for Public Health. S. Zurukzoglu.—p. 732.

Reform of Medical Education in France. A. Schüler.—p. 739.

Modified Sippy Treatment of Gastric Ulcer.—Albrecht states that a modified Sippy treatment has been employed for the past several years at the medical clinic in Zurich. He gives a tabular outline of the method which indicates that small amounts of food (in the first few days only milk and cream and later additions of solid foods) are given on the full hour from 6 o'clock in the morning until 7 o'clock in the evening inclusive, and he points out that the new procedure differs from the original Sippy treatment in the manner of reduction of the acidity. Attempts are made to decrease the secretion by a belladonna preparation that exerts a favorable influence also on the motility. The acidity of the gastric juice is reduced by the administration of dispersed aluminum hydroxide. These medicaments are administered in such a manner that a measure (approximately from 3 to 4 Gm.) of the aluminum preparation is given at half an hour after 6, 7, 9, 10, 12, 1, 3, 4, and 6 and at 8, and 15 drops of an extract of belladonna leaves at 8:30 and 2:30, and 10 drops of the same substance at

half an hour after 11, 5 and 7. Depending on the condition of the patient, the treatment, which ordinarily is continued for twenty-eight days, may be lengthened or shortened and the doses of the medicaments may be reduced. Some patients, particularly those with constipation, may be given magnesium preparations (magnesium oxide or a mixture of magnesium peroxide and magnesium oxide) instead of the aluminum hydroxide. The preparation of the belladonna leaves may eventually be replaced by the administration of atropine (0.5 mg. three times a day). The patient should be kept in bed during the entire duration of the treatment, and after it has been discontinued a light diet is advisable. The author states that the treatment was employed in 108 cases. He asserts that the results were favorable not only as regards the subjective symptoms but also in that the roentgenologic control revealed the disappearance of many ulcer niches. However, the reduction of the acidity was not quite satisfactory. The acidity values and the other symptoms of ulcer did not always run parallel; at any rate, the part played by the acidity in the genesis of ulcer and its symptoms is not entirely clear as yet.

Minerva Medica, Turin

2: 257-288 (Aug. 25) 1934

Endamoeba Histolytica and Acid Feces: Consideration on Parasitologic Diagnosis of Intestinal Amebiasis. P. Croveri.—p. 257.

*Some Obscure Points in Pathogenesis of Acute Pulmonary Edema: Part of Carotid Sinus in Its Mechanism. A. Salmon.—p. 261.

Experimental Research on Significance of Donaggio's Reaction in Urine. G. Ferro-Luzzi.—p. 268.

Atrophic Pigmentary Tubercleulid: Case. V. Grillo.—p. 271.

Abscess Due to Chemical and Chemo-Active Fixation in Medical Practice. V. Gandini.—p. 274.

Carotid Sinus in Mechanism of Acute Pulmonary Edema.—Salmon states that in the area of bifurcation of the primary carotid artery, that is, in the sinus of the internal carotid, there is to be found in the adventitia a rich plexus of nerve fibers covering the carotid sinus itself. The fibers of this plexus meet in a small nerve described by Hering and designated as the nerve of the carotid sinus or Hering's nerve. Its fibers anastomose with those of the glossopharyngeal nerve and the vagus. The carotid plexus presents anatomic connections with the carotid gland situated in the same region. This gland, made up largely of a chromaffin substance, is considered by many anatomists an accessory chromaffin organ. Numerous fibers of the upper cervical ganglion pass to the intercarotid plexus. The region of Hering's "carotid sinus" is a center of special reflexes, in that pressure on the carotid region or its direct stimulation produces bradycardia and peripheral vasodilatation determining a marked lowering of arterial pressure. The center of these reflexes is the carotid sinus, which is anatomically and functionally connected with the bulbar nuclei. These reflexes may be abolished by destruction of the sinus and after resection of Hering's nerve, which is supposed to produce a depressive action on the arterial tension analogous to that of the depressor nerves of De Cyon-Ludwig. The carotid sinus is sensitive to mechanical stimuli, to increase of arterial pressure, to compression and shutting off of the carotid arteries and to chemical and thermic stimuli. The sinus is stimulated by epinephrine, strychnine, calcium chloride, caffeine, atropine, sparteine and other substances. The excitability of the sinus diminishes in suprarenal insufficiency. The author refers to the sympathetic-epinephrine or neurohormone theory of acute pulmonary edema. This theory, he believes, explains the relation of the condition to arterial hypertension. It does not explain why a hypersuprarenalemia of marked sympathetotonic action causes acute pulmonary edema, conditioned by dilatation of the pulmonary vessels and presenting characteristic vagotonic symptoms. The author states that this point is made clear by invoking the part played by the carotid sinuses, which react to sympathetotonic stimuli, particularly to epinephrine. Because of their intimate anatomic connections with the sympathetic nervous system, the bulbar nuclei, the vagus center, the respiratory center and the vasomotor nuclei, they give rise to vagotonic symptoms of bradycardia, fainting, polypnea and dilatation of the pulmonary vessels, the most characteristic symptoms of acute pulmonary edema. The author attributes an important part in the pathogenesis of acute pulmonary edema to the toxic factor (increase of potassium in the blood) and to the pulmonary factor.

Pediatrics, Naples

42:915-1034 (Aug. 1) 1934

- *New Sensitive and Rapid Serum Reaction for Diagnosis of Leishmaniasis. L. Auricchio and A. Chieffi.—p. 915.
Whooping Cough and Its Roentgenologic Manifestations. F. Tecilazie.—p. 921.
Hormone Situation During Experimental Rickets. A. Cabitto.—p. 927.
Some Cases of Congenital Malformations of Hands and Feet. A. Zuppa.—p. 943.
Lumbar Spina Bifida with Solid Tumor. L. De Gaetano.—p. 967.
Malignant Granuloma: Two Cases. E. Pezza.—p. 981.

Serum Reaction for Diagnosis of Infantile Leishmaniasis.—Auricchio and Chieffi demonstrate that the blood serum of children suffering from leishmaniasis flocculates rapidly on addition of solutions of iron peptonate. They employed the following technic in six children presenting different stages of the disease. The blood is taken from the finger tip of the fasting patient. The amount of serum needed for the reaction is 0.2 cc., for which 0.1 cc. of blood is sufficient. The blood is collected with a pipet having a capillary point. The solution of iron peptonate must be freshly prepared. Three tubes are used. The serum to be examined is put in one tube; the same amount of serum from a normal child or from one affected by a disease other than leishmaniasis is put in another tube for control, and 1 cc. of the solution of iron peptonate at 1:600 is run in the three tubes. These are shaken and placed in a thermostat at 98.6 F. and observed every ten minutes for forty minutes. If the reaction is positive in the test tube containing the serum to be examined, the liquid becomes opalescent and flocculent and precipitates slowly to the bottom of the tube. No change is seen in the liquid of the control tube, the same limpid aspect persisting as in the tube containing only the solution of iron peptonate. Sometimes an opalescence may be observed, which is due to the distilled water of the solution. The reaction was positive in all cases of leishmaniasis. The serum reaction was constantly negative in ten normal individuals, in six patients having congenital syphilis, in eight presenting various clinical manifestations, in two with hemopathies and marked splenomegaly, in ten cases of malaria, in six of favism and two of typhoid, and in three patients presenting acute respiratory diseases.

Revista Médica del Rosario, Rosario de Santa Fe

24:641-740 (July) 1934. Partial Index

- Generalized Osteosarcomatosis: Case. M. Steinsleger and I. Stultitel.—p. 641.
Benign Spontaneous Pneumothorax: Case. D. Staffieri.—p. 660.
Clinical Evolution and Anatomic Verifications in a Patient with Wounded Heart. W. Tjjerina F.—p. 667.
Intrafunicular Injection of Hypophylin. N. Baravalle.—p. 677.
Habitual Abortion and Corpus Luteum. A. G. Neumann.—p. 682.
Polymyositis in Rosario: Last Epidemic in 1934. I. Stultitel.—p. 693.
*Descent of Vertebral Hypophonesis. E. S. Weiler.—p. 700.

New Sign of Pleural Effusion.—Weiler considers Koranyi's sign (hypophonesis of the dorsal segment on direct percussion of the apophysis of the dorsal vertebrae) of diagnostic value in pleural effusion. The mechanism of the sign is explained by the interposition of the pleura, filled with liquid, between the lateral and ventral aspects of the vertebrae and the lung. The sign may also be present without pleural effusion in bilateral hepatization of that portion of the lung adjacent to the dorsal vertebrae and in intrathoracic tumors, when they are in contact with the lateral and ventral aspects of the dorsal vertebrae. To differentiate the presence of pleural effusion from that of either intrathoracic tumors or bilateral hepatization of the lung, the author has determined the hypophonesis of the dorsal segment during the changes of position of the patient. The upper limit of the hypophonesis is verified by means of the direct percussion of the dorsal apophysis and then marked, first with the patient standing or sitting down (classic technic) and then with the patient in abdominal decubitus. In cases of pleural effusion the upper limits of the vertebral hypophonesis descends one, two or more interspinous spaces. The author calls the sign "descent of the vertebral hypophonesis." Its mechanism is explained by the mobilization of the intrapleural liquid, leaving the pleura between the lung and the dorsal and ventral aspects of the vertebrae more or less empty during abdominal decubitus.

When the pleural effusion is not great and there is no hepatization of the lung, the vertebral column recovers its normal resonance along its whole length (positive hypophonetic disappearance). The absence of modifications of the vertebral resonance during the changes of position of the patient (negative hypophonetic descent) indicates an absence of pleural effusion. The sign is not equivalent to Grocco's triangular area and frequently shows itself without the existence of such an area.

Deutsche medizinische Wochenschrift, Leipzig

60:1155-1190 (Aug. 3) 1934

- Abuse of Soporifics. F. Flury.—p. 1155.
Eclampsic Uremia in Periarthritis Nodosa. C. A. Bau.—p. 1158.
*Diagnostic Use of Hemagglutination Reaction in Active Serum in Syphilis, Gonorrhea and Other Infections. W. Bachmann.—p. 1160.
Hay Fever as Leading Symptom of Allergic Disposition. E. Hanhart.—p. 1163.
*Early Diagnosis of Liver Diseases. F. Fischler.—p. 1167.
Relations Between Cell Metabolism and Growth. E. Bumm.—p. 1173.

Hemagglutination Reaction in Syphilis and Other Infections.—The correct interpretation of an accidental observation led Bachmann to evolve a suitable active method for the serologic demonstration of syphilis, which, like many other tests, is based on Bordet's complement fixation reaction. However, the positive outcome is indicated not by the simple inhibition of the hemolysis but by the agglutination of the sheep corpuscles. It was observed that, if sheep corpuscles in a 2.5 per cent suspension are mixed with concentrated or attenuated hemolysin (immune serum of a rabbit that has previously been treated with red corpuscles of sheep), the sheep corpuscles become agglutinated. If active serum of a syphilitic patient is mixed with attenuated antigen in the form of an alcoholic extract, placed in the incubator for from ten to twenty minutes and mixed with a 2.5 per cent suspension of sheep corpuscles, and if finally the hemolysin is added, a further incubation of thirty minutes duration leaves the hemagglutination in existence; while, if the same test is made with a negative active serum, lysis of the sheep corpuscles is observed. The technic of this hemagglutination reaction is as follows: Into each of three tubes are put 0.1 cc. of serum from the patient and 0.1 cc. of physiologic solution of sodium chloride and 0.2 cc. of diluted antigen in the proportions of 1:4, 1:5 and 1:6, respectively. Incubation lasting from fifteen to twenty minutes is followed by an addition of 0.2 cc. of a 2.5 per cent suspension of sheep corpuscles; finally 0.1 cc. of hemolysin, mixed 1:1 with physiologic solution of sodium chloride, is added. After thirty minutes of incubation the first reading is taken, to be followed by another reading from one to two hours later. A comparison of the results thus obtained in 982 tests revealed conformity between the inactive methods of the Wassermann reaction, the Meinicke turbidity reaction and the hemagglutination reaction in 90.7 per cent of the cases. The author emphasizes that the hemagglutination reaction is a valuable method for the serologic demonstration of syphilis, which has the advantage that the use of guinea-pig complement can be dispensed with and that it can be used in older serums (up to five days old). The reaction requires the previous examination of the hemolyzing or agglutinating immune serums for their suitability. He shows that the test can be used also for the serologic diagnosis of gonorrhea, typhoid and some cases of rhinoscleroma. He describes the technics for gonorrhea as well as for typhoid.

Early Diagnosis of Liver Diseases.—Fischler admits certain factors that make the diagnosis of liver diseases more difficult than the diagnosis of disorders of other organs, but he emphasizes that the negativistic attitude toward the early recognition of disorders of the liver is not justified. He shows that urobilinuria and urobilinogenuria are highly reliable and exact indicators for the existence of functional disturbances of the liver. Careful attention given to these symptoms for many years has convinced him that involvement of the liver in other disorders and disease of the liver itself are unusually frequent. He shows that, in the present status of knowledge, urobilinuria is still largely merely a symptom instead of a completely understood disease process. In answer to the question whether urobilinuria is always a sign of liver disease, he

points out that there is also a physiologic urobilinuria, and in explaining it he discusses the functions of the liver and the factors involved in these processes. He emphasizes that in the evaluation of urobilinuria the functional condition of the liver is of vital importance. Then he gives his attention to the pathologic urobilurias. They are characterized by prolonged duration of the elimination of urobilin bodies, by a considerable height of the urobilin content and by the relative unresponsiveness to antiurobilinuric dietary measures. He takes up in detail the urobilurias observed in febrile conditions, those caused by disturbances in the hematologic system, those accompanying diabetes mellitus, those caused by disturbances in the blood discharge from the liver and those occurring in cirrhosis of the liver, in disorders of the biliary system and in tumors of the liver. In the conclusion he states that he gave his attention primarily to the urobilurias because he considers them the first and most important signs of a disturbance in the function of the liver. He does not wish to discredit the many other functional tests of the liver.

Klinische Wochenschrift, Berlin

13: 1105-1136 (Aug. 4) 1934

Serous Inflammation. H. Eppinger, J. Faltingschick, H. Kaunitz and H. Popper.—p. 1105.

Manometric Investigations on Metabolism and Growth of Bacteria Under Influence of Ultraviolet Radiation and Under Conditions of Inflammation. Ruth Lohmann.—p. 1112.

Synthetic Formation of Beta-Oxybutyric Acid and Aceto-Acetic Acid in Starving and Diabetic Organism. J. Monguió.—p. 1116.

*Infection and Toxic Edema. B. Busson and N. Kovacs.—p. 1120.

*Rôle of Reticulo-Endothelium in Formation of Fibrinogen. A. Held and C. H. Behr.—p. 1120.

*Insulin Destroying Power of Erythrocytes. F. Rosenthal, Ilse Friedheim and R. Nagel.—p. 1121.

Gallstone Formation as Result of Parenchymatous Hepatitis. G. Lemmel.—p. 1124.

Infection and Toxic Edema.—Busson and Kovacs point out that the failure to demonstrate toxins in certain infections that obviously exert a toxic effect has long been a problem of immunobiology. At present it is assumed that in these instances the toxins are not found within the bacteria or eliminated by the bacteria but are probably formed within the tissues under the influence of the invading micro-organism. Attempts have been made to explain on this basis certain actions of gas gangrene and of some streptococcal and staphylococcal infections. However, since the nature and the chemical composition of the toxins produced within the organism were still obscure, the studies of Eppinger deserved especial attention. That author proved the strong toxic action of the allylamine formates and of related substances on the organism, and their development from organic substances by the action of certain bacteria in the culture medium and their presence in pathologic processes. Moreover, it was possible to demonstrate an apparently specific toxic action of these substances following the destruction of tissues. In view of these observations it appeared logical to investigate what influence is exerted by such amines on the course of an infection. The authors made the following infection experiments with a hemolytic streptococcus strain and a hemolytic staphylococcus strain: They injected into a guinea-pig on the left side of the thorax 1 cc. of an eighteen hour bouillon culture of a hemolytic staphylococcus. An infiltrate developed at the site of injection but gradually disappeared again, and the animal did not die. However, if simultaneously with the bacterial culture 0.05 cc. of acrolein was injected on the right side of the thorax, the animal died within twenty-four hours. It was demonstrated by another experiment that this was due to a local action of the acrolein, to a promotion of the fixation and development of the infection by a localized impairment of the tissue in the form of a serous inflammation, of a toxic edema, and was not the result of a generalized damage by the reduction of the natural resistance of the animal. This experiment was carried out by injecting the acrolein not into the region immediately adjacent to the staphylococcal depot but distant from it, into the gluteal muscle. The result was that the animal remained alive. Experiments with a strain of hemolytic streptococcus produced the same results. The author calls especial attention to the fact that in the animals that died the heart blood contained no streptococci or staphylococci but that the pathogenic

micro-organisms were present in great masses in the region of the toxic edema.

Rôle of Reticulo-Endothelium in Formation of Fibrinogen.—Held and Behr review several theories regarding the site of fibrinogen formation. They mention the liver, the bone marrow, a connection between leukocytosis and fibrinogen content, and finally the spleen and lymph nodes. These theories, most of which are well supported, can be brought into harmony by ascribing the capacity for fibrinogen formation either to all cells or to a type of cell that is present in all these different organs. The first assumption is justified only if localization fails. In regard to the second possibility, a former investigation supposed that the reticulo-endothelium is the common type of cell, since it may be assumed that the reticulo-endothelium has not only decomposing functions but also constructive ones. The authors point out in this connection that the formation of certain blood protein bodies (antibodies) is ascribed to the reticulo-endothelial system, that Bennhold demonstrated the close exchange relations between the blood protein bodies serving as "vehicles" and the reticulo-endothelial system, and that in anaphylactic shock there is a disappearance of fibrinogen and a functional arrest in the reticulo-endothelial system. On the basis of these considerations they decided to make storage experiments on the reticulo-endothelial system with a thorium dioxide preparation, with colloidal copper and with india ink. They describe the outcome and conclude that these experiments furnish the proof for their theory that the reticulo-endothelial system is the source of fibrinogen.

Insulin Destroying Power of Erythrocytes.—Rosenthal and his associates found in studies on erythrocyte suspensions, which were free from leukocytes and thrombocytes, that hemolyzed erythrocytes exert an inhibiting influence on insulin, while intact erythrocytes, under the same conditions, have no damaging effect on insulin. The insulin destroying power of the erythrocytes is due to an endoglobular principle, for the stromas washed free from hemoglobin have no influence on insulin, while a hemoglobin solution that is free from stromas is capable of arresting the action of insulin. The insulin destroying power of hemolyzed erythrocytes can be abolished by keeping them for one hour at 70 C. This thermostability indicates fermentative powers in the erythrocytes which may be identical with the peptide-splitting ferments that Abderhalden discovered in the erythrocytes. Whether the insulin destroying properties of the erythrocytes are of clinical importance for the phenomenon of insulin resistance and for the ferment economy of the erythrocytes will require further investigations.

Medizinische Klinik, Berlin

30: 1017-1048 (Aug. 3) 1934. Partial Index

Tuberculous Diseases of Eye and Their Significance for General Practitioner. W. Hoffmann.—p. 1017.

*Tuberculous Pulmonary Infiltrates and Carbohydrate Metabolism During Childhood. H. von Mettenheim.—p. 1020.

Practical Significance of Hormone Therapy in Gynecology. H. Buschbeck.—p. 1022.

*Prognostic Significance of Black Vomit as Complication of Surgical Infections. E. Melchior.—p. 1026.

Permanent Results of Madlener's Pylorectomy. F. Smoler.—p. 1027.

Dietary Prevention of Cancer. A. Lorand.—p. 1030.

Organs as "Peripheral Hearers" in Circulation. Hasebroek.—p. 1031.

Doubly Stained Sachs-Witebsky Reaction (Sachs-Witebsky-Hecht Reaction). H. Hecht.—p. 1033.

Tuberculous Pulmonary Infiltrates and Carbohydrate Metabolism in Childhood.—In studies on tuberculous children, von Mettenheim aimed to determine whether the regulation of the sympathetic nervous system is impaired in children with pulmonary tuberculosis, particularly whether the functional activity of the liver is changed. Dextrose tolerance tests were made on eighty-eight children between the ages of 4 months and 13 years. It was found that the blood sugar curves differ from those of normal children and that the various forms of tuberculosis have typical curves. These results are essentially identical with those obtained by Spiro in adults. This author pointed out that the curves greatly resemble those obtained in allergic diathesis. This in turn recalls the opinions of some investigators, who have pointed out that tuberculous infiltrations develop in children with sympathetic diathesis, who have an increased tendency to swell-

ing, a greater reaction capacity of the entire organism and an allergic disposition that may be due partly to a sensitization by repeated infections, and also a functional disturbance of the organs involved in the carbohydrate metabolism, particularly the liver. The majority (thirty-seven out of forty-six) of the children with tuberculous infiltrates, examined by von Mettenheim, presented aspects of exudative diathesis. Consequently he concludes that the blood sugar curves characteristic for certain tuberculous processes can be interpreted as an allergic phenomenon in children. This phenomenon manifests itself in a disturbance of the carbohydrate metabolism, particularly in the regulatory action of the liver. The existence of a functional disturbance of the liver was demonstrated by tolerance tests with levulose. The author gives a theory of the rôle of allergy in the development of the tuberculous process. He thinks, however, that studies on a larger material will be necessary in order to determine whether the course of the alimentary blood sugar curve can be used as an indicator for the type or the degree of activity of a tuberculous pulmonary process, or can serve as a diagnostic or a prognostic method.

Prognostic Significance of Black Vomit.—Melchior states that the significance of black vomit in surgical diseases was first stressed by Dienlaffoy, who made his observations in cases of gangrenous appendicitis and pointed out that black vomit indicated an unfavorable prognosis for these cases. Erosions of the gastric mucosa, caused by necroses, form the anatomic substrate of the black vomit. The vomiting is occasionally extremely severe and quantities of from 300 to 400 cc. are eliminated. In weakened persons such hemorrhages may terminate fatally by causing suffocation. There is a relationship between black vomit and hemorrhages that have been observed after abdominal operations, particularly after those complicated by infections, but in recent years they seem to have become rare. However, they do seem to play a rather important part in peritonitis. If in these conditions the vomit is black and if rather large quantities are eliminated, the prognosis is unfavorable. The black vomit that is eliminated either spontaneously or by means of the stomach tube shortly after extensive interventions on the stomach should not be confused with the symptom of black vomit the author has in mind, for the former is temporary and has a favorable prognosis. The author calls attention to conditions of general sepsis, in which black vomit is a symptom. Here the prognosis is likewise unfavorable, for of the patients the author has observed only two recovered. He thinks that the symptom of black vomit has not been given sufficient attention in recent years, as some textbooks on surgical complications fail to mention it. He admits that, the before mentioned acute suffocation being rare, black vomit is usually not itself the cause of death. The fatal outcome is generally the result of the underlying disease, of which the vomiting of black blood is only a partial manifestation. The treatment can only be symptomatic, consisting of emptying the stomach, eventually by means of transnasal drainage, oral administration of fluid and care of the circulation.

Wiener klinische Wochenschrift, Vienna

47: 961-984 (Aug. 3) 1934

Diagnostic Significance of Intravenous Urography. K. Hutter.—p. 961.
Subleukemic Myelosis with Clinical Aspects of Pernicious Anemia. W. Beiglböck.—p. 962.

*Experiences with Löwenstein's Diphtheria Immunization Ointment. J. Siegl and Natalie Drach.—p. 965.

*Comparative Investigations on Complement in Gonorrheal and Rheumatic Disorders. J. Wendlberger and W. Volavsek.—p. 967.

What Can We Learn from American Neurosurgeons? B. Schlesinger.—p. 970.

Comparison Between Results of Direct Staining and Loewenstein's Culture Method in Examination of Secretions and Tissues. E. Jubés.—p. 976.

Experiences with Löwenstein's Immunization Ointment.—Siegl and Drach point out that the first immunization experiments with Löwenstein's diphtheria ointment produced comparatively favorable results. In the following years, Löwenstein tried to improve his ointment in order to better the results. The authors tried several of the modifications of the original ointment, but on the basis of the observations made with these they conclude that the hopes to improve the

first results have not been realized, for the modified preparations produced poorer immunizatory effects than did the original one. The authors doubt the practical value of the method.

Comparative Investigations on Complement.—Wendlberger and Volavsek summarize their studies as follows: 1. The complement content of the blood of normal persons varies between 0.025 and 0.037 cc. 2. In some dermatoses the complement titer does not differ from the normal. 3. Patients with malaria, one patient with leukemia, one with psoriasis and several with syphilis showed noticeable deviations from the normal titer. 4. In gonorrheal arthritides the complement content is normal, and in this respect they differ greatly from the rheumatic arthritides. The authors will report later their studies on the cause of the fluctuations of the complement.

Zeitschrift für Tuberkulose, Leipzig

70: 385-456 (July) 1934

Constitutional and Pathologic Anatomy of Hematogenous Form of Pulmonary Tuberculosis. W. H. Stefkó.—p. 385.

*Best Therapy of Pleural Exudates in Artificial Pneumothorax. P. Starcke.—p. 401.

Therapy of Pleural Exudates in Artificial Pneumothorax.—Starcke shows that according to some statistics pleural exudates are frequent in pneumothorax therapy, for of two statistics that he mentions one gives an incidence of 50 per cent and the other one of 68 per cent. He differentiates between sterile and infected exudates. The sterile exudates are of a rather benign character. The author thinks that their comparatively high incidence is due to the fact that the many small exudates of short duration, which frequently develop in the interval between two fillings, are generally counted into this group. Since this type of exudate develops as a rule immediately following a filling of the pneumothorax, the pulmonary collapse is probably responsible. The author shows that the former belief that the sudden and excessive stretching of the pleura is the cause is no longer tenable. He states that in the majority of these cases conservative measures, such as rest in bed and small doses of acetylsalicylic acid, will bring the desired results. The resorption of larger exudates may be promoted by moist packs and cutaneous irritants. Puncture is necessary only if the formation of exudate is rapid. Many of these exudates may be avoided by making the single fillings smaller and the intervals between them shorter. The added precaution of warming the pneumothorax air is unnecessary. He shows that the factors causing temporary exudates may also lead to the formation of chronic ones. Conservative measures and a single puncture are not sufficient in these cases. The prolonged existence of exudate and a lack of careful observation involve the danger of serious complications. The pressure may become too great, which is especially dangerous in cases of strandlike adhesions between lung and thoracic wall. In the roentgenogram the shadow of the exudate covers large portions of the lung and thus makes roentgenologic control impossible. In order to avoid tearing of adhering strands with consequent injury of the lung, and eventually an empyema with mixed infection, it is absolutely necessary to measure the intrathoracic pressure frequently. The author deplors that this pressure control is too often neglected. In case of a considerable excess pressure, it is of course necessary to withdraw a large part of the exudate and to replace it by a corresponding amount of air. Control of intrathoracic pressure is necessary also in order to avoid low pressure. A subnormal pressure must be counteracted by refilling with air. The author sees the greatest danger of the chronic exudates in the possibility that the pleural cavity may become rigid as a result of thickening of the pleura by the connective tissue formed from the fibrin deposited by the exudate. If this is the case, the pneumothorax must be maintained permanently or the rigid cavity must be removed by surgical intervention. The latter procedure is usually more difficult than is ordinarily assumed, for it may become necessary to remove portions of the thickened parietal pleura. In discussing the infected pneumothorax exudates, the author differentiates between purely tuberculous infections and mixed infections. He thinks that conservative measures should be tried first and that operative interventions should be postponed until the disease process has

reached a stage of rest. He describes the development of exudates with mixed infections and shows how they are frequently induced and how they may be prevented. He states that it is difficult to give general rules for the treatment but describes certain measures, such as drainage and thoracoplasty, and when and how they should be employed.

Zentralblatt für Gynäkologie, Leipzig

58: 1809-1872 (Aug. 4) 1934. Partial Index

Simple or Improved Speculum Examination. H. Hinselmann.—p. 1810.

*Reaction I of Anterior Lobe of Hypophysis and Its Differential Diagnostic Significance in Dead Extra-Uterine Pregnancy. W. Spitzer.—p. 1815.

*Experiences with Intravenous Continuous Drop Infusion in Cases of Sepsis. E. Kerner.—p. 1820.

*Activity of Trophoblast and Aschheim-Zondek Reaction in Extra-Uterine Pregnancy. E. M. Kaplan.—p. 1826.

Vaginal Total Extirpation in Intravenous Anesthesia with Aid of My Injection Apparatus and Arm Support. G. von Bud.—p. 1833.

Significance in Extra-Uterine Pregnancy of Reaction I of Anterior Lobe of Hypophysis.—Spitzer points out that in the pregnancy reaction of Aschheim-Zondek three degrees are differentiated: follicle maturation (I), hemorrhage into a more or less matured follicle (II), and luteinization (III). Pregnancy is indicated only when reactions II and III are demonstrable. Reaction I is not indicative of pregnancy, since an increased elimination of the follicle maturation hormone may be observed in other conditions. After discussing the significance of the Aschheim-Zondek reaction in extra-uterine pregnancy, the author points out that reaction I is a valuable diagnostic aid in cases of extra-uterine pregnancy in which the fetus has died, for it may still be positive from one and a half to two months after the death of the fetus. Since the diagnosis of abortion of a tubal pregnancy may present great difficulties, the biologic laboratory test may be the only reliable factor. The author relates the histories of three cases in which the follicle maturation reaction corroborated the assumption of death of an extra-uterine pregnancy. In view of the fact that the symptoms of the death of the fetus in a tubal pregnancy are frequently mistaken for those of inflammatory tumors of the adnexa, the author decided to study the outcome of the follicle maturation reaction in women with inflammatory changes in the adnexa. Five of thirty women gave a positive follicle maturation reaction, but, on repetition of the test, two of these five gave a negative one. From this observation the author concludes that biologic tests should always be repeated. He admits that the number of examined cases may not be large enough to permit a reliable estimate of the relations of the follicle maturation reaction to inflammations of the adnexa. However, the difference from the hormone production in tubal abortion is sufficiently great to make the reaction a valuable aid in the differential diagnosis. The author calls attention to the peculiar behavior of the rapid pregnancy reaction in rabbits. The rabbit test seems to be more suitable for the diagnosis of the retention of decidua tissues or of incomplete abortion than the mouse test. Consequently the author recommends that the mouse test as well as the rabbit test be made in doubtful cases of dead extra-uterine pregnancy.

Intravenous Continuous Drop Infusion in Sepsis.—Kerner states that in rather hopeless appearing cases of sepsis he obtained favorable results with intravenous continued drop infusion. He has employed it for a number of years in all septic processes in which the symptoms assume a threatening character from the beginning, and in puerperal sepsis without definite localization, particularly when chills develop. He administers either physiologic solution of sodium chloride or a solution of dextrose with an addition of a circulatory medication that is a compound of epinephrine, ephedrin, strophanthin and a blood pressure active extract of the posterior lobe of the hypophysis. He admits that in sepsis it is difficult to estimate the efficacy of a therapeutic method, since many factors enter into the process and since the organism itself plays the decisive part, but he thinks that his method of continuous drop infusion has been of beneficial influence.

Aschheim-Zondek Reaction in Extra-Uterine Pregnancy.—Kaplan points out that in cases of extra-uterine pregnancy in which the ovum has died early conservative treatment

is possible, provided there is a guaranty that the hemorrhage into the abdominal cavity will not be repeated. The risk of a hemorrhage is not eliminated until the embryo and the trophoblast have been destroyed. The trophoblast ceases functioning some time after the death of the embryo. If a method could be found that would disclose whether the trophoblast is active or inactive, it would be possible to determine when operative and when conservative treatment can be employed. In cases in which the trophoblast is active, treatment should be operative, because they involve the danger of internal hemorrhage; however, in cases in which the trophoblast has ceased its activity, conservative treatment can be tried. The author thought that the Aschheim-Zondek reaction might be helpful in determining the activity of the trophoblast, and he studied the relationship between the Aschheim-Zondek reaction and the activity of the trophoblast in twenty-one women with extra-uterine pregnancy. At first he tried to determine the activity of the trophoblast on the basis of its morphologic aspects. However, after he had studied the morphologic structure in cases of positive as well as negative Aschheim-Zondek reaction, he reached the conclusion that there is no parallelism between the morphologic activity of the trophoblast and the outcome of the Aschheim-Zondek reaction and that the function of the trophoblast and its morphologic structure do not harmonize. In the further course of his studies the author resorted to a different method. He implanted into infantile mice from 0.2 to 0.3 Gm. of chorionic or placental tissue, and after ninety-six or a hundred hours examined the ovaries of the animals for the hypophyseal hormone reaction, because active chorionic tissue contains hormones (follicle maturation hormone and luteinization hormone), while inactive tissue does not contain hormones and therefore cannot produce the characteristic reaction. The results of these implantation methods were compared with the outcome of the Aschheim-Zondek reaction in the urine. The author reports the results of these tests in eleven cases. He reaches the conclusion that the Aschheim-Zondek reaction cannot serve as an indicator of the activity or the inactivity of the trophoblast and that consequently it is unsuitable as a basis for the decision whether active or conservative treatment is advisable in extra-uterine pregnancy. The experiments are valuable also in connection with the question of the source of the luteinizing hormone, for Zondek believes that this hormone originates in the anterior hypophysis, while Philipp maintains that it is a product of pregnancy and is produced in the chorion and the placenta. After reviewing experiments carried out by Zondek, Philipp, Schockart, Siebke, Hofbauer and others, the author states that, without denying that the placenta produces luteinizing hormone, he believes that other glands, such as the anterior hypophysis and the pineal body and perhaps others, likewise produce the hormone during pregnancy. This would explain why luteinizing hormone is still present in the urine a long time after the removal of a hydatidiform mole or of a macerated fetus when a trophoblast is no longer present in the organism. It would also explain the lack of parallelism between the hormone content of placenta and urine.

Ugeskrift for Læger, Copenhagen

96: 845-864 (Aug. 2) 1934

*Chronic Acetphenetidin Intoxication. J. E. Holst.—p. 845.

Tuberculin Examinations in Julianehaab District, Greenland. L. Folke.—p. 847.

Congenital Lymphangioma: Case. B. R. Hansen.—p. 851.

Fibromyoma of Small Intestine: Two Cases. R. Malmros.—p. 853.

Chronic Mercury Intoxication Due to Dental Fillings. K. Steffensen.—p. 855.

Tannic Acid Treatment of Sunburn. E. Jensenius.—p. 858.

Chronic Acetphenetidin Intoxication.—In the case reported by Holst the patient had used acetphenetidin regularly for thirty years, as a rule in a daily dosage of 1.5 Gm., sometimes more. The anemia and cachexia, with epistaxis and hemorrhages in the skin after slight trauma, represented the picture of a chronic intoxication especially affecting the blood. The author says that although chronic acetphenetidin intoxications are rare, this instance together with cited cases of poisoning from other "headache powders" warn that the use of these medicaments should be controlled.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 15

CHICAGO, ILLINOIS

OCTOBER 13, 1934

THE TREATMENT OF PSYCHONEUROSES IN GENERAL PRACTICE

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PHILADELPHIA

The treatment of psychoneuroses in general practice should be viewed with a broad meaning. Besides the common psychoneuroses, I will include the use of psychotherapy in distressing physical diseases, or in cases of any sort in which there may be an emotional or mental problem, and with any individual who might consult us as physicians for advice on any personal problem involving mental and physical adjustment to life. Patients suffering from frank mental disease need definite psychotherapy and other medical therapy, but consideration of this phase of the field is not included here.

In the classification of the psychoneuroses, one finds general agreement on four central types or symptom complexes; namely, neurasthenia, hysteria, psychasthenia and psychoneurotic anxiety states. The last group includes anxiety hysteria and anxiety neurosis. The latter conditions are difficult to differentiate definitely and for the purpose of this paper such differentiations are unimportant.

ETIOLOGIC FACTORS

The psychoneuroses as clinical entities are ancient. In the time of Hippocrates the etiology of hysteria was considered to be the "wandering womb." In 1934 there are gynecologists and others still advocating hysterectomy as a cure. In later times Charcot advanced the idea that hysteria was due to "inherited taint." Binet, psychologically minded, believed that a patient with hysteria possessed a "double consciousness." Babinski, although an organicist, maintained that all hysterical signs and symptoms were produced by suggestion and that any conditions not removable by suggestion were organic and not functional. Bernheim held much the same view. Still later one finds the psychoneuroses being identified more clearly as to types. Janet presented elaborate psychologic theories as to the different clinical types of psychoneuroses, more descriptive in significance than explanatory as to etiology.

Freud explains the occurrence of psychoneuroses on the basis that mental processes in and of themselves may be etiologically significant. In hysteria, Freud considers that the physical symptoms and signs are the result of mental content, unacceptable to the individual,

formerly repressed into the unconscious mind, becoming converted into substitute disguised symbols of the unacceptable mental content. In the same manner, unacceptable desires and wishes may be the origin of the symptoms. The situation is somewhat similar in psychasthenia, wherein an innocuous idea becomes the substitute for the unacceptable mental content. The anxiety states result from immediate difficulties, in which there is a disproportion between sexual excitations and sexual satisfaction and the emotional outlet takes place in the anxiety attack.

Dejerine's important contributions present the view that the psychoneuroses are of mental origin, and he emphasizes the importance of emotional causes being mishandled by incorrect thinking and mental attitudes. Ross in England and Riggs in this country more recently have elaborated and correlated similar views with recent psychophysiologic theory. White points out the loosely organized, faulty synthesis of personality in the hysterical patients, who seem to be children mentally.

Other etiologic theories may be mentioned as containing some points of more or less interest, such as constitutional differences, somatic weakness, hypersensitiveness of the autonomic nervous system, foci of infection, and auto-intoxication. These are particularly important in connection with their frequency of association with a psychoneurosis, rather than being actually significant as definite causes of the condition. In an analysis of 239 cases of psychoneuroses, Strecker and Ebaugh point out certain significant statistics, as follows: predisposition from unfavorable home life, 70 per cent; from constitutional predisposition, 85 per cent; precipitating factors from sex disturbances, 22 per cent; from accidents, 13 per cent; from marital difficulties, 12 per cent; from financial difficulties, operation and deaths, 9 to 11 per cent. Physical examinations showed operations present in 23 per cent, focal infection and physical defects in 9 per cent. Mental examinations showed overconcern in 89 per cent, anxiety in 45 per cent and fears in 33 per cent.

Endocrine disturbance or alteration of function is now popular in etiologic speculation.

The very divergence in these etiologic possibilities goes to accentuate the etiologic nonspecificity. Gathering the discussion together, let me state that I have reviewed important dynamic, physical, psychogenic and environmental factors. The "constitutional differences" and somatic weaknesses are undoubtedly contributing conditions; the peculiarities of functional irregularities of the autonomic nervous system are active manifestations of an existing psychoneurotic condition but one cannot determine whether they may be cause or result. Foci of infection, toxicity, sudden physical or mental shock, and other stress and strain may definitely

From the Institute of the Pennsylvania Hospital.
Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

act as precipitating factors. Any of these forces are all contributory. Each individual adapts himself to these contributing factors through the use of the mind. In addition to these factors it is known that there are active influences at work within the mind itself. Such influences may be conscious mental problems, which are ordinarily termed worry or anxiety; more often they may be definite mental conflicts deeply situated because of occurrence within the unconscious part of the mind.

The means one has in making adjustment to such external and internal factors is of course one's mind. Such factors, no matter of what origin, have an end effect on the mind and, in turn, the mind becomes the mirror showing the compensation it reaches in handling or adjusting to the sum total of the external and internal stress and strain. Therefore, the psychoneurotic patient really is an individual in faulty adjustment with one, another or all of these factors, within or without. Therefore it may be correct to say that a condition exists due to etiology from a mental standpoint, since the lack of adjustment is due to the lack of satisfactory handling of the life situations in which the mind finds itself. I do not mean that one has a mental disease, as that would be a total surrender or overpowering of the mental functions. With the psychoneuroses, there is a partial difficulty in adjustment, which involves only a partial decompensation of the mind or individual.

Because I would consider the psychoneuroses to be basically of functional origin, within the mind itself, in later discussion of treatment it will be only logical to state that psychotherapy, or treatment of the mind, and by use of the mind, is the therapy of paramount importance.

DIAGNOSTIC FEATURES

The clinical types mentioned before are separated by no hard and fast lines. A careful, exhaustive study of any psychoneurotic patient may elicit symptoms enough to allow classification in any one of the four groups. Usually there is enough preponderance of one type of reaction to allow proper classification. Even though the differences of the four types are largely theoretical there are practical differences, which are important from the standpoint of therapy. I believe the most important points as far as diagnosis of the case is concerned are, first, an accurate, complete knowledge of the type of symptoms; second, a clear understanding as to the background and development of the symptoms; third, some comprehension of the dynamic forces that are contained therein. Knowledge of this sort cannot be secured except by painstaking history taking, physical and mental examinations, and deep interest in the patient. Then can one really plan for the patient a treatment that will be specific.

In connection with direct diagnosis of each type, I shall briefly outline cardinal symptoms and signs later, under symptomatology and in the description of typical cases.

In connection with differential diagnosis, the difference between a psychosis and a psychoneurosis is naturally important but usually not difficult. It is often considered that they are of difference in degree only, and even though it is difficult in some cases to make a distinction, actually they are fundamentally far different. The psychoneurotic patient lives in and deals with reality. Although many of the symptoms do not have physical or structural origin, they are real experiences to this type of patient. On the other hand, the

psychotic patient lives in and deals with unreality. His difficulties come from fantasy, delusion and imagination.

A few confusing situations commonly found may be mentioned. A beginning dementia praecox may show marked signs of neurasthenia or hysteria. Dementia paralytica and psychosis due to arteriosclerosis, slowly developing involutional melancholia, and mild depression may simulate neurasthenia. Some frank psychoses may show marked psychasthenic phobias or compulsions. Anxiety states are often present in hyperthyroidism. But in all psychotic cases the more rapid changing course of the condition, the physical and neurologic changes, and the presence of frank delusions serve to identify a psychosis quickly.

Serious chronic physical disease such as tuberculosis and carcinoma may have a neurasthenic beginning, but careful physical examinations should establish the proper diagnosis. There are neurotic personality types, which the experienced physician recognizes. Positive recognition of these types will aid in preventing confusion, not only in differentiating between symptoms of organic or functional origin but in evaluating the significance of any symptoms of organic causation that may occur in such patients.

SYMPTOMATOLOGY

The classic symptoms of neurasthenia consist of fatigue, usually extreme on the slightest exertion, either mental or physical; marked weakness in all activities; lack of concentration in all mental activity; local sensory symptoms of any type or intensity from any system; a mood of pessimism, discouragement or dejection, sometimes accompanied by anxiety and fears. Headache, backache, insomnia, feelings of inferiority, marked self centering of attention, and peculiar sensations are common.

Mrs. G. presented a characteristic case. She was admitted to the Pennsylvania Hospital at the age of 37. Her complaints were extreme weakness and fatigue, nausea followed by intermittent spells of diarrhea, crying spells, headache, gradual loss of weight, and marked intermittent pains in the legs, abdomen and back of neck.

These weaknesses and digestive disturbances had been present six months when an appendectomy was done to relieve her, and the operation was followed by an increase in weakness, and dejection, and for the next year she was in bed approximately half the time, "resting" to rid herself of weakness. She developed increasing sensitiveness to all sensory stimuli and for four months before coming to the hospital had not left her bed except to use a toilet jar in her room. There were no physical difficulties found to explain any part of the condition. Detailed study brought out no physical factors of great importance except a constitutional hypersensitiveness. There was uncovered a history of lifelong excessive self attention, extreme idealism and ambition based on innate feelings of inferiority because of unattractiveness; these points were accentuated in her marriage to a successful professor and by the beauty and superior intelligence of a 10 year old daughter; her conflict in this situation was aggravated by a desire for more attention and emotional response from the husband. With clear discussion of these matters and a frank facing of the personal problems hitherto evaded, insight on her part was secured, and cooperation as to a definite treatment plan on a basis of scheduled activity in work, exercise, and mental occupation followed. It was a long course of six months and more to recovery, and readjustment in mental attitude was needed for a year or two more to bring the patient to a fixed level of recovery.

Hysteria is so varied in its forms that the types of reactions patients may show will only be outlined. It is

as episodic in its occurrence as neurasthenia is constant and continued. The most common motor and sensory episodic occurrences are paralyses, anesthetics, paresthesias, hyperesthesias, cataleptic or trancelike manifestations, tics, choreiform movements and aphonia. Spectacular symptoms are amnesia, somnambulism, double personality episodes, hysterical psychotic reactions and other disturbances of consciousness. Usually a case shows one type of reaction, with very little mixture with other symptoms. Later attacks may be entirely of a different character.

One woman, aged 20, had fainting spells whenever she was confronted with any test or responsibility in school, such as an examination; later when working in a store, on hearing some very depressing news, she collapsed, complaining of abdominal pain located over McBurney's point. Physical examination showed local tenderness and a left-sided hemianesthesia, but no other physical or laboratory observations were significant. She was followed in the outpatient clinic, and at the time of the death of her mother developed a complete amnesia. Recovery from each of her attacks always occurred automatically within forty-eight hours. She possessed a personality often found in many patients with hysteria, characterized by an extreme desire for affection, marked dramatic emotionalization of all situations in which she moved, and sharpness of sensitiveness to color, sound and all esthetic contacts.

The tendency to dissociation in the hysterical patient is extreme and allies this type of psychoneurosis to some degree to the unrealities of the psychotic group.

The main symptoms of psychasthenia are contained in obsessions, compulsions, phobias, anxiety and nervous tension. The patients are clearly conscious and have full insight into the illogical content of their mind but seem powerless to control its vagaries.

One woman, aged 21, was so constantly doubting the morality of every one about her that she could think of nothing else; if this disappeared she would develop a doubt as to whether the front door was closed or the water spigot turned off. There was no question that these obsessions and doubts had a sexual significance for her.

The substitution of an innocuous idea as expressing deeper unacceptable wishes or desires in the psychasthenic patient is similar in some particulars to the substitution of the physical symptom in the hysterical patient.

A man, aged 37, had to check and recheck everything he did for fear that it was not correct. Unfortunately he was an accountant, and one can imagine the extra work it made for him. In a fashion his compulsion acted as a sort of punishment and it is interesting to note that, when it subsided, fantasies of a sexual nature became active.

Other symptoms are common, such as hand washing, repeated touching of certain objects, and inability to use certain numbers or objects. Very common is the feeling of the psychasthenic patient that he must not allow himself to get into any situation or place from which there is no escape. Some night I am going to hand a questionnaire to all persons sitting in the aisle seats and on the back row of a theater. This condition is common enough to make me believe that a large percentage of people taking these seats of easy access and escape are persons who are greatly susceptible to psychasthenic reactions.

It is also interesting to note that in this group a personality characteristic found is a tendency to be extremely particular, exact and precise. The old association of miserliness, exactness and constipation is a vulgar, amusing example.

Anxiety states are often very similar, although the variety of minor symptoms may be manifold. Characteristic intense anxiety and extreme fear, definitely connected with one idea or another, is quite constant. This emotional tension is manifested in attacks with great cardiac, respiratory, vasomotor or gastro-intestinal disturbance. Phobias of crowds, open spaces, closed spaces or impending death are as common as in psychasthenia. The anxiety states are similar in character in some respects to an "acute" neurasthenia.

A man, aged 31, consulted a surgeon because of chronic flatulence, belching, indigestion and tachycardia. The surgeon recognized the emotional tension behind the symptoms and uncovered many panic and fear reactions as well. He referred the patient for psychotherapeutic treatment and in the first hour of consultation the patient discussed at great length his anxieties, difficulties, symptoms and any other material he chose to bring up. He returned in one week to the psychiatrist, remarking that he had never unburdened himself before, nor had he ever felt deeply reassured about himself before. He delightedly volunteered the information that he had been absolutely symptomless since the previous interview. The psychiatrist told him that he would not remain symptom free but that, even though the symptoms would return, they could gradually be understood and adjusted and finally eliminated after some continued treatment. Throughout several weeks' careful study of his entire life and emotional habits, childhood personality traits, and analysis of his present-day difficulties, he reached a more efficient basis on which he was able to work out better personal, family and environmental adjustments. The previous lack of emotional outlets no longer persisted and other origins of his anxiety state were exhausted, giving him a slow but good return to normal health.

CONSIDERATIONS REGARDING TREATMENT

The basic etiology of psychoneuroses has been discussed as of functional origin, in reference to possibility of effective treatment. The importance of a complete detailed knowledge of the entire organism, mental and physical, has been emphasized as necessary for proper diagnosis. The clinical syndromes have been briefly outlined in order that a common ground of understanding may be reached. I will now take up material regarding the possible approaches for treatment of the patient.

Treatment, being a very wide subject, will be taken up from the following aspects: (1) the ideal treatment of the frankly ill or "acute" psychoneurotic patient in practice or in the hospital; (2) the types of treatment in vogue or used by the specialist; (3) the uses of psychoanalysis; (4) the basis of treatment through psychotherapy to make most effective advances in the prevention of psychoneuroses and a discussion of significant associated material.

The first step in contact with the patient is the taking of a detailed history from the patient. This may not be necessarily formal in the beginning, for an informal consultation or two in which the patient tells his story and gives his view as he wishes may fix confidence and respect for the physician because of his evident interest and patience as a good listener. This history must include details concerning the entire life, childhood, adolescence, youth and onward. The gaps in the history may be even more significant than the material given. More is needed than physical illnesses and happenings. Facts about personality development, emotional experiences, points about the inner mental life and what influences there have been on it, and what habits or attitudes in emotional reactions thought and conduct ensued are very important. The attitude of the physician toward the patient is equally important, for, regardless of the social significance of the patient's

story or situation, the physician must remain entirely uncritical, at least at the beginning. All of the history in an ill patient will never come forth in the early interviews. It is a long job to correlate all one finds out from a patient, and a gradual construction of the origin, development and course of the illness must be made. As treatment progresses, one may be surprised to find new significant recollections uncovered in the history, even after months. The patient may not be evading or lying; it may have been impossible to recall or uncover these points before.

After an initial consultation or two regarding history, a complete physical study of the patient should be made. It cannot be emphasized too strongly that this should be done more conscientiously and with more care than when the patient has some simple physical disease, if such a difference in examining patients could exist. There are several reasons for this: First, the patient must be thoroughly examined by the physician in order that any physical factors may be properly evaluated as influences on the patient or as connected with the illness. Second, one must be certain that all treatment for physical disease may be adequately known and prescribed for, regardless of its connection or lack of connection with the psychoneurosis. To digress for a moment, the successful treatment of a psychoneurosis or any other type of disorder or disease depends on treating the individual as a unified mental and physical being, not as a being of separate mental and physical entities. Third, a complete physical study impresses the patient with the thoroughness of the physician, laying the basis for confidence in what the physician says. It would be very hard for the patient to accept the physician's statements and proof of the functional origin of the symptoms or difficulties if the patient considered that he had not been studied completely. There are exceptions to these points about physical examinations, but not in the general treatment of psychoneuroses, but only whenever specialized psychotherapy is given on theoretical grounds, and such exceptions lie outside the scope of this discussion.

By this time the physician has sufficient knowledge about his patient from history and examinations to make a definite plan for therapy. This plan is based on a careful study of the patient as an individual who reflects his environment and how it affects his reactions. The mental and physical aspects are studied and evaluated and are treated in proportion. A definite schedule of living should be drawn up on the proper balance of work, play, exercise and rest, according to the ability and need of the patient. The regularity, intensity and organization of an outline of psychotherapy for every aspect of the patient's mental life is the keynote of the treatment. What is psychotherapy? Psychotherapy may be termed any influence on a patient's thinking, feeling and acting that serves to produce a constructive, more efficient readjustment resulting in purposeful living. It is really organized planned mental realignment of the patient, arrived at largely through his own acquisition of insight and his own efforts.

His functional difficulties and symptoms must be worked out with the patient, as manifestations of his mental or emotional conflict. Carefully conducted reeducation, in an intelligent patient, will be successful in showing him how emotional disturbances have bodily effects and how anxiety attacks and fears likewise have deep seated origins within.

Whenever possible, readjustment of the external factors influencing the patient, such as relationship to

friends and relatives and to social, economic and financial matters, naturally is very necessary and is part of any complete treatment.

It is evident that treatment carried out along the lines just described is an involved and time taking procedure. In general practice such treatment may be impossible, for many practical reasons. For this reason, at the Institute of the Pennsylvania Hospital we are endeavoring to study methods of adequate psychotherapeutic treatment less involved. Some of these types of treatment may be applied in general practice, others may be best applied by the psychiatric specialist; but, planned as they may be, they do not approach as yet the ideal outline of treatment previously described. In time, however, we may be able to point out certain treatment principles, derived from study of these methods, that may help to evolve simplified but effectual plans of therapy.

In the clinics of the Institute of the Pennsylvania Hospital, the experience has been that patients divide more or less into about six "therapeutic" groups:

The first group consists of those patients who come for one interview, who merely want to get oriented as to the meaning of certain troublesome personality characteristics, intense mood swings or difficult behavior patterns. One may want to do little more than confess many difficulties and conflicts; another may wish reassurance and encouragement because of attitudes of inferiority; a third may be concerned over personal and family adjustments of the most difficult character. Evidently they seem to take pride in working things out for themselves, after getting a brief start in the correct direction. Perhaps it is better that the physician let them do so without further aid. Doubtless, many of them may be no better and may need to return but a trial on their own may prove very worth while.

A second large group is made up of patients who are not intelligent enough for careful self study and reeducation. Other factors too numerous to mention may prevent deep psychotherapy for a prolonged time. The medical practitioner must carry throughout life some individuals who need a physician as a sympathetic listener, a cautious adviser and friend who will dissuade them from too great anxiety by reassurance, suggestion, persuasion and finally through habit training, hydrotherapy, electrotherapy and various physical therapies. Little can be said in favor of a plan such as this, for it is usually employed because no plan can be made at all. This could be termed general psychotherapy, on the basis that the patient's problems are met squarely as of functional origin.

Reeducation is a form of psychotherapy very worth while, which is used in a third group. This group is made up of the more intelligent types of patients who realize to a certain extent the functional aspects of their problems. Such patients follow a plan that is closely allied to the ideal type of treatment described before. A special point made use of in this technic is the study and reading a patient does in connection with special written material on mental hygiene. The organized plan of study and discussion and balanced schedule of living that comprise much of this treatment appeal to the patient who is systematic. It is something very definite, which they can grasp and use. Any unconscious difficulties may be evaded or sublimated, however, and are undoubtedly little influenced.

With other patients it is sometimes necessary to dig deeper to find causes for their difficulties, and occasionally certain patients cannot face certain personal

problems until they are shown their possible deep-seated mental origins. Special technic such as the use of free association, word association, and the study of dreams may be used to get them to comprehend the mental and emotional aspects of their difficulties. This approach to the patient, dealing with methods that should be regarded as intensive psychotherapy, should be called deep psychotherapy as compared with a reeducational approach.

The fifth group is one in which there are comparatively few cases. In these are seen deep emotional conflicts or problems, which may not be influenced by deep psychotherapy. In order to uncover some of these problems, a modified psychoanalytic approach is utilized. By this I mean a purely psychoanalytic technic carried out once or twice a week, over a long period of time, to work out explanations and understanding of deep Modified psychoanalysis is no in the usual case, but in some instances this adaptation is of real help.

Orthodox psychoanalysis, the sixth and last group, is of limited application for a few cases. It has already contributed vast help to psychiatry as a whole and holds much promise for treatment for the more severe psychoneuroses. Before I proceed further, some discussion regarding it is in order.

THE CLINICAL RELATION AND IMPORTANCE OF PSYCHOANALYSIS

Besides the contributions psychoanalysis has made in other fields, much of the advance psychiatry and psychologic medicine has made in recent years is due to psychoanalytic contributions. By psychoanalysis I mean freudian orthodox psychoanalysis. It is a new psychology, a new understanding of the mental make-up of man, as well as a new technic in the treatment of nervous and mental patients. It cannot be denied justifiably that a great deal of the understanding now had of the deeper motivations underneath human emotional reactions and behavior has evolved largely from the psychoanalytic field. Before its advent, psychiatry was largely a descriptive diagnostic specialty in medicine. Now active psychiatric treatment is instituted in direct attack on symptoms and manifestations from the patient which are understood to a greater degree than ever before. This treatment is not by any means always psychoanalytic but a critical study of much psychiatric theory and practice shows it to have a foundation derived from what has been produced study. Nevertheless the views and who is almost solely responsible for psychoanalysis as it exists today, are not definitively and ultimately confirmed and proved. They are good helpful hypotheses. The use of psychoanalysis as a type of specialized treatment likewise is as yet not well enough established, and I am deeply conscious of its great limitations. My discussion at this point is not that of an enthusiastic psychoanalyst. It is the view of a physician practicing psychiatry as a specialty, in which is used orthodox psychoanalytic theory and technic.

The first requirements of good psychoanalytic treatment is that the psychiatrist have a fundamentally sound training culminating in his own analysis. The direct treatment with the patient is a formal interview involving an hour a day usually six days a week. The patient reclines, not facing the analyst, and is requested to utter his thoughts and express himself freely, with no reservations. His associations carry the study deeper and deeper, and childhood or deep memories,

fantasies, wishes, and so on, may be recalled and their emotional counterparts relived. The analyst more or less automatically becomes identified with the rôle of those individuals important in the life of the patient. The transference situation, or emotional tie-up between patient and analyst, is the outgrowth of this process. By guiding the patient in his associations and giving interpretations of the meaning of some of the recalled material, emotional responses, and also by similar study of accompanying dreams, the analyst is able to help the patient gain a better understanding of his deeper motivations. These processes have been buried in the unconscious part of his mind, and through this technic of treatment the deeply rooted origins of psychoneurotic symptoms and reaction patterns may be uncovered and relieved, and a cure established. The treatment is likewise used in personality difficulties and even in mental diseases, but with less success. As to its applicability, I believe that it will be most applicable and effective first with personality maladjustments, secondly with psychoneuroses of not too great a duration, and thirdly and most guardedly with some mild psychotic reactions. It must be remembered that psychoanalysis is essentially on one side a destructive process and, in the individuals with whom it is used, constructive possibilities must be present or the analyst must supply a substitute for such possibilities or damage instead of benefit may result.

There are many points in which the limitation of psychoanalysis appears. The patients ideally must have a good grade of intelligence; they must not be too old, preferably under 50 or 40; they must be willing to cooperate in this treatment; the resistance or normal defense reactions to deep analysis must not be too difficult to alter; there is a great amount of time and expense involved, owing to the frequency and length of treatment.

How much more effective psychoanalysis is in curing psychoneuroses than other forms of psychotherapy is yet to be proved. The psychoanalysts insist that all other forms of psychotherapy are superficial and only palliative and therefore futile. But many psychiatrists feel that other forms of general psychotherapy, using information gained from patients, and based on psychoanalytic theory, is effectual. Practically it is often obviously impossible to use psychoanalysis for several reasons, and other psychotherapy must be used in more possible lines.

THE GENERAL PRACTITIONER AND THE PRE- VENTION OF PSYCHONEUROSES

It is clear that the problem of treating the psychoneuroses in the community cannot be solved alone or best by effective treatment of the ill patient.

What is available to the general practitioner in the way of intensive psychotherapy? Little, in fact, little more than what he may intuitively possess or have acquired through years of active practice. He is definitely limited in treating the more severe psychoneuroses or problems of mental hygiene, mainly because he has never been given adequate opportunity in his earlier education and training. This condition is still true in most medical schools today. A second reason is that a busy general practice will not allow adequate treatment time to be given in an involved or advanced psychoneurosis. The psychiatrist must be called in to meet such problems as best he can. It follows then that the family physician must regard himself more as a potent influence in the field of prevention of nervous and mental disease, where he can be extremely effectual.

By expending much time and effort he may succeed with some, in fact with many, and be impressed with the fact that the solution of the huge number of functional nervous disorders is not in their actual treatment but in their prevention. In recent analysis of medical education in the United States, the National Committee for Mental Hygiene found adequate instruction in psychiatry for undergraduates in only ten out of sixty medical schools. Obviously the men graduating from these schools are going to practice medicine with an unbalanced approach toward the patient. This unbalanced approach may be one reason why the shady sisters of medicine, for example, chiropractic, Christian science, faith healing and similar charlatanry, flourishes so much today. And the economic difficulties which many of worth-while medical practitioners have besetting them today may be coming from the inroads made by these other so-called therapies. In one metropolitan area in the past year, 19 per cent of all the physicians had an income of less than \$1,000 a year. It is my honest belief that, if medical men in the community could and would use scientific consideration and therapy for the mental aspects of their patients' illnesses, these conditions would not exist as they exist today, and the better health due patients would likewise be assured.

The economic and social importance of the psychoneuroses is astounding. Conservative estimates have been made as to how many patients in general office practice have no physical or structural disease. These estimates run from 35 to 75 per cent. There is no question that there are hundreds of thousands of functional nervous disorders seen every day. The time these persons lose in health and happiness and in economic loss is appalling to consider. After these illnesses develop, treatment involves excessive study and time beyond that which the family physician can spare in a busy practice. The problem may be almost unsolvable as physicians try to meet it now. But in the development of the field of preventive medicine a technique of handling nervous patients may be built up in such a way that psychoneuroses do not take form. In infancy, childhood, puberty, adolescence, early youth, the menopause and old age, mental changes as well as physical changes take place. Treating the patient, whether physically or "nervously" ill, as an integrated individual in relation to his environment is of paramount importance. The individual is really an integrated whole, consisting of mental and physical aspects, each dependent on the other and influencing each other most profoundly. The effective prescription given for the best interests of the individual and patient should, in the ideal sense, contain therapeutic elements that will act as a specific for the mental side as well as for the physical.

In the last analysis, therefore, instead of considering the psychoneuroses as special conditions with which the psychiatrist deals, physicians should consider it basically a problem for general practice in preventive medicine.

SUMMARY

How can a psychoneurosis be prevented or aborted? Keeping in mind points already discussed regarding the make-up of patients and the factors that may be causative, let me list a few practical points as guides in handling an incipient psychoneurosis or psychoneurotic tendencies in any medical or surgical patient:

1. Recognition of the personality types that are likely to become maladjusted.

2. The recognition of specific emotional difficulties and their resulting symptoms. This means diagnosing a psychoneurosis from the finding of positive and specific psychoneurotic factors and symptoms, rather than merely making the diagnosis by exclusion because nothing else can be found to explain the condition.

3. Avoidance of comment before the patient about functional differences or changes in the organs that are not significant. This is extremely important with impressionable, emotional children.

4. Willingness to work out explanations and treatment for functional conditions bothering adults, instead of dismissing such difficulties on the basis of mere worry or imagination.

5. Specifying the direct purposes of all treatment and its relation to the patients' difficulty as a whole. Some patients tend to misinterpret the significance of treatment instituted and thereby their symptoms may become fixed or enhanced to a greater degree instead of being alleviated.

6. Direct, purposeful use of psychotherapy in all phases of medical practice, wherever there is any indication or possibility of such need.

There are a few great scientific men who are what they are because they are so scientific and need be nothing more. But no man can be a truly great physician who does not treat the mind of his physically ill patients as well as their physical illnesses.

Let the physician become more conscious of the fact that he is essentially a therapist. He should treat what the patient has got, not decide the patient has got what the specialist wants to treat.

The general practitioner is not only a chemotherapist and a physical therapist but likewise a psychotherapist. If he is really conscious of his constant psychotherapeutic influence with his patient he will carry further to absolute results the well being and improvement of his patient and raise the level of health and happiness in his community.

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ABSTRACT OF DISCUSSION

DR. ALAN D. FINLAYSON, Cleveland: Dr. Smith raised the question of whether a detailed history was not sometimes impossible. There is only one condition under which I can see that it is impossible, and that is when the patient visits the physician only once. Dr. Smith also made the statement that psychoanalysts claim that any other treatment, aside from psychoanalysis, is superficial and futile. With the term "superficial" I would agree. Most analysts, however, do not believe that other treatment is futile if an orthodox analysis cannot be done. Any treatment of the neurotic that is not based on the dynamic concept of their trouble is usually ineffectual. In a recent study by Dr. Ebaugh and his colleagues of medical education in the United States the statement was made that fifty out of the sixty medical colleges had inadequate instruction in psychiatry. I do not believe that the adequacy of a psychiatric course in college is dependent entirely on the number of hours given, but I do think it depends on whether it is presented from a dynamic standpoint. In other words, why does the patient act or think as he does? Why does he have hallucinations? I think that psychiatry is taught this way in comparatively few medical colleges. This lack of adequate psychiatric education is the answer to a great many difficulties the general physician has in handling the neurotic patient. In many chronic conditions, chronic disturbances of the heart, cancer, chronic kidney trouble, in which there is nothing that one can do to alleviate the condition, there is a great deal one can do in straightening out life's pathway and in making life far more comfortable for the patient.

DR. HAROLD S. COHN, Cleveland: I am interested in the treatment of neuroses only from the general practitioner's point of view. Dr. Smith in classifying the cases relative to treatment left out an enormous group whose neurotic symptoms are due to something that is usually ignored by the psychiatrist. That something is the economic factor. General practitioners see many patients with various types of neuroses and presenting a host of functional symptoms, particularly gastric. Invariably their trouble can be traced to the fact that they are worried financially. This is particularly true of the last four years. It is the economic factor in most of the ordinary neuroses. For this entire group Dr. Smith has not suggested any suitable remedy. It is this economic insecurity that causes most of the neuroses, and unless the neurologist or psychiatrist can tell how to solve this economic factor, general practitioners cannot treat such cases. The psychiatrist should be able to tell how to prescribe mental ease and freedom from worry as to economics. Another point is that as long as doctors who go into this field of medicine learn that the individual must adjust himself to his family, to himself and to society, they should learn something about the structure of society. I find that doctors do not know a thing about the economical and political structures of the society to which the individual has to adjust himself, and the doctor cannot adjust him to that society unless he knows that particular phase of it. In other words, training in the field of social science and economics should be added to the course of neurology in medical schools.

DR. LLOYD H. ZIEGLER, Albany, N. Y.: I am in accord with Dr. Finlayson that serious consideration should be given to doing away with the terms "neurasthenia" and "psychasthenia." If one will look into the historical aspects of the word "neurasthenia" one will find that it does have much basis, despite the fact that Baird used the term about the middle of the last century. It has been my experience that, if these so-called cases of neurasthenia are studied carefully, one may find Addison's disease, early parkinsonism, myasthenia gravis, psychotic developments, incipient pulmonary tuberculosis, and any one or more of a host of other possible diseases. The recent survey on psychiatric medical education made by the National Committee for Mental Hygiene discloses fundamental defects in the teaching of this subject in the majority of the medical schools today. Although much progress has been made in the teaching of psychiatry, most physicians in the past have been inadequately trained to deal with these difficult and intricate problems not usually explainable on somatic bases. There is no doubt that recent economic insecurities have affected the health of people variously. Some individuals with serious economic problems solve them with great equanimity. In others, trivial losses elicit outstanding maladaptations.

DR. T. EARL MOORE, Miami, Fla.: There are general practitioners, orthopedic men and cardiologists who are sending people to resorts to have "something" taken care of. What happens in the resort towns is that these patients come in contact with people who are psychiatric minded, the public as well as psychiatrists. It is the duty of the physicians in these resort towns to refer them back home. A vacation away from home is no panacea for psychiatric ills; as many founder as are helped by such treatment alone. The patient needs a psychiatrist back home much more than he needs a vacation. A correctly advised vacation, however, at the time indicated, may be specific therapy.

DR. LAUREN H. SMITH, Philadelphia: I agree with Dr. Finlayson that not all psychoanalysts consider other psychotherapy futile, although psychiatrists are more prone to consider other psychotherapeutic measures very worth while, even though they may be only palliative and not entirely curative. Dr. Moore mentions how the psychiatric patients are dumped on physicians at various summer resorts. This brings to mind how much better results are often obtained with the patient who is treated in a change of scene from home and relatives. Dr. Cohn has found his practice complicated because of the depression. In the consultation clinic we also found many cases in which the economic factor has been the precipitating and continuing cause of illness. With many patients, however, psychotherapy can be used to help them acquire a greater feeling of adequacy within themselves, particularly relating to the handling of the present economic problem, and they will

sometimes get along much better. Dr. Ziegler mentioned the matter of diagnosis. What may be an anxiety hysteria this week may soon be a full-blown obsessive psychasthenia, and at other times definitely neurasthenic in type. I do not feel that diagnoses are important if one gets at the fundamental dynamics back of the problem; and if the conditions are considered to be disturbances of the general integration of the individual the form of that manifestation does not matter so much if one knows the origin of it within. The relation of the problem to general medicine is of the utmost importance. Here at the convention two physicians, one a gastro-enterologist and one a specialist in arthritis, have told me their problems relating to neurotic tendencies in patients. The specialist in arthritis states that he is unable to do anything with a great percentage of his patients on a medical and dietary regimen unless he works with them over a long period on a purely psychotherapeutic basis. Likewise the gastro-enterologist said he considers himself about 50 per cent psychotherapist. A large number of patients are referred to the psychiatric clinic by the university gastro-enterologic clinic.

REDUCTION OF PREMATURE INFANT MORTALITY THROUGH DETERMINATION OF FETAL SIZE IN UTERO

AN ATTEMPT TO CONTROL WEIGHT AT BIRTH
ACCORDING TO THE COMPLICATION
OF PREGNANCY PRESENT

STEWART H. CLIFFORD, M.D.
BOSTON

During the past eleven years 30,781 infants weighing more than 5 pounds (2,268 Gm.) at birth have been delivered under the supervision of the Boston Lying-In Hospital with 378 neonatal deaths—a mortality of 1.2 per cent. In this same period there have been 958 infants delivered weighing less than 5 pounds with 364 deaths—a premature infant gross mortality of 38 per cent (chart 1). Thus it is seen that the premature infant group, representing but 3 per cent of the total births, contributes one half of the neonatal deaths. Ordinary pediatric methods have been unable to improve this situation, since over 80 per cent of the premature infant fatalities occurred within the first forty-eight hours following delivery (chart 2). Our experience during the past year suggests that the premature infant mortality can be reduced further by the simple method of delaying the induction of premature labor, whenever possible, until a viable baby can be assured.

It is a truism that the larger the premature infant the greater will be its chance of survival. Evidence has been obtained suggesting that the weekly gain in weight of the fetus in utero is 4 ounces (113 Gm.) during the seventh lunar month, 6 ounces (170 Gm.) during the eighth, and from 8 to 12 ounces (227 to 340 Gm.) per week during the ninth month. The close relationship that exists between the birth weight of the infant and its viability is demonstrated in chart 3—with each 8 ounce increment in body weight there is a striking reduction in the death rate. The importance of even one week's delay in the termination of pregnancy becomes apparent.

An analysis of 958 consecutive deliveries of premature infants reveals that the opportunity to control the

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
This is the fifth in a series of Studies on the Reduction of the New-Born Infant Death Rate from the Boston Lying-In Hospital, the Departments of Obstetrics and Pediatrics of the Harvard Medical School and the Department of Child Hygiene of the Harvard School of Public Health.

time at which pregnancy shall be terminated was present in 49 per cent of the cases. The mothers of 28 per cent of the premature infants had toxemia complicating their pregnancy, 7 per cent had vaginal bleeding of unknown cause, 5 per cent had placenta praevia, and 4 per cent had either diabetes mellitus, pyelitis or pulmonary disease.

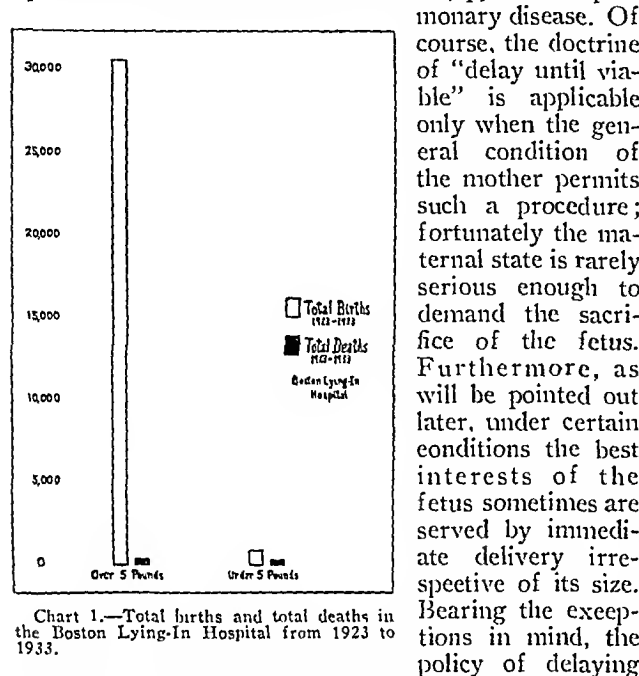


Chart 1.—Total births and total deaths in the Boston Lying-In Hospital from 1923 to 1933.

delivery until viability is assured gives promise of effecting a material reduction of the premature infant mortality. The determination of the ideal moment for the elective termination of pregnancy in the individual case depends on the possession of reliable information concerning the size of the fetus in utero. A method whereby this knowledge can be obtained has recently been reported.¹ The occipitofrontal diameter of the fetal head in utero is measured by means of a modified roentgenometrie technic. The fundamental studies of Scammon and Calkins² have established that this diam-

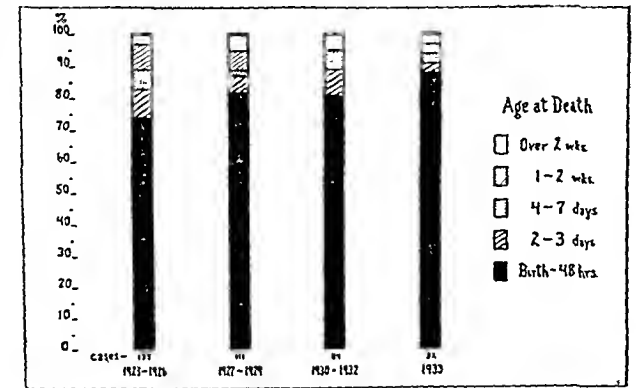


Chart 2.—Percentage of premature infants dying at various ages.

eter serves as a reliable index as to the maturity of the fetus. As one is unaccustomed to think of the degree of fetal maturity in terms of occipitofrontal diameter, it has been necessary to translate this figure

into the understandable language of body weight. The relation that exists between the occipitofrontal diameter and the birth weight has been established through a study of more than 600 new-born infants. A graph has been prepared incorporating these data with the relation Scammon found to exist between this diameter and fetal age and with our statistics concerning the mortality for various weight groups (chart 4). It is possible, therefore, from a roentgen determination of the fetal head diameter in utero to predict the minimum and probable birth weight, the age of the fetus and the mortality to be expected. During the past year 240 such determinations have been made.

CONTROL OF THE BIRTH WEIGHT IN TOXEMIA

Pregnancies complicated by toxemia are responsible for a large proportion of the premature infants born alive and a still greater proportion of the premature infants stillborn. Toxemia apparently starves the fetus through involvement of the placenta and kills the fetus when the placenta becomes grossly infarcted or separates prematurely. It has been our experience that the

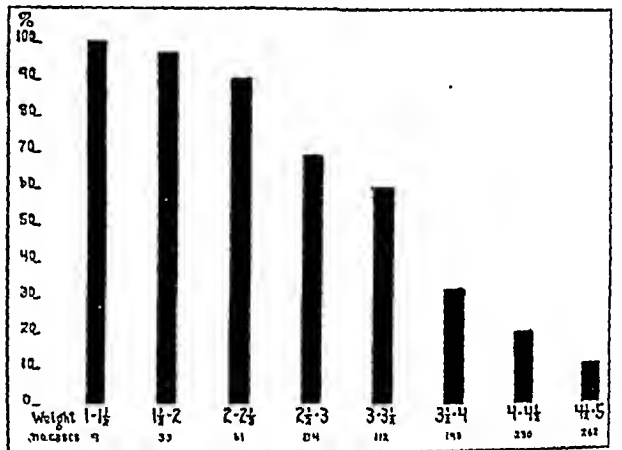


Chart 3.—Premature infant mortality according to birth weight.

infant of a toxemic mother is generally well developed but undernourished—it consistently approaches the minimum weight to be expected from its occipitofrontal diameter measurement rather than the average. It has also been our experience that, providing the toxemia does not kill the fetus in utero, premature infants of mothers with toxemia encounter the same mortality rate as do infants of comparable weight delivered of mothers with uncomplicated pregnancy³ (chart 5). The fetus in toxemia is exposed to two hazards—too early delivery and death from prematurity: too great a delay in delivery and a fatal intra-uterine accident.

Toxemia of pregnancy was present in 6 per cent of the 3,084 deliveries that took place in 1930. The fetus was stillborn in 12 per cent of the cases with this complication; one half of the stillborn infants weighed more than 5 pounds. The fetus was delivered alive as a premature infant in 11 per cent of the cases. In 10 per cent of the group the infant weighed from 5 to 6 pounds (2,268 to 2,722 Gm.) when delivered.

The possible relation between the level of the maternal blood pressure in toxemia and the occurrence of a

1. Clifford, S. H.: *J. The X-Ray Measurement of the Fetal Head Diameter in Utero*, Surg., Gynec. & Obst. 58:727 (April) 1934.

2. Scammon, R. E., and Calkins, L. A.: *Growth in the Fetal Period*, University of Minnesota Press, Minneapolis, 1929.

3. Clifford, S. H.: *Reduction of the Premature Infant Mortality: A New Approach Through the Estimation of Fetal Weight in Utero and as a Result of an Analysis of the Influence of Obstetrical Factors Upon the Viability of 958 Premature Infants*, J. Pediat. 5:139 (Aug.) 1934.

stillborn infant has been investigated in fifty-five cases to date. When the systolic pressure remained below 150 mm. of mercury, no stillborn infants were encountered. When the blood pressure was between 150 and 180, the stillbirth rate was 11 per cent. With the blood pressure between 180 and 210, the stillbirth rate was 43 per cent. As no pregnancy was allowed to continue to higher levels of blood pressure, there are no data available from this series as to the stillbirth rate for levels above 210.

In pregnancy complicated by toxemia in which the systolic blood pressure stays below 150, the evidence

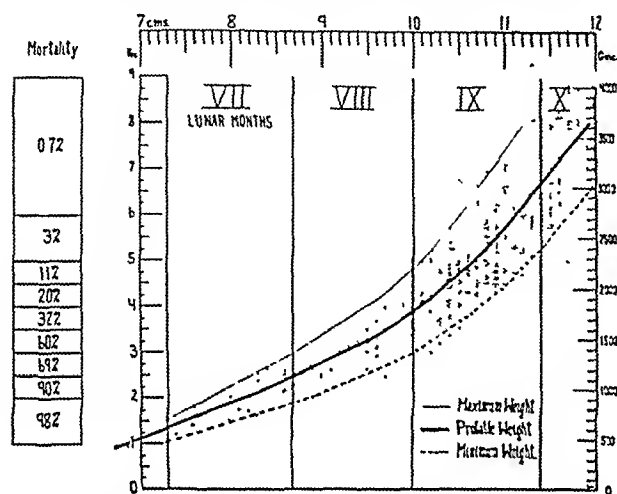


Chart 4.—Relation of occipitofrontal diameter to birth weight, fetal age, mortality.

available at present indicates that there is little danger of intra-uterine death, and pregnancy might well be allowed to continue.

In pregnancy complicated by toxemia in which the systolic pressure remains between 150 and 180, the best interests of the fetus are served by a prolongation of pregnancy until a birth weight of 5 pounds can be assured and then delivery should be made. In toxemia of this degree the fetus is exposed to an 11 per cent chance of being stillborn. If the fetus were delivered weighing from 4 to 4½ pounds (1,814 to 2,040 Gm.) at birth it would encounter a 20 per cent mortality; from 5 to 6 pounds an expected mortality of 3 per cent, and above 6 pounds an expected mortality of 0.7 per cent.

In pregnancy complicated by toxemia in which the systolic pressure remains between 180 and 210, the fetus has a better chance of surviving if delivered as a 3½ pound (1,533 Gm.) or more premature infant than if pregnancy is prolonged in the hope of obtaining a larger baby. The stillbirth rate is 43 per cent in the presence of toxemia of this degree of severity, as opposed to a premature infant mortality rate of 32 per cent for infants weighing from 3½ to 4 pounds at birth.

The premature infant mortality statistics that have been given are based on a sufficiently large series to be significant. The relation between the blood pressure level in toxemia and the stillbirth rate that has been submitted is based on a study of fifty-five cases. The information concerning the fetus in toxemia is presented at this time in the nature of a preliminary report; much work remains to be done before this relationship is thoroughly understood.

CONTROL OF THE BIRTH WEIGHT IN HEART DISEASE

In pregnancy complicated by heart disease the fetus can be allowed to mature in utero with safety only as long as the mother presents no sign of cardiac failure. The fetal prognosis is better if pregnancy can be terminated prior to the onset of serious decompensation irrespective of the weight of the infant (chart 5). The premature infant mortality in the presence of congestive failure is 80 per cent; this is probably due to the fact that the majority of these infants must be delivered by cesarean section, that 73 per cent of the mothers have received morphine preceding delivery, and that the placental circulation must be involved in the general circulatory failure. It has been my impression that the prolongation of pregnancy in the presence of heart disease does not subject the fetus to the hazard of intra-uterine death, as is the case in toxemia.

CONTROL OF THE BIRTH WEIGHT IN THE PRESENCE OF BLEEDING

In the presence of gross vaginal bleeding, whether it is due to placenta praevia or to premature separation of the placenta, the sooner fetal delivery can be accomplished the better the infant's prognosis.

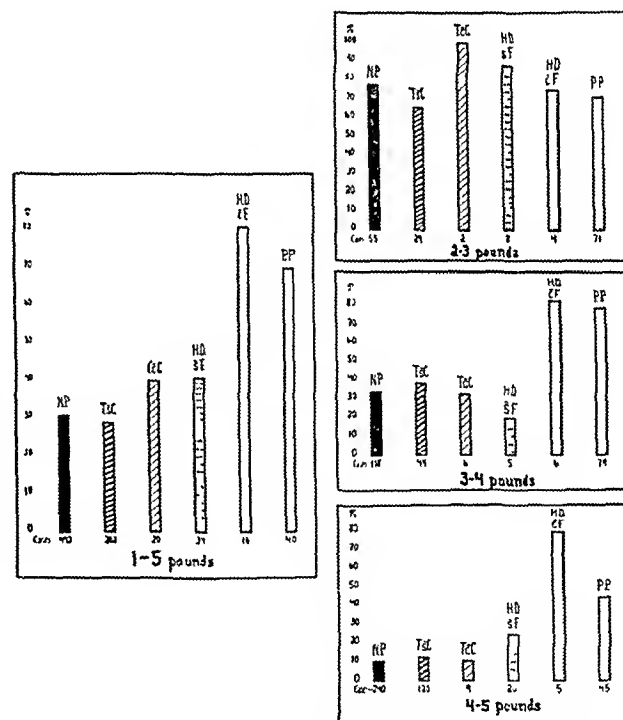


Chart 5.—Premature infant mortality according to complication of pregnancy by birth weight.

When the bleeding is slight and when the mother can be kept in a hospital under constant supervision, it may sometimes be possible to delay the gas examination and to determine the cause of the bleeding until such time as a viable fetus can be demonstrated.

CONTROL OF THE BIRTH WEIGHT IN THE PRESENCE OF DIABETES MELLITUS, PYELITIS OR PULMONARY DISEASE

When pregnancy is complicated by severe diabetes mellitus, pyelitis or pulmonary disease, it may be advisable to induce labor without regard to the size of the fetus. In the milder cases the demonstration of a fetus

of adequate size may make further prolongation of pregnancy unnecessary.

SUMMARY AND RESULTS

Further reduction in the distressingly high premature infant mortality depends on reducing the number of deaths in the first forty-eight hours of life. The condition of the premature infant at birth may be improved

by delaying the induction of labor, whenever possible, until an infant of adequate birth weight can be assured. An estimation of the weight of the fetus in utero can be obtained through mensuration of the occipitofrontal diameter of the fetal head by means of a modified roentgenometric technic, which diameter in turn can be translated into terms of expected body weight.

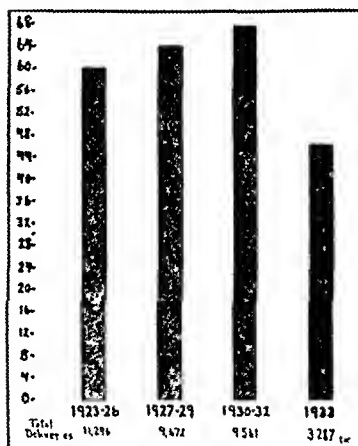


Chart 6—Stillbirth rate per thousand deliveries (includes miscarriages and premature nonviable infants).

In the severer grades of toxemia the situation may arise wherein it is safer for the fetus to take its chance being delivered as a premature infant than to run the risk of being stillborn should pregnancy be allowed to continue. The risk to the fetus of being delivered as a premature infant can be determined from information as to its expected birth weight. In reaching a decision this is compared with the chance of fetal death in utero as determined from an evaluation of the severity of the toxemia.

In pregnancy complicated by heart disease without failure there appears to be little danger of intra-uterine death of the fetus, and pregnancy may be allowed to continue as far as the maternal condition will permit. It is important to the future of the fetus that delivery should not be delayed until congestive failure develops, for under these circumstances the premature infant mortality mounts to 80 per cent.

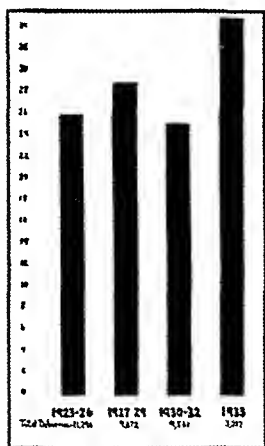


Chart 7—Incidence of premature infants alive at birth; rate per thousand deliveries.

In the presence of gross bleeding the sooner the fetus can be delivered the better its prognosis.

The influence of knowledge as to the weight of the fetus in utero in the management of certain types of pregnancy is felt to have contributed to the reduction in the stillbirth rate to 47 in 1933 from a level of 69 per thousand deliveries for the preceding ten years

(chart 6). It has been instrumental in increasing the incidence of premature infants born alive from an average of 27.6 for the preceding ten years to 34.7 per thousand deliveries for 1933 (chart 7). Furthermore, the proportion of premature infants weighing from 4 to 5 pounds at birth increased from an average of 52 per cent for the preceding ten years to 61 per cent during 1933 (chart 8). Finally, the premature infant mortality dropped for the first time in five years from 35 per cent to 29 per cent (chart 8).

Two important additional influences collaborated with the determination of fetal maturity in effecting the improvements recorded. The general use of pentobarbital and scopolamine analgesia during labor has resulted in a definite reduction in the incidence of operative deliveries.⁴ With the mother relieved of pain, labor was allowed to pursue its natural course through full dilatation of the cervix to normal delivery. Secondly,

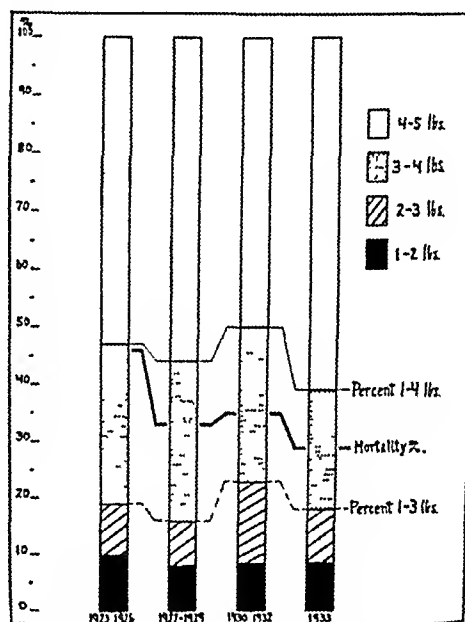


Chart 8—Relation of distribution of weight groups to general mortality by years.

there has been a better understanding of the safest method of accomplishing the actual delivery of a premature infant in the presence of the various complications of pregnancy.³

CONCLUSION

The premature infant mortality and the stillbirth rate can be reduced through control of the time at which pregnancy shall be terminated.

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ABSTRACT OF DISCUSSION

DR. FRED L. ADAIR, Chicago: Despite popular ideas that seventh month infants are more apt to survive than those born at eight months, it is well established that the more mature the fetus the better are its chances of survival. Weight, however, cannot always be taken as a criterion of maturity, though in general the statement is correct. It is not clear from the presentation of Dr. Clifford what other factors may have entered into the reduction of the mortality of these premature infants. The method of delivery has much to do with the death or survival of infants and especially of those which are premature

⁴ Irving, F. C.; Berman, Saul, and Nelson, H. B. The Barbiturates and Other Hypnotics in Labor, Surg., Gynec. & Obst. 58:1 (Jan) 1934

Each week adds to the maturity as well as to the weight and length of the fetus. It seems to me that the length of the fetus is, as a rule, a better index of its maturity than the weight. Scammon and Calkins have presented numerous formulas for estimating body weight from various measurements of the fetus. X-ray methods, so far as they deal with the measurement of distances from tube to plate and the stereoscopic shift, are mathematically accurate, and intervening points can be accurately determined. The difficulty is to locate the points on the fetal head that one desires to measure. This can be done with approximate accuracy from the occipitofrontal diameter and the body length, and approximate menstrual age can be deduced. I use the method described by Hodges. It seems to me that the figures given by the author for weight gain during the ninth month are somewhat high even for infants of normal mothers. Physicians cannot and should not attempt to classify, treat or determine the time to interrupt pregnancy on the basis of blood pressure alone. It is unlikely that the author intended to convey any such idea. I should like to have my view clearly understood that the continuation of a pregnancy in a woman with a toxemia does progressive and irreparable damage of greater or less degree to her tissues and organs, and the longer the pregnancy is allowed to continue the more serious is the damage. One has to evaluate the relative importance of fetal and maternal lives. The so-called toxemias are not all alike in their effects on the mother, the fetus or the placenta, and there should be an attempt to make some differentiation between these various disorders. I am of the opinion that one cannot ordinarily temporize safely in the presence of genital bleeding during pregnancy and that a diagnosis should be made. Too many maternal and associated fetal fatalities result from the failure to recognize promptly the cause of the frequent warning bleeding of placenta praevia and ablatio placenta. I agree with the author that premature infant mortality and the stillbirth rate can be reduced through control of the time of terminating pregnancy. I should, however, like to emphasize the fact that in general any induction of labor increases the hazard for the mother and the fetus.

DR. JULIUS H. HESS, Chicago: I am certain that Dr. Adair welcomes the pediatrician into the field of obstetrics. In his clinic the babies go into the pediatric service shortly after birth. I am certain that a much lower morbidity has resulted from such cooperation. There is no gainsaying the fact that every half pound or pound added to the birth weight of the premature infant advances its opportunity not only for life but for a reduced morbidity. As the means are at hand for preventing refrigeration of infants, a proper nursing corps and food that is believed the best for this type of infant, breast milk, it is necessary to go back of the arrival of the infant in the hospital or the home, or the transfer from the obstetric department to the premature infant station, in order to reduce mortality, and that is exactly what has been attempted here. In a group of 1,623 premature infants, 238 of a total of 489 deaths occurred in the first forty-eight hours after admission to the station. In obstetric hospitals in which only premature births delivered in their own wards are received, the forty-eight hour death percentage would be higher, as most of the very small ones born in homes do not live long enough to be brought to the hospital. I was interested in the question of the different types of delivery, as regards not only the death rate but the factors that might influence the death rate. In the 1,623 brought to the station from 1922 to Jan. 1, 1934, in whom there were 489 deaths with 386 autopsies, there were the following: Induced labor with cervical dilatation, occurred eighteen times with six deaths, or 33⅓ per cent. All six infants had intracranial hemorrhage. Precipitate labor took place sixty-three times, with twenty deaths, or 31.7 per cent. Sixteen of the twenty had intracranial hemorrhages. There were sixty-three sections, with nineteen deaths, or 31.6 per cent. Two died with intracranial hemorrhages. This was a rather surprisingly low number. There were twenty-six spontaneous breech deliveries, with six deaths, or 23 per cent. Four infants had intracranial hemorrhages. There were eleven cases of version and extraction with one death, or 9 per cent, and that infant had an intracranial hemorrhage. Of twenty-three breech extractions, two infants died, or 8.7 per cent, one with intracranial hemorrhage. I was surprised by these facts, because I had always felt that next to

forceps extraction the breech extraction offered the greatest danger so far as intracranial hemorrhage was concerned. Forceps, high or low, were applied in 135 cases. Undoubtedly 90 per cent of these were low forceps. Nine infants, or 6.6 per cent died, and four had intracranial hemorrhages.

DR. STEWART H. CLIFFORD, Boston: Although the subject of applying the knowledge of the size of the fetus to practical obstetrics is new, it has become quite complicated. It is impossible to cover in a fifteen-minute period all the aspects of this subject that have developed. Therefore, in this presentation I limited the discussion to the time at which pregnancy should ideally be terminated. In another presentation, to which Dr. Hess has referred, I attempted to analyze the influence of the various types of delivery and complications of pregnancy on the premature infant mortality. The details of the report can be obtained in the *Journal of Pediatrics* for August 1934. In connection with the premature infant mortality associated with the method of delivery, I found the surprising fact that cesarean section, which is ordinarily thought to be the method of choice, actually carried the highest mortality of 44 per cent; delivery by breech extraction was next. The safest method for the delivery of the premature baby was found to be associated with low forceps application and the use of a wide episiotomy. In this case the mortality rate was 11 per cent. I agree wholeheartedly with Dr. Adair in his attempt to emphasize the value of skeletal measurements as a reliable index of fetal maturity as opposed to birth weight. The birth weight is extremely unreliable as an index of fetal age. Some day I hope the body length or the occipitofrontal diameter will be just as significant to the practitioner in this respect as the baby's weight. However, at present if I say that the baby has an occipitofrontal diameter of 11.5 cm. or that it is 47 cm. long, this probably means nothing at all to the listener. On the other hand, if I say that the baby in utero probably weighs 5 pounds, or at least weighs a minimum of 4½ pounds, one can immediately visualize the infant and plan accordingly.

THE SURGICAL TREATMENT OF CARCINOMA OF THE BRONCHI AND LUNGS

WILLIAM FRANCIS RIENHOFF JR., M.D.

AND

EDWIN NASH BROYLES, M.D.

BALTIMORE

In the treatment of malignant tumors of the lung and bronchi the same fundamental principles should be observed that are followed in the management of such tumors elsewhere in the body; namely, the removal of the entire organ and involved lymph glands when that is possible. Whenever feasible, this policy has been carried out regarding other organs and structures, following the advance in surgical views and technic. Total ablation by almost standardized operative methods has been developed for the breast, rectum and thyroid. To mention only a few, and is today a recognized procedure the world over. Partial removal of a breast for carcinoma would today be an unheard of procedure; in the instance of the lung, because of its unique anatomic structure, to be referred to later, a removal of the entire organ rather than a portion of it seems to be still more a requisite demand. Another point is that, owing to its structure and function, the total removal of the lung for even a benign tumor may be required as a measure to

From the Surgical Clinic of the Johns Hopkins University School of Medicine and Hospital.

A preliminary report of the operative technic appeared in the Bulletin of the Johns Hopkins Hospital 53: 390-393 (Dec.) 1933.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

save a life, a fact demonstrated by one of the cases herein reported.

In the past, supposedly insurmountable technical difficulties have played a major rôle in retarding the progress of surgical intervention with bronchial and pulmonary malignant tumors. As in the surgical treatment of malignant conditions elsewhere in the body, so it will probably be of those in the lungs; namely, that a number of operative procedures will be suggested, developed and modified over a period of years until finally fairly standard methods will be evolved and accepted by virtue of their outstanding merits, applicability and effectiveness in various types of cases and conditions, in the hands of different operators and over a prolonged period of trial. It is not possible at this early stage in the development of total pneumonectomy to anticipate all possible technical pitfalls and immediate as well as remote consequences that no doubt will not be wanting.

It would seem advantageous, therefore, to present from time to time for consideration and discussion the experiences gained by those interested in this branch of surgery, for the total removal of the entire lung bids fair to become eventually the operation of choice in the surgical treatment of malignant tumors of the bronchi

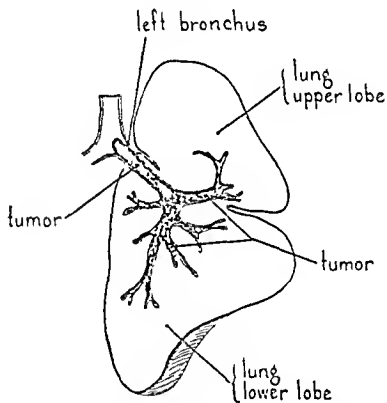


Fig. 1 (case 1).—Diagrammatic sketch of the left lung, showing tumor, an intrabronchial fibropapilloma, filling entire bronchial tree.

and lungs. The development of a rational, safe and thorough operative procedure is therefore of prime importance. It is with this idea in mind that we present for consideration the limited experiences of two successful instances of pneumonectomy. In this brief report of the two cases, attention is called alike to the preoperative preparation and the operative technic

employed, to the postoperative follow up stage of the respective patients and, finally, to the critical discussion. It is of course impossible in the space allotted for the presentation of this report to discuss in detail the development of the operative treatment of malignant lung tumors and the interesting experiences and views of those contributing to this field of surgery.

REPORT OF CASES

CASE 1.—D. Y., a white girl, aged 3 years, admitted to Harriet Lane Home, Johns Hopkins Hospital, June 19, 1933, had been perfectly well until April 24, when she became ill and vomited at frequent intervals during the day. The pulse was slightly accelerated, the temperature 100.6 F., the respiration rate from 38 to 40. Examination of the chest revealed pronounced dullness on percussion of the entire left side of the chest posteriorly, which extended forward to the anterior axillary line. This dullness was especially marked over the scapular region. Over this entire area of dullness there was marked bronchial breathing. The patient was asymptomatic; there was no cough, and within forty-eight hours her pulse, temperature, and respirations became normal. The physical manifestations in the chest persisted and, in addition, within the next few days the dullness had extended over the entire anterior portion. The rectal temperature for the following two weeks showed an elevation to 99 and 99.6 F. Aspiration of the chest

was performed three times, twice unsuccessfully, and at one time 0.5 cc. of a thin, turbid fluid was obtained which on bacteriologic examination showed a few short chain streptococci.

Roentgen examination revealed no fluid in the pleural cavity, but the entire left side of the chest was hazy.

The heart was normal, displaced only slightly to the left. The blood pressure was 110 systolic, 82 diastolic.

Bronchoscopic examination, done by Dr. Edwin N. Broyles, revealed a small, glistening, yellowish tumor mass, completely filling the left bronchus and protruding well into the trachea toward the right side. A biopsy was possible and a diagnosis of spindle cell fibrosarcoma was made. Iodized poppy-seed oil could not be forced into the left primary bronchus. (Figure 1 shows the location of the tumor.) Since after several attempts it became evident that the tumor could not be resected through the bronchoscope, the patient was operated on, July 24, at which time a total left pneumonectomy was performed. The operation was carried out as described under operative technic.

Her convalescence was entirely uneventful. The temperature and pulse were never elevated after operation. The child was up on the fourth day and about the ward; the wound healed by first intention, and there was never the slightest evidence of infection in the wound or chest at any time. After operation the child was at no time short of breath or cyanotic, nor did she cough. The pathologic examination of the specimen revealed that the tumor was an intrabronchial fibropapilloma, which had arisen in the periphery of the lung and grown centripetally along the smaller bronchi into the left primary bronchus and trachea. The entire bronchial tree was completely filled with a tumor mass, which was everywhere covered with bronchial mucous membrane (fig. 1).

The patient has since returned several times for examination, which shows both on percussion and on auscultation that the heart and mediastinum have been displaced not only to the left but also posteriorly; that undoubtedly there is a large lappet of lung which has passed through the anterior mediastinum, displacing the heart posterior and to the left, and also that the lung in all probability has passed through the posterior mediastinum. The injection of iodized oil h.s. demonstrated by roentgenograms (fig. 7) that the main bronchus has healed completely and that the right lung has been expanded by compensatory dilatation and has migrated into the left thoracic cavity anteriorly, and probably also posteriorly. The heart shows no abnormalities. The child is perfectly well at present, almost a year since the operation. (fig. 8). The chest shows no deformity whatever, and the excursion of the left diaphragm is almost as great as that of the right. The expansion on the two sides of the chest is practically equal and symmetrical.

CASE 2.—*History.*—H. M., a woman, aged 24, complained of a constantly increasing sensation of pain in the left lower part of the chest anteriorly at about the level of the fourth rib. She located the pain in the precordial region and felt as if it was deep seated, a throbbing type of pain not associated definitely with respiration or cough.

In the summer of 1932 there was hemoptysis estimated at about two cupfuls of fresh blood, which she could feel coming up from low down in the chest after hearing a soft bubbling noise. Three months later she again coughed up a few mouthfuls of blood, and for the last two months she had had several small hemoptyses. Five days before admission the patient coughed up about a cupful of thick, dark blood four times during the day. Since that time she had coughed up a little constantly. She had some pain on taking a deep breath and on moving, at about the level of the fourth rib, as pointed out by the patient herself.

Examination.—The physical examination was essentially negative. The lungs were perfectly clear and no râles were heard. A roentgenogram of the chest revealed nontuberculous infiltration at the bases of both lungs.

The laboratory tests were negative.

Bronehoscopic examination, made by Dr. Edwin N. Broyles, showed a tumor about 1 inch below the first branch in the left bronchus. It seemed to be a small polyp, but only the apex of the tumor could be seen through the bronchoscope. Attempts at removal resulted in considerable bleeding. Attempts to remove the tumor through the bronchoscope and by fulguration were found to be unsuccessful after numerous trials. High

voltage roentgen therapy was likewise unsuccessful. Following bronchoscopic examination there was a great deal more pain in the left anterior portion of the chest at about the level of the fourth rib. Pathologic diagnosis of the particles removed by biopsy at the time of the bronchoscopic examination was carcinoma. An injection of iodized oil was made on the left side and a typical block found at the beginning of the left lower primary bronchus, just distal to the ventral bronchus. The iodized oil welled back into a rectangular mass.

The patient was admitted to the hospital, October 25, and an artificial pneumothorax was begun. November 1 the lung was practically collapsed. November 3 a left pneumonectomy was performed according to the technic described.

Preoperative Preparation—Beginning two weeks prior to operation, the left lung was compressed by a gradually induced and finally complete artificial pneumothorax. The patient thereby became accustomed to breathing only with the non-collapsed lung and so established, before operation, a respiratory and circulatory equilibrium under altered intrathoracic pressure.

Operative Technic—Tribrom-ethanol, 90 mg per kilogram by rectum, thirty minutes before operation and nitrous oxide and oxygen as a supplementary anesthetic were administered. Intratracheal anesthesia was not resorted to. The patient, accustomed to breathing with one lung, did not seem to be affected by the opening of the chest. The inconvenience of inserting a tube in the trachea was thereby obviated and also

veins lie in front of the left primary bronchus, and individual ligation of these can safely and easily be accomplished in their anterior presentation.

Ligation of the vessels offered no difficulty in either of these two cases. The pulmonary artery running in front and rather on top of the left bronchus was isolated by blunt dissection and clamped just midway between the reflection of the pericardium and the primary division of the artery (fig 13). The proximal arterial stump was then ligated with oiled braided silk and the mouth of the vessel transfixed with medium waved silk. The superior and inferior pulmonary veins were then isolated in turn and also transfixed with medium waved silk.

In case 1, in which operation was done July 24, the left primary bronchus was cut across with the scalpel and the lung removed from the chest (fig 14). The cartilaginous rings of the bronchial stump were cut at various points in their circumference in order to do away with their springlike action, which normally tends to maintain the patency of the bronchus. The bronchus was closed with a continuous suture of number 1 plain catgut in the mucosa supported by interrupted medium silk sutures in the wall of the bronchus. In case 2 (fig 13), in which operation was done November 3, the technic was the same, but owing to the location of the tumor (fig 15) it was possible to cut across the first ventral or superior branch and then incise the primary descending bronchus diagonally. There was very little loss of blood during the operation. The pulse



Fig 2 (case 1, one week after operation)—Air in the apex of the left thoracic cavity and definite fluid level, slight scoliosis to the left side, increased size of the right thoracic cage in comparison to the left. Intercostal spaces on the right are larger than on the left.



Fig 3 (case 1, two weeks after operation)—Practically all the fluid absorbed from the left thoracic cavity and mediastinum being pulled over to the left. Fibrous bands may be seen forming fenestrated labyrinthine cavity on the left side. Scoliosis is somewhat more pronounced. Intercostal spaces are relatively very much reduced in comparison to the right side. The heart is in the transverse position and the diaphragm somewhat elevated.

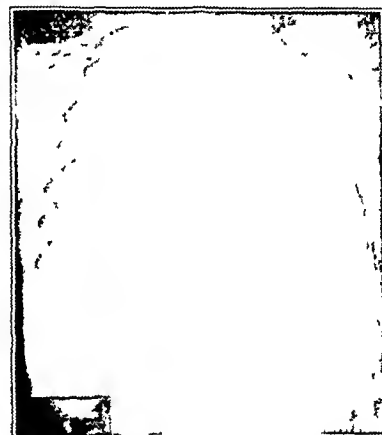


Fig 4 (case 1, on discharge from the hospital)—The trachea is somewhat displaced to the left, the fibrous adhesions hilling the left thoracic cavity, and the heart and mediastinum are pushed over to the left side. The diaphragm is not quite as elevated as in figure 3. At this stage physical signs indicated that the right lung had already migrated into the left thoracic cage. It is to be noted here that the intercostal spaces on the left side more nearly approximate the right side than at any time previously. The diaphragm is also in a much more normal position. These changes suggest that as the left thoracic cage fills with expanding right lung, respiratory movements may tend to normal and approximate those of the normal respiratory excursion of the diaphragm and the thorax.

an almost unavoidable contamination of the trachea and bronchi with infectious matter.

The patient's position on the operating table was the semi-recumbent one, with the right side down. The trunk was rotated toward the right at an angle of about 45 degrees, the left arm being raised over the head, and the head of the table elevated to 45 degrees. In that way the best exposure of the anterolateral surface of the left side of the chest was obtained, little if any weight being thrown on the right side and the diaphragm being simultaneously relieved of the weight of the underlying viscera.

After the usual iodine application to the skin and draping of the operative field, an incision was made in the third intercostal space, parallel to the third and fourth ribs and extending from the costal cartilages to the anterior axillary line (fig. 9). The fibers of the pectoralis major were divided along their course, the internal intercostal muscles cut directly across (fig 10). The parietal pleura herniated up between the ribs as a result of the increased intrathoracic pressure (fig 11), and after its incision air escaped with a hissing sound. The third and fourth ribs were merely spread apart with a self-retaining retractor (fig 12). The anterior approach was chosen, because it gives a far better exposure of the hilus; the pulmonary artery and

rate and blood pressure remained unaltered. The operations caused practically no

shock to the patients and were not unusually prolonged, thirty minutes being required for the first and one and one-half hours for the second. The spread ribs were reapproximated with number 2 silver wire, and the pectoral muscles, subcutaneous tissue and skin were sewed up with interrupted fine silk sutures (fig. 16). In both cases the chest was closed without drainage.

Postoperative Course.—As the convalescence differed somewhat in the two cases, and as each one offered especial points of interest, they will be considered separately. In the child, the pulse, temperature and respirations were undisturbed after the operation. One week following operation, a diagnostic thoracentesis yielded serosanguineous fluid, the culture of which proved to be sterile. Series of roentgen examinations of the chest following operation revealed first a gradual accumulation of fluid and some air in the left thoracic cavity. When after

two weeks that had almost completely disappeared, the formation of many delicate bands of fibrinous and fibrous adhesions running from the mediastinum and pericardium to the left chest wall and forming a number of small pockets with different fluid levels would be observed (figs. 2, 3, and 4). The chest cavity seemed to be honeycombed with an organizing fibrinous mass containing multilocular spaces of a labyrinthine aspect. The diaphragm became more elevated and immobile and the



Fig. 7 (case 1).—Iodized oil injection made by Dr. E. N. Broyles, April 27, 1934, ten months after operation, showing stump of left primary bronchus completely healed. The patient regurgitated some iodized oil and swallowed it, so that a small bit entered the esophagus and stomach. The right bronchial tree is shown, and on close inspection it can be seen that the ventral as well as the dorsal branches of the right primary bronchus cross the midline well into the left thoracic space. This shows a great deal more plainly in the roentgenogram than it does here.

heart and mediastinum shifted constantly more to the left side. At this time the right thoracic space was definitely by measurement larger than the left and was expanding vigorously, thereby exaggerating the enlargement. The bands of fibrous tissue seemed gradually to contract, becoming shorter as the mediastinum moved toward the left chest wall. In the first postoperative month the respiratory movements of the left side were absent and those on the right side became increasingly more conspicuous. An asymmetry of the thorax had evidently also developed by this time. The left thoracic space was diminished in its anteroposterior and lateral diameters, the intercostal spaces were markedly narrowed, and a scoliosis developed toward the left side (figs. 3 and 4). From this time on until the patient's discharge, the right lung as the result of compensatory dilatation began to extend to the left side and fill up the empty space that remained. A lingula of lung was seen to extend across the anterior mediastinum in front of the pericardium, pushing the heart toward the left chest wall and then posteriorly, as the expanding anterior lappet of lung became larger. Finally it inserted itself more and more in front of the heart, so that at present the point of maximum impulse is approximately in the midaxillary line. The large anterior lappet can readily be seen in the roentgenograms of the lateral chest view (fig. 5). The recent injection of iodized oil also proved this extension of the right lung to the left thoracic cavity (fig. 7). Physical signs on percussion and auscultation are further corroborative not only of the presence of lung tissue anteriorly in the left side but also of having penetrated the posterior mediastinum, coming across between the spinal column and the heart, below the arch of the aorta. Simultaneously with the filling of the left thoracic space, the respiratory excursion of the thorax and to a less extent of the diaphragm has returned. The diaphragm does not descend as far on the left as on the right side, but the movement of the thorax is apparently equal on the two sides. The asymmetry present before the filling of the chest with the extending right lobe disappeared along with the scoliosis. No empty space exists at present in the left thoracic cavity (fig. 6).

The convalescence of the second patient has differed in some quite obvious ways. Following operation the pulse rate fluctuated somewhat in correspondence with an elevation of temperature, which is shown in figure 17. The changes in the roentgenograms were identical with those of the first case; i. e., the chest filled with fluid and was gradually absorbed in the course of from two to three weeks, presenting the same type of fibrous bands resulting in the formation of multilocular

spaces. The lateral view showing these spaces containing different fluid levels is shown in figure 18.

Frequent exploratory thoracenteses revealed a dark red fluid containing some red and white blood cells but no infection. Never more than from 50 to 100 cc. could be recovered at a time. During the third week the patient, when turning on the right side in the morning (she slept on her back), would cough up from 25 to 50 cc. of this fluid. This expectoration persisted until about a week before her discharge, seven weeks after operation. Since that time it has not recurred. Roentgenograms at that time showed a small amount of fluid in a pocket, evidently connected with the left bronchus. The injection of iodized oil, April 25, corroborated this observation (figs. 19 and 20). The remainder of the left thoracic cavity is nearly filled out, by the displacement of the heart and mediastinum to the left and the elevation of the diaphragm. The left thoracic cage, if not entirely obliterated, is narrowed in all diameters; the intercostal spaces are likewise diminished, and through the formation of fibrous adhesions a space occupying fenestrated labyrinth of connective tissue has been created. In successive roentgen studies the walled off pocket connected with the bronchus is becoming smaller and will evidently disappear with an early closing of the now minute opening. Repeated readings of the intrathoracic pressure have all been zero, as could be expected because of a communication with the bronchus. Physical signs suggest further that the right lung has extended over to the left side, especially in the anterior and superior portion of the left side of the chest, and is occupying that space evacuated by the shift in the mediastinum to the left. Thereby the volume of the right thoracic space has been increased and also the right lung, which fills it (fig. 21). This aspect is supported by the steady increase in vital capacity since opera-

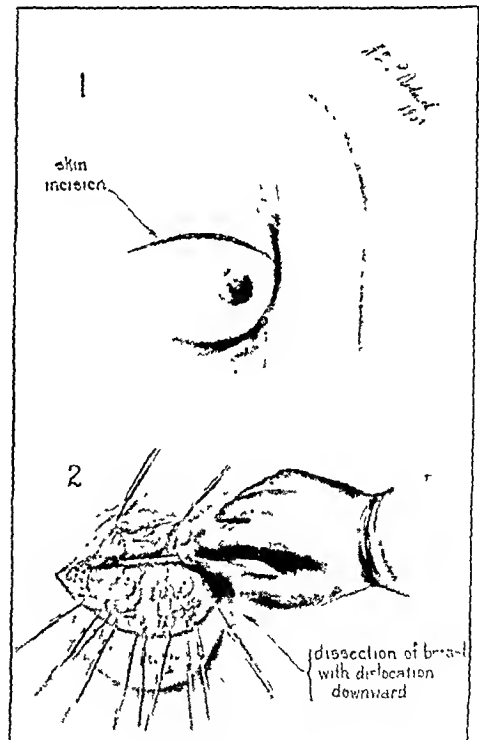


Fig. 9.—Operative technic.

tion; i. e., from 1.7 to 2.4 liters. The normal for this patient is 3.2 liters. Unfortunately, enough iodized oil was not introduced at this time to determine this fact. It will be interesting to note whether a negative pressure develops in the left thoracic cavity simultaneously with the closure of the bronchus and if so whether, as is very likely, respiratory movements will return with the filling up with lung tissue of the left thoracic cavity.

This train of events was noted in case 1. Patient 2 had a perfect functional result (figs. 22 and 23). She is the picture

of a very active young married woman in excellent health. It is interesting to note in this case that in spite of numerous colds during the winter the patient did not develop an infection of the cavity in communication with the bronchus. This communication is probably quite small. The patient has not coughed at all except for two days following the injection of iodized oil,

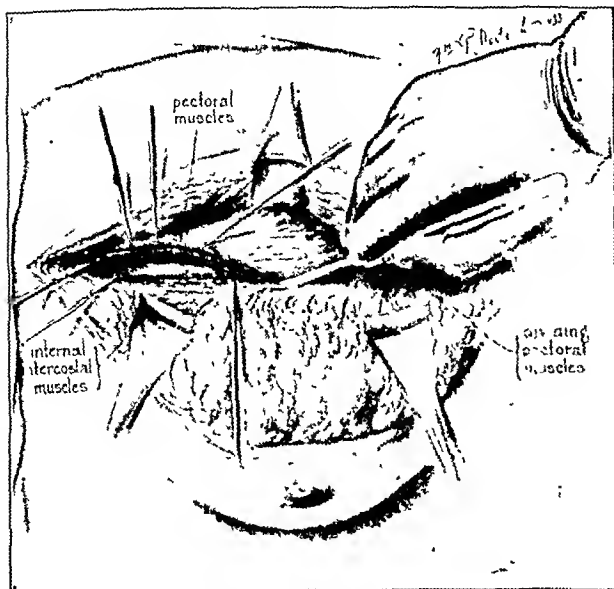


Fig. 10.—Operative technic.

which was allowed to run down the pharynx and which became undoubtedly infected. Other than that, she has been without morbid symptoms of any kind since operation and has been very active.

COMMENT

Incidental to the development of an operative technic for the removal of the thoracic esophagus, extending over a period of the last five years, it soon became evident that compression of the lung by an artificial pneumothorax would serve two very valuable purposes; i. e., first the patients were able to adapt themselves to breathing with the noncollapsed lung and also adjust themselves to the altered conditions of intrathoracic pressure that would exist during and after the operation. Thus the shock attendant on opening the pleural cavity was negligible. The second purpose was to remove the lung mechanically as far as possible from the operative field so as to give the maximum exposure of the mediastinum with the minimum handling of the lung. The relative simplicity of removing a collapsed lung under these conditions was at once evident, and therefore artificial pneumothorax was employed as a part of the preoperative preparation at the first opportunity. Other advantages of the preoperative pneumothorax are that in all probability the blood and lymph flow is markedly reduced, and intrathoracic exposure is very much increased, as the collapsed lung occupies a surprisingly small amount of space. Thus the operative removal can be accomplished through a relatively small incision in the chest wall; again, the necessary handling of the lung is reduced to a minimum and the opportunity for massaging emboli from a malignant tumor is lessened. It is to be recalled that tumors of the lung grow quite frequently along the pulmonary veins as well as the lymphatics.

The approach to the hilus of the lung through an incision in the anterior thoracic wall was selected

because from the anatomic as well as the surgical standpoint it is the most rational and simplest route. The hilus of the lung is thus completely exposed, so that an anatomic dissection may be deliberately and carefully performed. Thus the pulmonary artery and veins may be independently and securely ligated. These vessels lying essentially ventral to the main or primary bronchi are dispensed with in the beginning of the operation, thus insuring against the loss of any considerable amount of blood, and undoubtedly decreasing the probability of air emboli by way of the pulmonary veins. A secondary but still an important consideration is the ligation of the pulmonary veins before the lung is handled, preventing, of course, the escape of carcinomatous emboli into the peripheral arterial circulation through the left auricle. An excellent exposure to the mediastinum may be obtained at the level of the third interspace anteriorly, which permits of a dissection of not only the lymph glands of the hilus but also those of the posterior mediastinum as well. (Two neuromas of the mediastinum on the right and left side have been removed recently, this approach being used with excellent exposure). The anterolateral incision in the third interspace, from the parasternal to the anterior axillary line, permits without even so much as fracturing or cutting a rib, by simple spreading of the incision, ample exposure from the diaphragm to the apex of the thoracic cavity. In this manner not only is time saved but the added procedure of resecting ribs and dividing muscles is done away with.

The closure of the bronchus was done in these cases in a simple way with as little damage to the tissues as possible. The left primary bronchus was cut completely

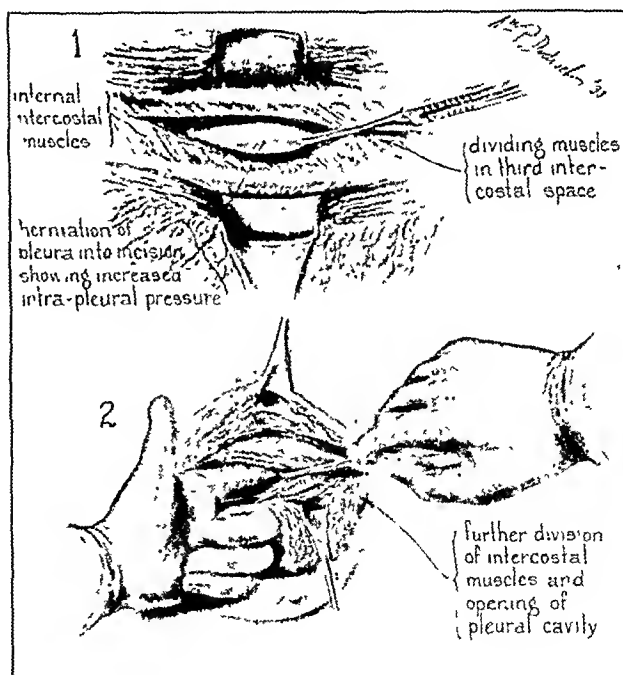


Fig. 11.—Operative technic.

across with a scalpel in the first case just distal to the bifurcation of the trachea. The spring-like action of the cartilaginous rings was done away with by cutting the ring at several points in its circumference. The mucosa was sutured with a continuous suture of number 1 plain catgut, while the wall of the bronchus was

sutured with interrupted silk sutures. The bronchial stump healed by first intention, as shown in figure 7. In the second case, the tumor being located just distal to the first ventral branch of the left primary bronchus (fig. 15), the incision was carried through the inferior portion of the first ventral branch and then across the descending primary bronchus, the idea being that the

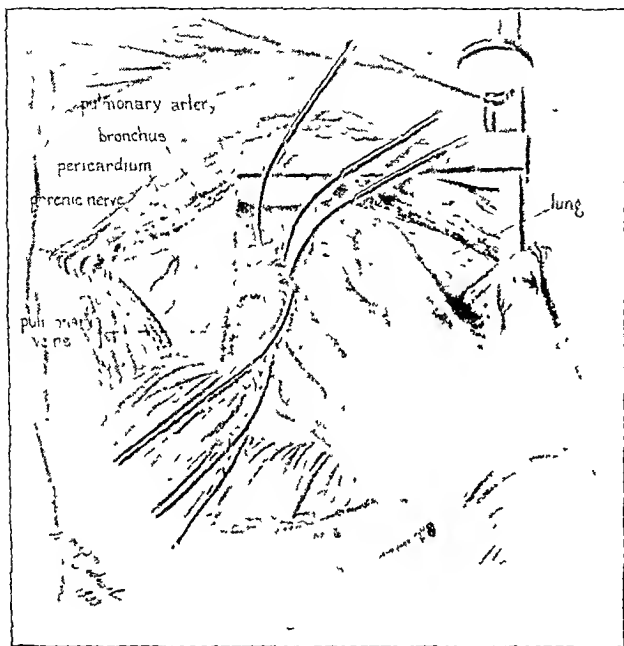


Fig. 12.—Operative technic

small first ventral branch might be closed independently of the large descending one and proceeding thus on the hypothesis that a small bronchus would more readily heal than a larger one. As a matter of fact the size of the large descending branch was very little reduced on the left side by the departure of the first ventral branch, remaining about the size of one's index finger and being equal in size to the bronchus in case 1. The result shown by the injection of iodized oil is almost self explanatory. The large bronchus healed by first intention while in the smaller one remained an opening the size of a thread. The same technic of closure was used in both cases. In the second case infection occurred prior to operation and was due to a bronchiectasis distal to the tumor and as a result of fulguration of the tumor through the bronchoscope.

Figure 20 demonstrates the walling off, pocket forming process about the end of the bronchus, which has been described. These results at least suggest that the bronchus may be securely closed in the human being and, further, if a small opening should occur after some days or weeks, that a walling off process may take place which makes this opening into the bronchus inconsequential. A small bronchus should probably not be left attached to the primary bronchus, for the reason that the circulation in the bronchial artery to such a small bit of tissue is more than likely disturbed in the closing of the main bronchus. Cauterization of the bronchial stump in any form is apt to cause a slough and prevent primary healing, or it may become a nidus of infection and should therefore be abandoned. Mass ligatures or tourniquets about the hilus are also harmful in that the bronchial artery is blocked far proximal

to the point at which the bronchus is cut across, and thus the bronchus for some distance is deprived of its circulation. Healing is thus retarded, to say the least, if not entirely prevented. In cases in which the primary bronchus is invaded toward the trachea, as in the first case, it would be impossible to cut across the bronchus proximal to the growth if the hilus should be tied off in a mass ligature.

Thoracoplasty is certainly unnecessary in pneumonectomy. The first patient fortunately had the juvenile resilience to compensate completely for the loss of an entire lung. This case may be considered from every point of view the ideal result, which for an older person would be unobtainable or only approximately so, as in the second case. Nevertheless, the maintenance of the normal shape and rigidity of the thoracic cage is a most important factor in the compensatory restitution. It serves somewhat as a sheet anchor to which the heart and mediastinum are attached by fibrous bands, probably profoundly influencing the intrathoracic pressure relations by maintaining the patency of the chest cage. What could be more upsetting to the cardiorespiratory mechanism than a flail wall to one side of the thoracic cage that moved in a large excursion with each respiration? Surely the ultimate effect of such a fluttering chest wall must be eventually deleterious. A sterile small pneumothorax is harmless, yet even that condition will be rare, for the cavity remaining in the thorax after the maximum compensatory dilatation of the

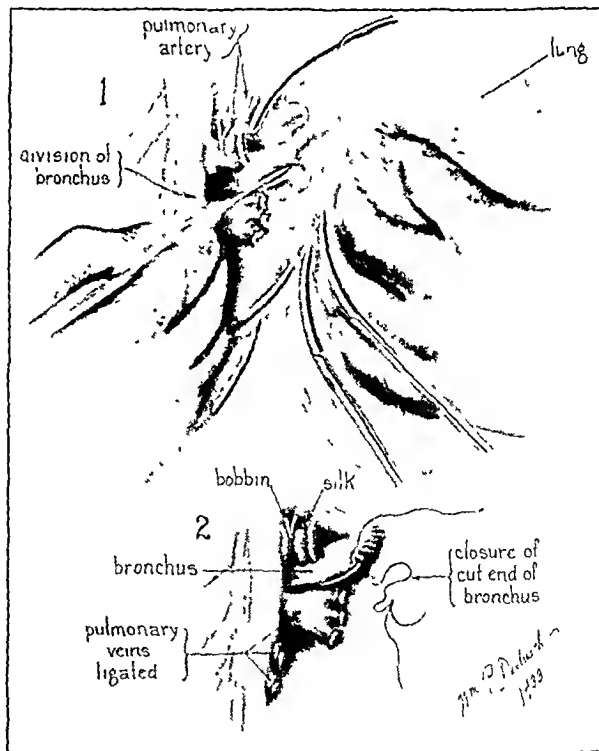


Fig. 13.—Operative technic.

remaining lung will gradually obliterate itself by the formation of multiple fibrous bands creating a veritable fenestrated labyrinth of many small spaces. (In eight consecutive cases of one stage lobectomies for bronchiectasis, in the presence of infection, the same process of obliteration has been observed. In none of these has

a thoracoplasty been found necessary.) Likewise in such cases should interference with the function of the phrenic nerve be given up, for the piston action of the diaphragm and its effect on intrathoracic pressure is a valuable adjuvant in the compensatory restitutive mechanism.

As far as could be ascertained from clinical examination, roentgen examination and thoracentesis, the compensatory restitutive mechanism consisted of the following steps: The remaining thoracic cavity, after removal of the lung, gradually fills after a

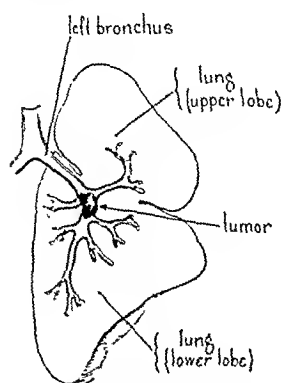


Fig. 14 (case 1).—Method of closure of left primary bronchus.

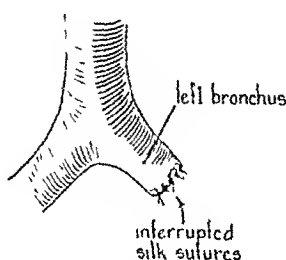


Fig. 15 (case 2).—Diagrammatic sketch showing relative position of tumor.

period of from forty-eight to ninety-six hours with an effusion of bloody serum possibly mixed with some old blood, clotted and unclotted, from the operation. This semifluid or fluid medium in addition to the entrapped air approximately fills the chest cavity. The latter rises to the apex of the cavity. Displacement of the mediastinum is by this means prevented in the first few hours or even days following operation. If the fluid in the cavity is sterile or even mildly infected (i. e., ability to obtain a growth but not pus formation), organization begins immediately and fibrous tissue strands develop from the costophrenic sinus and pericardium from below up much like the "sealing off" process occurring after pneumothorax in cases of pulmonary tuberculosis. Strands of fibrous tissue can be seen running from the pericardium and mediastinum to the lateral thoracic wall. The bands divide the thoracic cavity into many small spaces, which are lacelike in appearance and form a veritable labyrinthine network. Different fluid levels can be seen in these spaces. Undoubtedly as these fibrous bands contract they have a tendency to immobilize the diaphragm in a high fixed position but also to limit any respiratory movements of the chest wall and to pull the entire mediastinum and heart to the affected side. This readily explains the retraction of the interspaces and the ribs themselves, thus narrowing not only the lateral but also the anteroposterior diameter of the chest. Following the mediastinum evacuating its central position, the volume of the right thoracic cage is by this much increased and a compensatory dilatation of the remaining lung occurs simultaneously. If the mechanism ceases at this point the vital capacity is increased but moderately, as in the second case; but if a negative pressure is developed in the affected thoracic cavity the remaining lung will undergo further compensatory dilatation and fill the remaining empty space in the operated side, as in case 1. With this filling the respiratory movements seem to return. Whether or not the remaining lung advances to fill the empty space left by the operation seems to depend entirely on the pressure conditions in the

remaining space; if negative, the remaining lung will expand and fill the remaining space; if positive, the remaining lung will not hyperexpand or advance.

In treating malignant disease of the bronchi and lungs it is to be recalled that the spread of the growth may be (a) along the bronchi by continued growth or by bronchial embolism, (b) into the pulmonary veins and then carried into the left heart and peripheral arterial system without passing through the lung capillary system, (c) by direct extension of the growth from one lobe to another as the result of an incomplete anatomic fissure, (d) by anterograde and retrograde invasion of the lymphatics along the bronchi, involving the intra-lobar and interlobar glands as well as those of the hilus, and if the fissure is incomplete involving the lymphatics of the adjoining lobe.

For these reasons it would seem likely that total pneumonectomy would be followed by a higher percentage of ultimate cures than partial pneumonectomy, while at the same time in many instances it would be technically less difficult.

CONCLUSION

The important points of the method of operation here discussed are:

1. The preliminary collapse of the affected lung.
2. The anterolateral incision and approach.
3. The isolation and separate ligation of the pulmonary vessels.

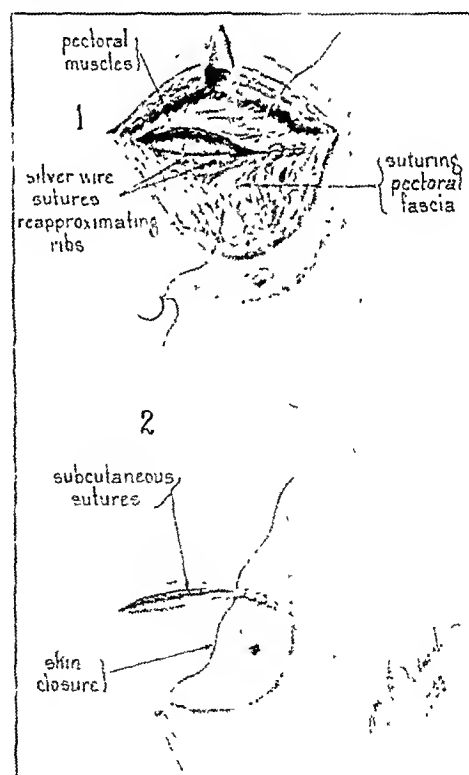


Fig. 16.—Operative technic.

4. The primary closing of the bronchus after the cartilaginous spring has been interrupted.
5. The primary closing of the chest wall without drainage.
6. The prevention of postoperative sloughing and formation of bronchial fistulas.

7. The avoidance of resection of ribs and especially of thoracoplasty with its consequences.

8. The prevention of shock.

9. The comparatively short duration of operation and early convalescence.

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ABSTRACT OF DISCUSSION

DR. EVARTS A. GRAHAM, St. Louis: Primary carcinoma of the bronchus is an exceedingly important subject, because it constitutes approximately 10 per cent of all cancers. It is possible to diagnose nearly all cases at a relatively early stage if the possibility of the condition is kept in mind. Since there have really been no authenticated cases that have been cured by radiotherapy of any kind, the only satisfactory treatment at present is by surgery. Drs. Womack and Tuttle, however, at St. Louis, have been going over some sixty-eight cases of ours with the idea in view of attempting to find out by classification and by other methods whether possibly certain types of cases might be considered to be more amenable to radiotherapy than to operative treatment; this study has not been completed. I congratulate the authors on their success. I am not certain, however, that the method which they used

was a year ago last April on a physician. I performed a thoracoplasty on him also because of the reasons mentioned, and I removed the mediastinal glands. He is perfectly well at present and he has resumed the practice of medicine. There is a strong probability that he will never have a recurrence, because the carcinoma had not penetrated the bronchial cartilage and there was no involvement of the mediastinal glands. The revival of interest in one stage resections of a lobe or of the lung is due to a great extent to the work of Dr. Brunn. The operation of a single stage lobectomy had been practically abandoned in this country until he revived it a few years ago for bronchiectasis.

DR. E. F. BUTLER, Elmira, N. Y.: The authors touched on a relatively new field in surgery—total unilateral pneumonectomy for carcinoma of the lung. In 1923 Lilienthal made a plea for operative intervention in these cases. He could not report any cases from his own series but he called attention to five cases in which operation had been performed in Sauerbruch's clinic. In this country there have been twelve or more cases of bronchogenic carcinoma of the lung in which total unilateral pneumonectomy has been done by Rienhoff, Graham, Alexander, Churchill, Overholt and others. The operative mortality has been low. In times past the diagnosis of carcinoma of the lung was usually arrived at during the course of operation for lung abscess or at autopsy. Now,



Fig. 18 (case 2).—Lateral view of the left thoracic cavity, three weeks after operation, showing different fluid levels in multilocular spaces formed by the space occupying fenestrated labyrinths of connective tissue fibrous bands.



Fig. 19 (case 2).—Iodized oil injection, April 25, 1934, showing filling of dilated end of descending left primary bronchus. A threadlike stream of iodized oil can be seen coursing down over the mediastinal side of the cavity connected with the bronchus. The diminution in the thoracic cage on the left side is similar to that observed in case 1. This was taken with the patient sitting in the upright position. Silver wire sutures have begun to break up in small pieces.



Fig. 20 (case 2).—April 25, 1934, after injection of iodized oil, with patient in recumbent position. Demonstrates size of cavity connected with the small threadlike opening that has persisted since about three weeks after operation. This opening, it is believed, is diminishing constantly.

will prove to be the best. I am fearful that in many old and middle-aged subjects a serious kinking of the large vessels will occur by the deflection of the mediastinum sufficient to fill up the empty space unless a thoracoplasty is performed. I wonder too whether emphysema is not likely to occur in the overdistended lung. Again, I feel that the mediastinal glands should be removed and, finally, I think it is safer to provide an air-tight drainage to prevent the serious effects of a tension pneumothorax if the bronchial stump should happen to open, and also to allow egress for the large amount of fluid that always collects. Possibly, future experience will show that although a thoracoplasty may be desirable it can be safely postponed until some time after the removal of the lung. The method of anterior approach, to attack the hilus first, appeals to me as having advantages over the posterior approach in some cases. The uncertainty about whether the tumors were malignant in both of the cases is at this time not so important as it may seem to others, because at this stage of the application of surgery to carcinoma of the bronchus it is important to develop satisfactory methods of attack. The anterior approach seems to me to be an important contribution. My first total removal of the lung for a carcinoma in one stage

and surgeon, the diagnosis may be accurately determined during the initial study of the case. Womack, reporting from Graham's clinic, has shown that the location of the carcinoma in the lung has a distinct prognostic significance. The nearer the original focus lies to the periphery of the lung, the shorter is the life expectancy; the nearer this focus lies to the hilus, the longer is life expectancy. Pneumonectomy and lobectomy are not yet standardized operations. They are still in the evolutionary stage. As a guide in developing the technic of these operations, there is a wealth of precedent and tradition. Six years ago Brunn disregarded precedent and developed a one-stage lobectomy, which has already won a secure place among the accepted thoracic operations. Rienhoff has also shown a disregard of precedent in his operative approach to the pedicle of the lung and in his indifference to the remaining dead space within the pleural cavity. His results have been good. It must be borne in mind, however, that the factor of suppuration did not enter to any great degree into Rienhoff's cases. When suppuration or sepsis becomes an important factor, the presence of a large empty

pleural space might invite an overwhelming postoperative infection. Rienhoff's patients and others operated on by similar technic will be watched with interest to determine the ultimate behavior of the mediastinum and also to determine the ultimate effect on the patient of mediastinal displacement that must presumably occur. These cases may later require thoracoplasty to correct excessive mediastinal shift.

DR. CLYDE ALLEN, Detroit: This presentation represents another milestone in a difficult problem of thoracic surgery. The question of the preliminary pneumothorax I think is of great significance. The necessity of crowding down the lung before attempting to remove it is, I believe, of prime importance. The operation on the phrenic nerve is of importance in reducing the size of the thoracic cavity before a shift of the lung to the other side is allowed. That problem, however, will be worked out as more experience comes. The question of drainage seems to be of great importance. I feel that an air-tight, water-sealed drain is the most satisfactory way of handling this problem. Four years ago I operated on a woman for carcinoma of the lung, which was diagnosed by bronchoscopy previous to the operation. I felt that, in spite of the fact that the patient was 65 years of age and had a rather marked hypertension, an attempt should be made to remove this and it was done in a two-stage operation. That is, a lobectomy was done. That was in 1930. This patient is now 69. Clinically she is well, but two and one-half years after the operation, bronchoscopy disclosed a small nodule in the stump of the right bronchus. A piece of this was taken out and it was found to be carcinoma of the same type, and radium was implanted. Since that time bronchoscopy has been done every six months and radium has been employed. She has had a total of 480 milligram hours.

DR. WILLIAM F. RIENHOFF JR., Baltimore: Fortunately the patients are young, so that it will be possible to settle some of these points if we all live long enough to follow them. I asked to have Dr. Graham discuss the paper because of his very large experience. In regard to kinking of the great vessels, C. S. Levy in 1920 reported the cases in the literature of congenital absence of the lung, including one that had come to autopsy at the Johns Hopkins Hospital, and in no case were there any evidences of disability from kinking of the large vessels of the mediastinum, although one lung was entirely absent. In the event of displacement of the mediastinum the heart is displaced, but this displacement is associated with rotation and I am not certain that there would be a kinking of the vessels. But whether there was or was not a kinking of the aorta and vena cava, it seems that a thoracoplasty might be performed at a later date if and when necessary. I am observing these patients continuously, as one lives in Baltimore and the other just outside. The younger patient has intelligent parents and they watch her closely. Physiologically and clinically they are both perfectly normal. If, and when, they develop signs or symptoms of a deleterious influence due to displacement of the mediastinum, then is the time to consider a thoracoplastic operation, not before. Furthermore, the question of whether a thoracoplasty would correct a disability from compensatory dilatation of the remaining lung is also, I think, open to question. Another thing about the congenital absence of lung is that none of them had emphysema at the time of autopsy. Compensatory dilatation of the remaining lung that Heuer, Reichert and I found after experimental pneumonectomy on dogs is an entirely different entity from a pathologic emphysema. It was found that the elastic tissue was not interrupted in the remaining lung after pneumonectomy. I can see no reason for draining the operated side of the thoracic cavity if it is sterile; but if it is not sterile and there is pus formation, I think that in twenty-four hours or forty-eight hours one may consider air-tight drainage through the incision or, if necessary, through an additional stab wound. If the cavity isn't infected I believe that through the clotting of blood and the presence of a supernatant serosanguineous fluid organization will occur with the formation of fibrinous and fibrous bands, which will transform the chest from a unilocular to a multilocular space. It is likely that the formation of fibrous tissue bands will occur more rapidly if the chest is full of some medium, a fluid medium or a semifluid one, than if the cavity is emptied by drainage. It is my opinion, which

may be entirely wrong, that a drainage tube is a hazard and if it is left in long enough, over forty-eight hours, infection will occur along the tube in spite of all precautions. Dr. Graham mentioned the lymph glands of the mediastinum. I forgot to state that I think in both of our cases we had very good exposure of the mediastinum. It was very simple to remove the glands along the posterior surface of the bronchus and in the mediastinum by either the anterior or the posterior approach. I have not meant to depart too radically from surgical precedents, but I feel that if drainage can be avoided, certainly in the uninfected cases, it will be a help in restoring that side of the thoracic cavity to normal.

EXPERIMENTAL STUDIES IN VASCULAR REPAIR

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As we arrive in this world an intricate physiologic interruption in the circulation takes place which separates us from the maternal blood stream and places us entirely on our own. The success of this remarkable and most interesting process in the beginning of a new life hinges on a normal physiologic reaction; namely, thrombosis and the rapid healing or closing of an injured blood channel. As we depart from this biologic battle the last physiologic change in our bodies after our heart has ceased to beat is the clotting of blood within our veins.

During the interval between these terminal events of life, most of the pathologic changes that take place in the body have either directly or indirectly some bearing on the problem of thrombosis and the subsequent repair of this vascular damage. The healing of all wounds, the constant battle with infections, as well as the development and growth of the body, and the actual maintenance of life is dependent on this normal physiologic reaction. Karsner¹ describes repair as a reaction of the fixed tissue to an injury and divides it into three more or less intermingled stages; i. e., granulation, organization and cicatrization. Throughout this process the vascular changes play an extremely important part in the reconstruction. Although thrombosis is an intimate part of this vascular repair, the healing process is completely independent for, as MacCallum² says, "even when a thrombus fills the vessel and becomes replaced by fibrous tissue, the endothelial cells take no part in the formation of that tissue but confine their growth to the production of a new lining membrane which will cover all the surface of the clot and extend into every crevice, so that the blood is kept from contact with the fibrin or the new fibrous tissue." Hertzler³ has said that thrombosis is the most important problem in surgery and the least understood. As thrombosis is the first change that occurs in the process of vascular injury, it becomes a very important step in vascular repair.

When a needle is inserted into a vein for the withdrawal of blood, a certain amount of damage is done to this vein wall. A hole is torn in this tubular blood-filled channel and certain pathologic disturbances take place that might be the forerunner of immediate and

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Karsner, H. T.: Human Pathology, Philadelphia, J. B. Lippincott Company, 1926.

2. MacCallum, W. G.: Textbook of Pathology, ed. 3, Philadelphia, W. B. Saunders Company, 1924.

3. Hertzler, A. E.: Surgery and Pathology of the Skin, Fascia, Muscles, Blood Vessels and Tendons, Philadelphia, J. B. Lippincott Company, 1933, preface.

serious complications. The muscular coats and the elastic tissue in the vein wall immediately draw the wounded edges of the vessel firmly together. The injury to the vein permits a loss of tissue juices that are rich in fibrinogen, and when this substance comes in contact with the escaping blood under normal conditions a firm clot quickly forms and the opening is tightly sealed. This clot not only covers the outer sur-

reparative processes of injured veins are similar throughout the body, yet there are certain mechanical, physiologic and anatomic differences in the sigmoid sinus that might produce different reactions to injury. On account of the structure of the sigmoid sinus, eddies are formed in the circulating stream and there is a regular interruption of blood flow by the changes in intrathoracic pressure. There is such a fine balance and rich anastomosis with the other intracranial venous sinuses that all these factors are conducive to the formation of a thrombus and a rerouting of this normal venous return by way of the other patent channels.

ETIOLOGIC FACTORS

Various factors enter into the repair and restoration of the normal function of the venous channel, such as the manner in which the vein is injured, the amount of destruction of the vein wall, whether it is infectious, traumatic or both, and the duration of the inflammation; the condition of the patient's blood also plays an important part in all tissue repair. These mechanically produced vascular changes are not identical with those caused by the bacterial destruction of tissues. They differ, as MacCallum has stated, because bacteria may persist after healing has begun, and this may continue to repeat the injury. Although endothelial cells may have extraordinary powers of assuming other forms and functions, it is in the repair of vascular injuries that they have such a high degree of specificity, and the chief function of these endothelial cells in later life is the formation of a new lining for blood vessels.

TYPES OF EXPERIMENTS

The first series of experiments were the ligation of veins in the dog, varying in size from the internal jugular to the inferior vena cava. When these vessels

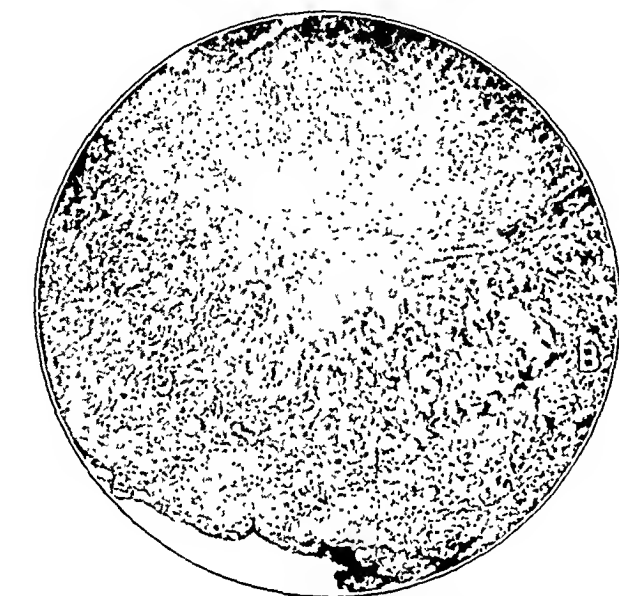


Fig. 1—A, cross section of external jugular vein showing the firmly attached noninfected retrograde thrombus. B, the vein wall, the intima of which was everted, showing the characteristic thickening resulting from this trauma.

face of the wounded vessel but extends over the damaged inner coats, and its size and shape are in proportion to the amount of venous damage.

What nature attempts to do, usually with success, is to maintain the venous channel as a blood carrier with as little interruption as possible, block the escape of blood through the wound promptly and repair the defect in the shortest space of time. Almost immediately after this intravenous or mural clot has formed, a lining similar to that of the normal blood vessel is laid down over the surface of the clot. I have been able to identify normal vascular endothelium on these clots within eighteen hours after the initial injury.

Immediate and fixed approximation of the wounded edges of the vessel is the best method for prompt repair. However, this may be highly impractical in some instances because the location of the injured vessel may not lend itself to the favorable technic and, in addition, the suturing of the inflamed and diseased vessel may not always safely prevent the loss of blood.

Certain vessels such as the sigmoid sinus are not amenable to ligation and suture repair. In the field of otolaryngology, this vessel is frequently infected and presents many perplexing problems. It is to the sigmoid sinus that the major portion of these experiments have been directed, although it has been necessary to resort to other venous channels in animal experiments. The sigmoid sinus offers many advantages for the study of thrombosis and vascular repair. It is easily exposed and this exposure can be maintained for a considerable length of time because it is not disturbed by the inflammatory reactions of the surrounding soft tissues. As it passes through the firm layers of the dura, this helps to keep the vessel open. While thrombosis and the



Fig. 2.—Nonviable muscle implant seven days after insertion, showing degenerated muscle fibers and organized thrombus.

were tightly ligated an intravenous thrombus formed at the site of the ligation, which was eventually absorbed; and although there was a compensatory hypertrophy of the collateral circulation to carry on a sufficient venous return, in no instance did the vessel recanalize past the point of obstruction.

In the next series of animals, nonviable muscle was used as a venous plug for the control of bleeding. This

nonviable tissue had many disadvantages. First, there was a tendency for it to slip out of the vein and permit a hemorrhage, either immediately after its insertion or from thirty-six to forty-eight hours later. Infection was more frequent and the reaction in the vein wall about the site of this nonviable tissue was always so great that the vein never recanalized (fig. 1). This reaction was apparently due to the necrosis of the non-

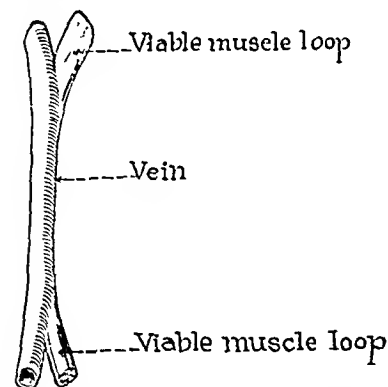


Fig. 3.—Vein with viable muscle loop placed intravenously sixty days before. The vein has completely recanalized along the opposite side of the viable muscle insertion.

used intravenously or extravenously for the repair of various types of vein wounds. The amount of the completeness of this venous repair by the use of viable muscle is extensive, and the unexpected results were startling. Briefly, these experiments were as follows: First, a viable strip of clean muscle was pushed into the open external jugular vein toward the head for a distance of from 2.5 to 5 cm. The muscle was held in place three minutes by narrow pointed thumb forceps. The venous flow had previously been obstructed beyond the point of opening by placing a hemostat on each side of the exposed vein and elevating the bed so as not to injure the vessel in any way. Care was also taken not to damage the vein at any point except at the site of the muscle entrance, the attempt being made to determine just what part the viable muscle played in the formation of the thrombus unaided by tissue juices from the damaged vessel wall. This muscle filled the opening into the vein but did not distend the venous channel. The valves toward the cardiac end of the vein blocked the venous return from this direction. This procedure controlled the bleeding and promoted the quick formation of a firm and well organized thrombus, which usually extended from 4 to 6 cm. up to the point of the first bifurcation. The muscle remained viable within the vessel, and within fourteen to twenty-one days a new venous channel was formed opposite the point of the viable muscle insertion and the vein returned to its normal size and shape. The viable muscle then became an extravenous implant as it remained enclosed within the old venous bed, the new channel being a detour which had formed around the muscle, and the vascular endothelium formed the new wall of the vessel, using the viable muscle as a base. The same venous repair and recanalization took place when two separate viable muscle implants were led into the vein in a cephalad direction. Because a longer strip of vein was blocked (fig. 3) it took a longer time for the recanalization to form, but again the vein was restored to its normal size. When an incision was made in the external jugular vein of the dog, viable muscle placed on this opening, and the edges of the muscle

sutured to the surrounding tissue, the escape of blood was completely blocked, and the venous channel was only partially occluded by the extravenous viable muscle. The opening into the vein healed so quickly that the injury could not be identified except at the site of attachment of the overlying muscle.

In another series the viable muscle was led into the vein and cut through an opening in the caudad end, and the raw ends of the extravenous muscle were sutured (fig. 4). In additional experiments, two strips of viable muscle were led into the vein from the caudad end and cephalad end and these raw ends were approximated intravenously (fig. 5), where they firmly united. In all these experiments, recanalization following the operative procedure always occurred.

When a segment of the vein wall was cut out over the intravenous strip of viable muscle (fig. 6), the defect was promptly repaired and the new channel formed in the usual manner. Finally, this vein overlying the intravenous loop of viable muscle was completely sectioned (fig. 7) and permitted to retract from 1 to 2 cm., leaving the bare muscle exposed, and again a new venous channel formed (fig. 8) over this muscular scaffold and both severed ends of the vein united so smoothly that it was impossible to determine the site of the previous injury (fig. 8). Aside from the fact that it took a longer period of time (from forty to ninety days) for this process to be completed, the reformation and reestablishment of this severed vein as a blood carrier was so complete that except for the remaining viable muscle loop it could not be differentiated on gross examination from the opposite vein, not

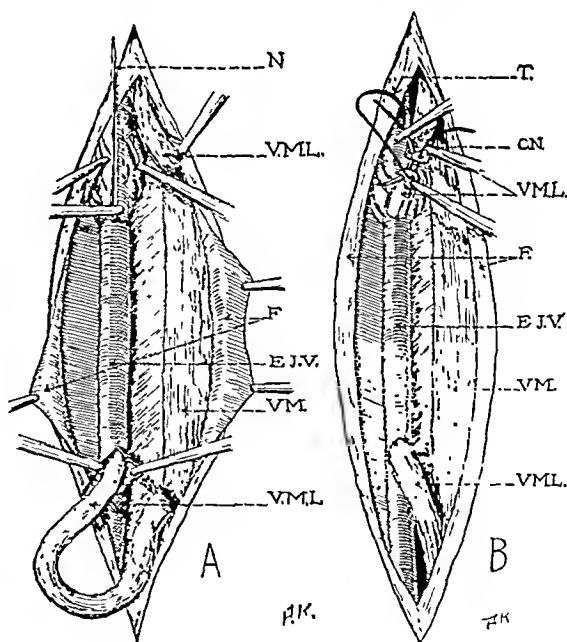


Fig. 4.—A, method of inserting a viable strip of muscle into the external jugular vein of the dog. The muscle is brought out of the vein at the point of exit of the needle. The exit and entrance are the only two places where the vein is traumatized, as it is not lifted from its bed. B, suturing of the raw muscle ends (C and N) after the viable muscle strip has been led through the vein. The muscle quickly united at this point of suture and did not undergo atrophy, because there is no loss of function.

operated on, that was used for a control. The part that the viable muscle plays in the reformation of an entirely new venous channel and the joining of these severed and separated venous ends is, in my mind, the most positive conclusive evidence of the part that viable muscle plays in venous repair.

Although it is difficult to understand and determine just how this large vessel can be so completely repaired, the entire process, although on a much larger scale, is not unlike the regeneration of the smaller blood vessels, which is comparable to the following description by Marchand:⁴

When such strands of endothelial cells, which at first may be no more than whiplash-like protoplasmic filaments, become united with others so as to form a bridge and become thickened



Fig. 5—Intravenous approximation of viable muscle ends. The raw muscle ends reunited firmly and a new venous channel formed alongside the viable muscle insert in the usual manner.

into a double row of cells by mitotic division, there gradually appears a cleft in the middle through which blood corpuscles are forced. There has been much discussion as to the part played by connective tissue cells in this process, but the evidence seems to be overwhelming in favor of the idea that when connective tissue cells take any part they act merely as supporting cells, applying themselves to the outside of the new tube, of which the essential lining layer is composed of endothelial cells alone.

Coffin⁵ made the same observation in the repair of lymphatic vessels. Obviously viable muscle acts in the same way as the connective tissue cells in that it merely serves as a supportive framework on which these newly developed vascular endothelial cells may easily and quickly regenerate. As the success of a tissue transplant depends primarily on the degree of specialization and the continuance of a constant and abundant blood supply, there are obviously two types of tissues well adapted to this experiment when viable muscle is used for vascular repair. It is well known that the failures resulting in the transplantation of the more highly specialized tissues are because the cells do not survive long enough to permit the development of new capillary blood vessels. Carrel⁶ emphasizes the importance of the maintenance of this vascular supply in his remarkable experiments such as the transplantation of the kidney.

Further proof that an injured vein may remain open during the process of repair is based on the experiment in the dog in which I made an incision into the inferior vena cava and closed the opening by the direct application of the raw surface of a strip of viable muscle taken from the anterior belly wall. No ligatures and no sutures were used as the blood stream was only temporarily occluded during the application by finger pressure, which was gradually released within five minutes after the muscle had been applied to the vein wound. The intestine was then allowed to fall back in place and the abdomen closed. In eleven of these operations there was no postoperative bleeding, including operations in two of the animals that developed a septic fatal peritonitis. Specimens of the vena cava taken at necropsy showed the mural thrombus covered with immature endothelial cells as early as eighteen hours after operation. In none of the animals was there any evidence of embolic disturbance, and never was a com-

plete occluding thrombus formed. The viable muscle strip undergoes the normal atrophy of disuse but remains fixed to the vena cava and does not produce distortion of the venous channel. Fibrin is thrown out so quickly about this raw muscle that it is necessary to dissect the finger free to prevent the removal of the muscle when the pressure is released from the vena cava. This also suggests that finger pressure should be carefully and slowly removed when the viable muscle is used to close the defect in the sigmoid sinus. The patency of the vena cava was confirmed by roentgen studies made after the injection of opaque mediums in the saphenous vein (fig. 9).

If complete occlusion of the sigmoid channel is desired after the infected thrombus has been removed, the viable muscle should be large enough to fill the vein completely and should be led into the sinus with a needle and thread and fixed in position. This method will produce a more extensive retrograde thrombosis and by detouring the circulating blood away from the infected vein should help to prevent a widespread dissemination of the infection. Regardless of whether the muscle is extravascular or intravascular or how far it is inserted into the venous channel, the experiments on the dog lead me to believe that eventually the obstructed sigmoid will recanalize and carry on its function as a blood carrier, provided its temporary obstruction is caused by viable muscle.

In this particular problem of the sigmoid sinus thrombosis the immediate operative complication,

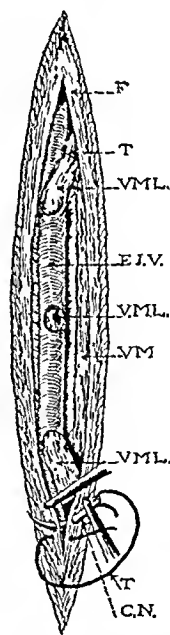


Fig. 6—A segment (P M L) of vein wall removing the overlying intravenous viable muscle. This defect is repaired prior to the recanalization.

namely, the control of hemorrhage, has demanded and received the major amount of attention. While the control of hemorrhage is extremely important and quite necessary in immediately saving the life of the patient, it is by no means the only part of the problem. It is the infection within this blood channel that creates the destructive and often fatal complications, and surgical attention, if the surgeon's obligations are to be fulfilled, cannot be directed exclusively to the removal of the infected thrombus and the immediate control of hemorrhage. After this is done he has only exchanged this known infected thrombus for a new occluding thrombus which he hopes and trusts will not become reinfected. He can do more than hope and trust for these favorable results if he applies the patient's own tissue, that is, viable muscle, for the repair of this infectious and traumatic damage. He has removed only a part of the infection when he takes away the infected thrombus as he cannot, because of obvious anatomic reasons, remove the infected vein. Not only does this viable muscle produce less trauma to this injured vessel but it brings in some

additional blood and lymph supply, which may in some cases be enough to turn the tide for a favorable outcome. My experimental observations lead me to believe that the disadvantages in the use of this tissue are more theoretical than real, because in none of these animals have I encountered any embolic phenomena or any fatal postoperative hemorrhage when viable muscle is used. The application of viable muscle in the repair

4. Marchand, quoted by MacCallum, "Textbook of Pathology," p. 203.

5. Coffin, quoted by MacCallum, "Textbook of Pathology," p. 203.

6. Carrel, quoted by Karsner, Textbook on "Human Pathology," p. 193.

of vascular injuries is by no means limited to the sigmoid sinus, but it is this particular phase of the problem that interests me in this specialized field of surgery, and I shall not report here the experiments that I have carried out successfully on the carotid arteries, liver, spleen, kidney and brain.

METHODS OF REPAIR

This viable muscle serves as a scaffold on which the new vascular endothelial tissue growth may take place,

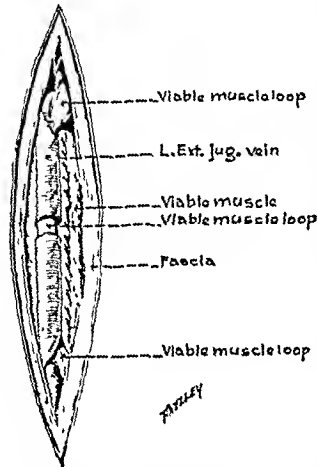


Fig. 7.—Complete section and separation of the vein wall overlying the viable muscle implant. The viable muscle acts as a base on which the new vascular endothelium is laid down, and the defect is completely repaired and the vein recanalizes (see figure 8).

not only with more rapidity but in a definite fixed route, and as the scaffold is not removed the new vascular repair continues to rest on this supportive base. To a certain extent the direction of the formation of the new venous channel can be guided by this muscular scaffold. For instance, when a viable muscle loop is placed within a vein, the new channel always forms on the opposite side of the muscle implant. As the muscle remains viable in this transformed position it reinforces the damaged and weakened vascular wall even after the new venous channel has been completely reconstructed. It was this constant finding in the relation of venous repair to viable muscle implants that suggested the adaptability of viable muscle implants in the repair of certain types of aneurysms.

Reparative processes are carried on without apparent functional demands, as can well be demonstrated by some of these experiments. For instance, when the two external jugular veins in the dog are simultaneously blocked with viable muscle, a prompt and sufficient collateral venous return is established. This takes place by the dilatation of the subcutaneous veins and the compensatory dilatation of the smaller internal jugular veins. The compensation is so prompt and efficient that there is no clinical evidence of any circulatory block. Roentgen studies as well as postoperative exposure of the vessels at various intervals confirm these observations. With the ease by which this compensation is so fully and quickly developed it would seem that nature would be content to accept this new detour for the venous return, but she shows her resentment to this circulatory disturbance by always returning as far as possible to the old established channels. Almost immediately the dilated superficial veins again return to their normal size and the dilated internal jugular veins that were apparently carrying their extra burden without inconvenience quickly diminish to one third their newly acquired size.

OTHER TYPES OF EXPERIMENTS

After it had been definitely established that a new channel of normal size always formed along the opposite side of the viable muscle insert, various attempts were made to reroute this newly formed channel. For instance, the vein was sectioned below the insertion of the viable muscle to see if a new venous channel would

form out through the muscle. This never occurred. In order to determine what part the restoration of the venous channel plays in the recanalization of the vein beyond the viable muscle implant, I tied the vein with a silk ligature distal to the point of entrance of the viable muscle. As some authorities maintain that blood does not enter the newly formed capillary buds until these adjoining sprouts communicate and provide a circulation, it is quite interesting to note that in all the experiments a new channel was opened up past the muscle insert and to the point of the ligation exactly in the same manner as in those experiments in which the vein was not ligated. It was also proved that there was no venous return out through the viable muscle loop, as there was only normal bleeding when the muscle was cut, and microscopic sections showed only the normal vascular supply. It would appear from these experiments that nature repairs and restores the continuity of the venous channel up to the point of a permanent obstruction even without a functional demand.

CLINICAL APPLICATION

The clinical application of this problem to the human being consists of the following technic: After the sigmoid sinus has been exposed and the mastoidectomy completed, the mastoid incision is continued downward along the posterior border of the sternocleidomastoid muscle from 4 to 6 cm. (fig. 10 A). A strip of muscle which is left attached at the mastoid tip is separated and cut transversely at the lower border of the wound (fig. 10 B). This muscle should not be traumatized and should be left in the wound until ready for use. The sigmoid is then opened in the normal manner and the thrombus removed, preferably by suction. While the assistant occludes the upper and lower ends of the sigmoid to control bleeding, the viable muscle is either placed on the wound or led into the sinus with a needle and thread and fixed in position, as has been previously described; or the muscle may be held over the sigmoid wound by finger pressure for three or four minutes until enough fibrin firmly seals it and then petrolatum gauze packing is placed over this viable muscle explant to help hold it in position. Two different pathologic manifestations may indicate whether the muscle should be intravenous or extravascular. For instance, if the sigmoid sinus is accidentally opened or if it is opened and no thrombus is found, the extravascular muscle implant is preferable, because there is no advantage in completely occluding the venous stream and producing an extensive throm-

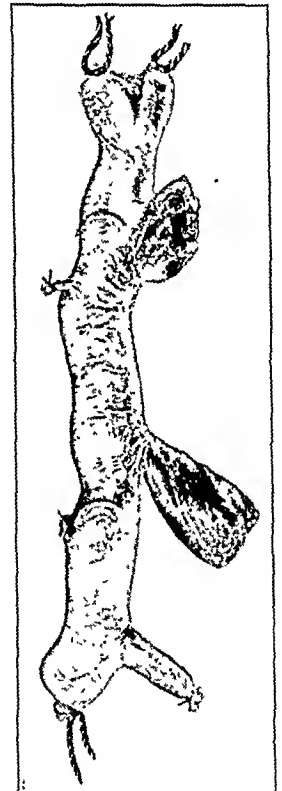


Fig. 8.—Specimen of external jugular vein with intravenous viable muscle implant that had had a complete section of the overlying vein wall one hundred days previously (see figure 7). The wounded vein borders are so smoothly united that evidence of previous injury could not be determined. The vein is restored to its normal size as a blood carrier.

bus. When a small opening is made in the sigmoid and viable muscle is laid on the wound to control the bleeding, I believe that only a mural thrombus forms at the site of the vein wound, which within a few hours is covered with vascular endothelium. Only while the muscle is being applied is the blood stream completely occluded. Further manipulations and disturbances to

I have not yet done in the human being, that viable muscle, i. e., sternocleidomastoid muscle, when used in the repair for either intentional or accidental injuries to the sigmoid sinus, is not only the best means available for the control of hemorrhage and promotion of healing but, when it is used, one may expect a recanalization and complete repair, the sigmoid sinus being restored to its normal function as a blood carrier.

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ABSTRACT OF DISCUSSION

DR. MONT R. REID, Cincinnati: This paper illustrates the importance of a closer correlation and association between the various specialties of surgery. It too often happens that fundamental work remains cloistered for years in the field of the surgical specialty in which it originated. I am reminded of the life-saving procedure of ligating the jugular vein for septicemia resulting from a lateral sinus thrombosis. It is just beginning to find an application in the field of general surgery, where septicemias arising from infected foci in other parts of the body may be benefited by a similar procedure. I do hope that this excellent work of Dr. Dixon's will not suffer a similar fate but will reach the entire surgical profession quicker. He has drawn attention to the tremendous regenerative power possessed by the vascular endothelium provided it is given a chance to demonstrate this ability. Given a living vascularized tissue such as muscle, it will do it with amazing rapidity. In the absence of infection, it will do it quickly over free transplants of muscle which must secure their own blood supply

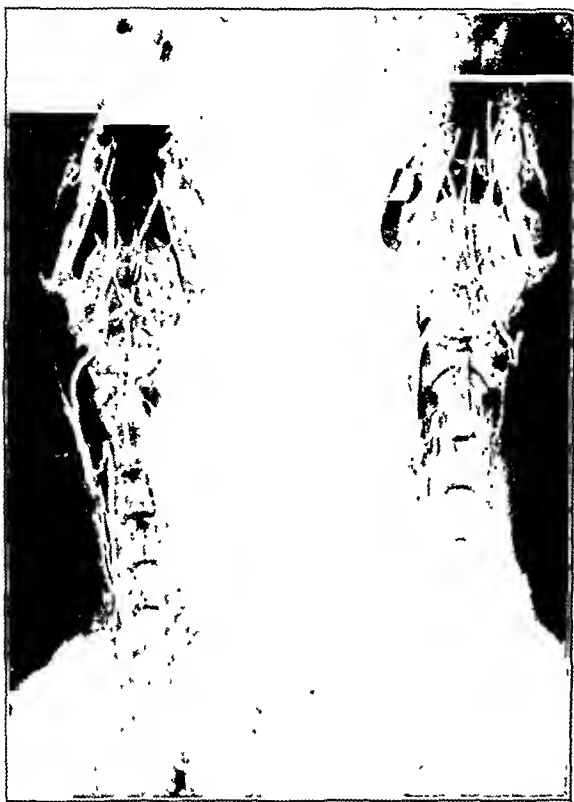


Fig. 9—Appearance after sublingual intravenous injection of diatriz of the external jugular veins sixty days following the insertion of gauze plugs, showing the compensatory collateral hypertrophy and failure to recanalize beyond the point of obstruction.

the vein wound are unnecessary and healing is in no way retarded. This method, I believe, is much to be preferred to the complete blocking of this channel with a foreign body such as a gauze plug, which is inserted through an infected wound and necessitates the formation of a complete occluding thrombus, which, being a nonviable tissue in direct communication with the circulating blood stream, is very apt to become infected and liberate bacteria directly into the circulation.

The use of viable muscle in vascular repair is based on a sound embryologic basis, as muscle and blood vessels both arise from the mesoderm. Also blood vessels contain within their coats muscle tissue, which is filled with blood vessels. In addition, blood vessels and muscle tissue are almost equally rich in the tissue juices that promote thrombosis. Apparently this muscle, which is used either intravenously or extravenously in the repair of venous wounds, is the most satisfactory tissue that could possibly be used for their repair. Not only does this raw viable muscle promote rapid and firm clotting but it hastens healing, helps to retard infection, minimizes the amount of trauma and, what is more remarkable, permits the severed vessel to restore itself as a normal blood carrier.

Based on these experimental observations I think it is fair to conclude even without necropsy studies, which

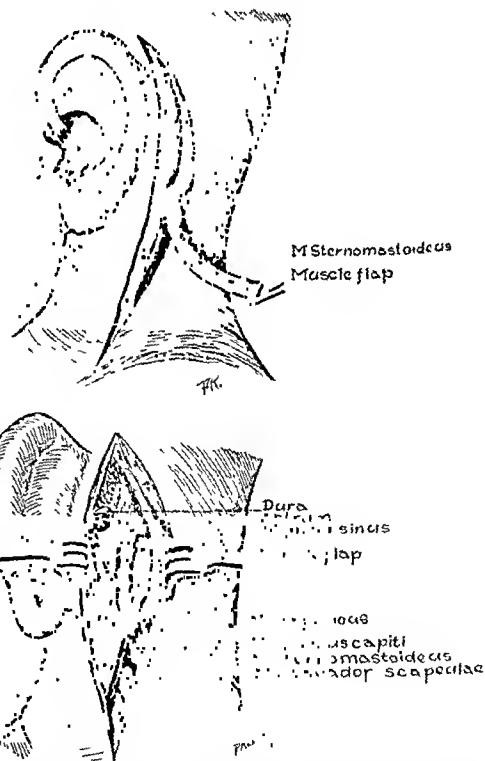


Fig. 10—A, lengthening of the normal mastoid incision over the sternocleidomastoid muscle in preparation of the muscle flap for insertion into the opened sigmoid. B, viable muscle applied to the defect in the sigmoid sinus that has been opened.

to live, in addition to furnishing a base, circulation and medium for the growth of endothelium. I speak of this because it has long been a practice among general surgeons to use plugs of muscle to control bleeding from veins or arteries when it is not possible or desirable to ligate the bleeding points. It is preferable to use adjacent and attached living muscle, but frequently, especially in brain surgery, this is not possible, and free transplants of muscle must be used. I am grateful to

Dr. Dixon for his demonstration of the probable ultimate fate of a vessel so treated. It is distinctly encouraging. It is well known that infection alters the process. When, however, the exigencies of the situation, such as his problem of the sigmoid sinus, demands a plugging of the wounded vessel, I am sure that his method of using attached, living and vascularized muscle is certainly the best procedure and a real contribution. In the practice of general surgery, one finds certain analogies in the use of pedicled muscular flaps for the obliteration of chronically infected empyema and bone cavities. Not only are the cavities obliterated, but the infection clears up more rapidly. It very likely will be proved that this use of pedicled muscle will not only be most beneficial in dealing with the open sigmoid sinus but will be a distinct benefit to the healing of the mastoid cavity. I should like to ask Dr. Dixon whether he would rely solely on the complete plugging of the sigmoid sinus with muscle when there exists a septicemia.

DR. LYMAN G. RICHARDS, Boston: This experimental work demonstrates conclusively that viable muscle tissue can be used effectively in the control of immediate venous bleeding. This is undoubtedly due, aside from the mechanical occlusion of the opening in the vein wall, to the thrombokinetic substances contained in the muscle tissue, a property that has long been made use of particularly by neurologic surgeons. Dr. Dixon's work brings out that the complete occlusion of the vein lumen by such viable muscle is followed by a complete recanalization of the vein, eliminating any objection to its use on this score. This is, therefore, a material of appropriate histologic and physiologic structure for use in the control of lateral sinus bleeding. Where such bleeding is the result of accidental trauma, the method of control here suggested would seem to be ideal. It avoids pressure packing and its consequent thrombosis and possible infection at the site of the compression. This method might well be reserved for those instances in which simpler measures fail. All are familiar with the ease with which a slight pressure with bone wax or gauze for a few minutes will at times seal over the tear with no further bleeding or compression packing. While the securing of the section of sternomastoid muscle is not complicated, it is one more additional procedure in the operative scheme. The greatest controversy will arise as to the use of the procedure in true septic phlebitis of thrombosis. Here the experimental work and the clinical situation diverge to a considerable extent, since in none of the experimental animals, as I understand this paper, was there any true septic venous thrombosis. Moreover, the external jugular vein of the dog has the advantage of easy mobilization and temporary occlusion from above, which does not exist in the case of the lateral sinus. Such ease of occlusion permits opening the vein and inserting a strip of muscle with much less interference from bleeding than has been my experience in mastoid surgery. It is true, of course, that the sinus can be compressed between the skull wall and the brain; but the resistance offered by the latter is not always such as to secure the complete obliteration that one would expect from certain pictures in the textbooks. Nevertheless, I have no doubt that muscle can be inserted into the sinus lumen after the removal, if present, of the septic clot.

DR. O. JASON DIXON, Kansas City, Mo.: In regard to the muscle becoming infected, it has long been known that muscle reacts very favorably in the presence of infection, and while I didn't report it here, I have carried on experiments with infection in the dog. I have also used viable muscle in man. I had a motion picture film here to show it, and also to show the amount of scar left. The only way I have been able to infect the thrombus in the dog is by the use of nasal discharge from a dog suffering from distemper. The dog is not susceptible to our virulent types of bacteria. I have injected streptococci from the brain of patients dying with otitic meningitis without the slightest reaction and when I use the usual discharge the dog develops a chill and runs the septic course of the human being. It is interesting to see how quickly that can be controlled, in some instances, by the removal of the focus of infection. Of course, any thrombus completely occludes the vessel. It is a question how extensive that thrombus is, how firm it is and how well organized. With muscle I find that the thrombus which forms is from six to eight times as extensive as when gauze is used. Therefore there is a better and

a more fixed plug and I also detour the circulating blood stream away from the point of infection farther back. Experimentally, in the human being one is dealing with an entirely different problem. Here there is a low pressure in the vein, bleeding is easily controlled, and, after all, one is dependent more or less on a pack and the overlying pack and the plug to control this bleeding. The particular advantage that I see is that it prevents the redisturbance of an infected wound. When the chills cease, and the patient is convalescing, I remove the gauze plug and start the process all over again. The muscle should be filled with petrolatum gauze, which acts as another safety pack. I am sure that if one ever tries it one will find it a very simple procedure to obtain the muscle. It shouldn't be traumatized, it shouldn't be handled with forceps, but aside from that one can do almost anything with it. One can get as much as one likes; there is always more than is needed, and I believe that it eventually will have some advantages. I believe that it is going to have certain advantages in other fields of surgery.

DISSECTING AORTIC ANEURYSM WRONGLY DIAGNOSED CORONARY THROMBOSIS

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AND
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The development of a dissecting aneurysm of the aorta may simulate closely acute coronary occlusion. We are presenting herewith an interesting and instructive case in which we ourselves were in error, with a discussion of the differential diagnosis.

Some ten years ago there spread through this country a sudden realization that coronary thrombosis with cardiac infarction was a common condition that could be diagnosed clinically. This was after more than a decade of surprising neglect of Herrick's¹ classic paper on the subject. Along with the dispersal of this knowledge there was then, as there has been since, much interest in the possibility of confusion of coronary thrombosis with some acute abdominal disease. Herrick himself and also quite early Levine and Tranter² called attention to this possible confusion. However, as a rule the distinction is an easy one to make if both conditions are borne in mind. The other common condition with which coronary thrombosis was in the past often confused is angina pectoris; the differentiation is, however, so clear that such a mistake is rarely made nowadays.

In recent years attention has been directed to two other conditions that can be much more difficult to distinguish clinically from coronary thrombosis than are acute abdominal disease and angina pectoris. These two conditions are extensive pulmonary embolism producing an acute cor pulmonale and dissecting aneurysm of the aorta. Both are serious. The former is the more common and hence the more important condition; it will form shortly the subject of a report by one of us (P. D. W.) with Dr. Sylvester McGinn. The latter is much rarer but also important because of its serious nature and of the likelihood of its being overlooked; it forms the subject of the present report. It is of

From the Massachusetts General Hospital.

1. Herrick, J. B.: Clinical Features of Sudden Obstruction of the Coronary Arteries, *J. A. M. A.* 59:2015 (Dec. 7) 1912.

2. Levine, S. A., and Tranter, C. L.: Infarction of the Heart Simulating Acute Surgical Abdominal Conditions, *Am. J. M. Sc.* 155:57 (Jan.) 1918.

interest that among 7,000 necropsies at the Massachusetts General Hospital a dissecting aortic aneurysm has been found in eighteen and never correctly diagnosed before death (although thought of in two). In 50 per cent of these cases, death was caused by rupture of the aneurysm; in the others the aneurysms were merely incidental changes and did not produce any symptoms.

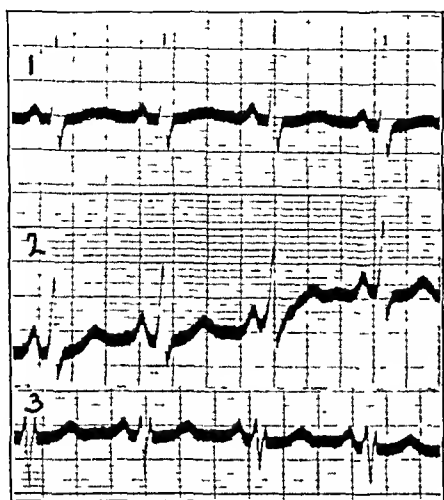


Fig. 1.—Electrocardiogram taken February 25, six hours after the onset of the severe pain. Leads 1, 2 and 3 are presented in sequence in this record and in the two to follow (figs. 2 and 3). The heavier time lines mark fifths of a second. Amplitude abscissas 10^{-4} volts.

REPORT OF CASE

History.—F. W. K., a man, aged 54, a lawyer, except for one attack of rheumatic fever in childhood had had no ill health until fifteen years before the present illness. At the age of 38, hypertension was discovered and slowly advanced to a recent level of 210 mm. of mercury systolic and 115 diastolic. The urine showed an increasing amount of albumin and of late a fixed low specific gravity of from 1.010 to 1.012

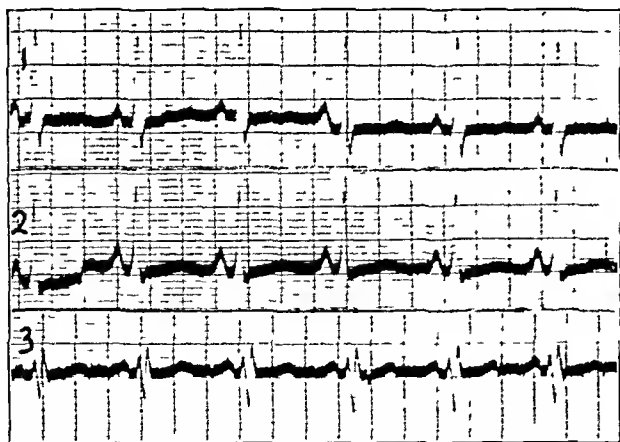


Fig. 2.—Electrocardiogram taken February 26, thirty hours after the onset of the pain.

with casts. Nocturia had developed, and some stiffness of the peripheral arteries was noted. During this period of medical observation covering fifteen years there were no cardiac symptoms or signs of failure except that three years before the present illness there was a mild attack of chest pain, thought by the attending physician to have been angina pectoris.

In 1920, twelve years before the present illness, carcinoma of the large bowel was discovered and resection was done, with the establishment of a permanent colostomy. In 1928 there were two important illnesses, pneumonia and appendi-

citis, for which appendectomy was done. The tonsils were removed in 1930.

During the three months just prior to the present illness the patient's vision had been failing and ophthalmoscopy showed retinal hemorrhages. Omitting tobacco helped his eyesight a good deal. Headaches during these months were relieved by acetylsalicylic acid. Routine examination early in January 1932, a few weeks before the present illness, revealed no serious abnormalities of the heart or lungs; the blood pressure at that time was 190 systolic and 100 diastolic. Soon after this the nonprotein nitrogen in the blood was found to be normal, 36 mg. per hundred cubic centimeters. The Wassermann reaction was negative.

The patient had worked hard for years with long hours and infrequent vacations. He smoked an average of twenty cigarettes a day for years and used alcohol and tea and coffee moderately. He exercised little.

The family history was unimportant except that his father had died of heart disease. Four children were alive and well.

Present Illness.—Feb. 25, 1932, eight days before death, he awoke in the morning at his usual time with a consciousness of a slight dull pain over the precordium, with no sense of constriction and no radiation. He dressed, breakfasted, and went to work as usual with the pain still present, uninfluenced by exertion, and showing very little detectable change. At about 11 a. m., while trying a case in court, he was suddenly seized by a severe constricting and penetrating pain over the

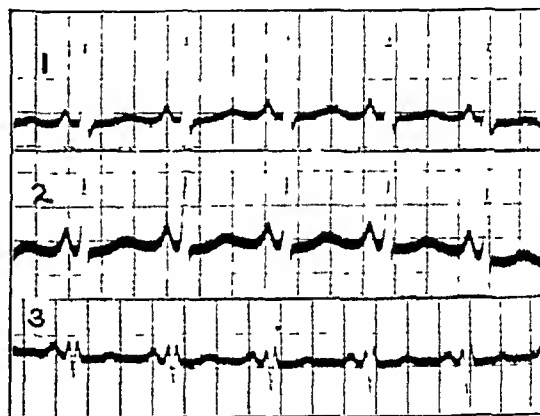


Fig. 3.—Electrocardiogram taken February 29, four days after the onset.

lower left side of the chest in front and extending somewhat into the right side of the chest. There was no radiation down either arm, but there was a sense of weakness and numbness in the left arm throughout. The pain extended laterally in the chest and grew steadily more severe and suffocating. He was forced to retire from the court room and to lie down for a few minutes. He then attempted to resume trial of his case but was unable to do so. It was at that time that a physician was called and found the patient complaining of excruciating pain in the left side of the chest. He was in profuse perspiration and collapse, lying on a couch. The color was pale and the eyes were apprehensive. The pupils were equal and regular and reacted to light and distance. The heart sounds were regular and of fair quality; no murmurs were heard. The pulse rate was 88 and the blood pressure 200 mm. of mercury systolic and 90 diastolic. The lungs were clear.

A tentative diagnosis of coronary thrombosis was made after inhalation of amyl nitrite had given no relief. Morphine sulphate was then injected subcutaneously in the dosage of one-fourth grain (0.016 Gm.) with very little relief. After fifteen minutes a second dose of one-fourth grain of morphine sulphate was injected. Gradually this afforded the patient definite relief but after another twenty minutes there was an accession of still more severe pain. A third dose of morphine sulphate (one-fourth grain) was then injected with very little relief. The patient was moved shortly after this by stretcher and ambulance to the hospital. The pain in the left side of the

The ascending aorta measured 7 cm. in circumference. It showed a moderate amount of arteriosclerosis. The arch

measured 6 cm. in circumference. It also showed a moderate amount of arteriosclerosis. In the outer portion of the media of the arch there was an organizing blood clot measuring 5.5 by 2.5 by 2.5 cm. This clot was moderately firm, slightly friable and grayish pink. It was adherent to both external and internal surfaces. There was a triangular ulceration with perforation of the intimal and medial coats of the arch, measuring approximately 8 by 5 mm. in extent, located at the junction of the arch with the left subclavian artery (figs. 5 and 6). There was a second triangular ulceration with perforation measuring 3 by 4 mm. in extent located in the central portion of the arch 2.5 cm. from the higher perforation. Both these perforations communicated with the blood clot in the dissecting aneurysm already described. The media was split almost completely in the thoracic portion of the descending aorta. There was an almost complete horizontal tear of the intima and media approximately 7 cm. below the arch. There was another but only partial horizontal tear 3.5 cm. below the arch. A portion of the blood clot dissected down the descending aorta as a narrow strip measuring 6 by 1 by 0.2 cm. At

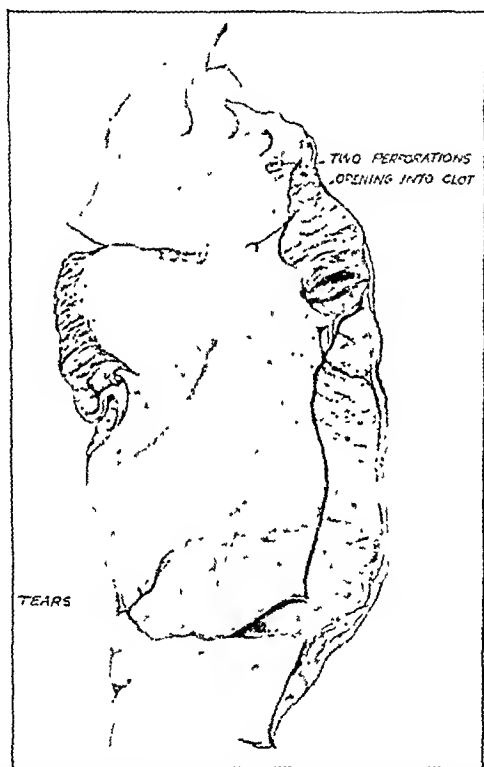


Fig 6.—Detailed drawing showing the dissecting aneurysm of the descending thoracic aorta with the separation of its coats by the blood clot.

the terminal portion of the descending thoracic aorta just above the diaphragm there was a blood clot measuring approximately 7 by 3 by 1.5 cm. adherent to the external surface of the adventitia, the result of a perforation of the adventitial coat. This was the site of the origin of the blood found in the right pleural cavity. The aorta at the level of the sixth intercostal artery measured 5.6 cm. in circumference.

The abdominal aorta was moderately arteriosclerotic. There was partial splitting of the media, but no definite blood clot could be seen in the wall of the distal part of the abdominal aorta. In the portions that were not definitely separated, a thin purplish red line of apparent blood clot could be seen extending within the media down the descending aorta and also into the iliac arteries. The whole aortic wall was very friable and could easily be torn. This was more marked in the thoracic portion.

The pulmonary artery and venae cavae were normal.

The suprarenals were normal

The kidneys weighed 325 Gm. The capsules stripped with moderate ease, leaving a grayish surface that was studded

with small petechial reddish spots. The cortex measured 7 mm. in thickness. It was very pale and contained a few linear reddish areas and scattered yellowish glistening specks. There was a moderate amount of pelvic fat.

The heart's blood showed no growth on culture.

Microscopic Examination of the Aorta.—All sections showed a marked thickening of the wall. This was due in part to a marked fibrous and atheromatous thickening of the intima, but to a much larger extent to a dissecting clot of fibrin and red cells lying apparently in the outer third to quarter of the media and to marked proliferative and exudative changes in the adventitia. The inner layers of the media appeared essentially normal except in one or two areas where focal areas of scarring with loss of elastic tissue were noted. In the outer layer of the media, masses of red cells were noted dissecting their way between persistent elastic fibrils with an apparent destruction of the muscle cells. Several portions of the clot showed well marked early organization. The adventitia showed a very marked increase in the number of capillary vessels, which were often arranged in parallel rows at right angles to the lumen of the aorta. There was also a marked diffuse and focal polymorphonuclear and mononuclear infiltration in the immediate neighborhood of these proliferating capillaries.

FINAL ANATOMIC DIAGNOSES

The final anatomic diagnoses were as follows:

Dissecting aneurysm of the aorta (arch, descending thoracic, and abdominal) and of the iliac arteries.

Rupture of dissecting aneurysm of the aorta, descending thoracic.

Massive hemothorax, right.

Cardiac hypertrophy and dilatation, hypertensive type.

Acute endocarditis, mitral and aortic valves.

Arteriosclerosis; arteriolar sclerosis.

Chronic vascular nephritis, marked.

Pulmonary emphysema, slight.

Absence of rectum and sigmoid, old resection for carcinoma; colostomy.

Adenomatous polyps of colon and of cecum.

Papillary adenomas of the kidney.

Hyperplasia of prostate, slight.

Cysts of spleen, small, unclassified.

COMMENT

In this case the prolonged severe chest pain that we attributed to thrombosis of a good sized coronary artery resulting in a large myocardial infarct was without doubt due to the splitting of the coats of the aortic wall in the formation of the dissecting aneurysm. The beginning of the resolution of the blood clot in the aortic wall undoubtedly caused the fever and leukocytosis, which again we wrongly attributed to the resolution of a myocardial infarct. Finally, the sudden death due to the rupture of the aortic wall into the right pleural cavity after eight days of illness we considered at the time to be due to rupture of the heart wall itself, to the overwhelming effect of an attack of angina pectoris or to ventricular fibrillation.

An important symptom that may aid very much in at least suggesting dissecting aortic aneurysm, namely, pain in the back or referred to the back, was absent in our case. To be sure, the anterior chest pain did radiate laterally, but that happens with coronary thrombosis. Also the pain had a tearing character, but its suffocating quality was in keeping with coronary pain.

There were three clues of varying importance in our case that should have helped us more than they did. At the time we remarked about them and expressed surprise at their presence with such severe "coronary thrombosis." The first was the maintenance of hyper-

tension throughout, at first marked, later less. This we do not now recall to have encountered in any fatal case of coronary thrombosis. Of course any very severe pain may be attended by a state of "shock" with a sharp fall in blood pressure, but that was not the case in our patient unless it was very transient at the onset before the pressure could be obtained. This maintenance of high blood pressure was mentioned by Gager³ in a discussion of a case of dissecting aortic aneurysm in 1928.

The second clue in our case was the persistence of excellent heart action throughout. The heart sounds remained forceful with the aortic second much accentuated. No murmur or gallop rhythm developed at the apex, and there were no other signs of dilatation of the heart. Nor was there ever any suggestion of pericardial friction. The severity of the acute illness in our patient should have been attended or followed by some evidence of disturbed heart action had coronary thrombosis been to blame.

Finally, and most important of all, the electrocardiogram failed to show during the first five days after the onset of the very severe chest pain any indication of the important myocardial involvement that would necessarily have followed acute occlusion of a large coronary artery. We were much concerned at the time by this evidence, but we discounted it with the observation that here was a rare case of coronary thrombosis without "coronary T waves." We had never before encountered a case of proved severe myocardial infarction with practically normal electrocardiograms through the first week of the acute illness, nor have we in the two years that have elapsed since, but at the time we decided that this was an exception to the rule; we were wrong in that decision. Although coronary thrombosis chest leads have infrequently shown abnormalities in the electrocardiogram when the standard leads have not, we have ourselves as yet failed to find rapidly fatal myocardial infarction that did not give evidence of the condition in the standard leads at some time during the first week after the onset of the lesion. Undoubtedly chest leads (including the so-called lead 4) in this case would have been essentially normal; the patient came under our observation before we began to use routine chest leads in cases of suspected coronary thrombosis.

In 1921 Crowell⁴ summarized the literature on dissecting aortic aneurysms and reported four new cases. There were then on record about 275 cases. Death had occurred from rupture into the pericardial sac in 47 per cent of the cases. Kellogg and Heald⁵ in 1933 reported one of the last cases, and in their case the diagnosis was correctly made during life, on the basis of (a) sudden onset of pain which progressively spread, (b) evidence of interference of the arterial circulation to the lower part of the body⁶ and (c) the supportive family history of vascular disease and the past history of hypertension. Kellogg and Heald state that thirteen cases of dissecting aortic aneurysm are recorded in the

literature correctly diagnosed ante mortem.^{6a} Davy and Gates⁷ in 1922 reported an instance of dissecting aortic aneurysm in which sharp intense pain radiated straight back to the spine from the front of the chest, which one would expect to occur in more cases than actually happens. In their case sudden death on the nineteenth day was the result of rupture of the aneurysm into the left pleural cavity. In contrast to their case was one reported by Wedd and Thomas⁸ in 1931: A woman, aged 36, with marked essential hypertension (280 mm. of mercury systolic and 180 diastolic) for several months before death had no pain at all. In this case the lesion was unsuspected before autopsy; the final rupture into the pericardium was attended by blurring of vision, dizziness and syncope. Gager³ in 1928 in his case already referred to commented on the absence of coronary T waves in the electrocardiogram as well as on the maintenance of the hypertension during the acute illness.

Finally, a word is to be said about roentgen evidence. One may expect this to be generally disappointing, despite occasional clues. There are two chief reasons for failure of the x-rays to be of help in the majority of such cases. One of these is that the aorta is actually only slightly increased in size (circumference) in most cases by the hemorrhagic infiltration of its walls—this increase in caliber not being sufficient to make a notable prominence of the aorta, which tends to be somewhat enlarged anyway as a result of hypertension. The other reason is that only infrequently does one possess a control roentgenogram of the heart and aorta of the patient prior to the occurrence of the dissecting aneurysm.

SUMMARY

In a case of dissecting aneurysm of the aorta in a man, aged 54, we made a wrong diagnosis of coronary thrombosis because of the prolonged severe anterior chest pain at the onset, the fever and leukocytosis that followed, and the sudden death (from rupture of the aneurysm into the right pleural cavity), which occurred on the eighth day. Clues that should have helped us at least to question our diagnosis and to consider dissecting aortic aneurysm were (1) the maintenance of hypertension through the course of the acute illness. (2) the excellent heart action throughout, and, (3) most important of all, the absence of coronary T waves from the electrocardiograms of a severely ill patient during the first five days after the onset of the chest pain.⁹

6a. Since this paper was written there has appeared an important publication on dissecting aneurysms by T. Shennaw (Dissecting Aneurysms, Medical Research Council, Special Report Series, No. 193, London: His Majesty's Stationery Office, 1934). In this work the author has analyzed 300 cases with the involvement of the aorta in the great majority. Seventeen of the cases are from his own experience. Rare cases were diagnosed ante mortem.

7. Davy, H., and Gates, M.: Dissecting Aneurysm of Aorta, Brit. M. J. 1: 471 (March 25) 1922.

8. Wedd, A. M., and Thomas W. S.: Dissecting Aneurysm of the Aorta, Clifton M. Bull. 17: 154, 1931.

9. Within the past few weeks we have encountered a new case of dissecting aneurysm of the aorta which we diagnosed correctly during life, partly because of our experience with the case reported above but mainly because of two important points in the history, the first of which has not in some cases, we believe, been sufficiently recognized: (1) sudden overwhelming chest pain as if from the blow of a sledge hammer (in contrast to the more gradual development of the severe pain of coronary thrombosis) and (2) radiation of the pain, temporarily, toward the back and legs (not to the arms). This patient, a man of 57, developed slight fever (100 F. by mouth) and considerable leukocytosis (18,000) and died suddenly forty-eight hours after the onset of the pain. Postmortem examination showed a very extensive dissecting aneurysm involving the entire length of the aorta, penetrating even into the walls of both common iliac arteries and about the mouth of the right coronary artery (compression of which may have caused the slight abnormality that we found in the electrocardiogram—late inversion of T_a after a high origin, and flat T₂). In spite of the involvement of the common iliac arteries, there was not enough compression of them to prevent full pulsation in both dorsalis pedis arteries. Death resulted in this case from rupture of the dissecting aneurysm into the pericardium.

3. Gager, L. T.: Dissecting Aneurysm of the Aorta Complicating Hypertension, Am. Heart J. 3: 489 (April) 1928.

4. Crowell, P. D.: Dissecting Aneurysms of the Aorta: Report of Cases and Review of the Literature, J. A. M. A. 77: 2114 (Dec. 31) 1921.

5. Kellogg, Frederick, and Heald, A. H.: Dissecting Aneurysm of the Aorta: Report of Case Diagnosed During Life, J. A. M. A. 100: 1157 (April 15) 1933.

6. This is important evidence if present, but it is usually absent. It is due to the compression of the arterial branches, like the iliac, by the blood clot in the dissecting aortic wall. Even the coronary arteries may be so compressed, thus confusing still more the clinical picture.

THE EFFECTS OF CASTRATION IN THE ADULT MALE

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AND

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In order to increase familiarity with the diagnostic evidence of hypogonadism in men, twelve post-pubertal castrates were subjected to careful clinical and laboratory studies, including bio-assays for the gonad-stimulating principles of the urine, and another substance from urine, presumably a testicular hormone which promotes comb growth in capons.

SYMPTOMS

Nervous and Vasomotor Symptoms.—The nervous and vasomotor symptoms of these castrated men constituted their most outstanding complaints. Unilateral castration did not give rise to any symptoms except a temporary diminution of libido in two cases. Complete castration, either by the simultaneous removal of both testes or by the removal of a single remaining gland, produced nervous and vasomotor disorders as early as the third day after operation. Nervousness was a major complaint of four patients at the time they were studied, although nine had experienced it at some time for varying periods after castration. The usual history was that the nervousness was first noted from three to eight weeks after operation. The patients' descriptions of this symptom were, for the most part, vague and poorly defined, but apparently there was a sensation of uncomfortable stimulation not unlike that resulting from a mild overdosage of thyroid. Such nervous excitability may be associated with a tendency to psychoneurosis, emotional instability and restlessness.

The vasomotor phenomena are closely allied with the nervousness and are usually the earliest symptoms of hypogonadism. Seven of these patients at the time they were examined complained of sudden flushing and sensations of heat or of chilling. Two of them had had such symptoms previously but had not noticed them for several years. The hot flashes occurred as many as four or five times daily for a period of several years and tended gradually to decrease in number and severity.

Potency.—Sexual potency (power of erection) and libido (sexual desire) were diminished in all twelve cases. Sexual impotence is not a distressing symptom in the absence of sexual desire. Hence, in the nine cases in which there was a complete loss of libido, neither partial nor complete impotence was a troublesome feature, but in the three cases in which there was a partial retention of libido, even partial impotence became a distressing symptom. Orgasms occurred in the cases in which potency was retained, but it is uncertain whether fluid was ejaculated. The knowledge that impotence exists and that it is disturbing normal domestic life has a tendency to be distressing, but psychoneurotic symptoms of any importance were present because of this in only one of these cases.

Psychic Symptoms.—Rowe¹ has stated that the "male castrate is subject to profound mental changes." This statement is not consistent with our observations. After the acute nervousness had subsided, our patients tended to display the quiet phlegmatic temperament

referred to by Barker.² In one there were obvious psychic abnormalities; but evidently these were associated with and caused by advanced generalized arteriosclerosis, for the abnormal psychic state preceded castration and was probably a factor in producing the patient's insistence that the operation be performed.

Muscular Symptoms.—It is an extremely difficult matter to evaluate the reduction of muscular strength in the human being. Judging from the statements of the patients, it appears that the sense of energy and endurance were decreased in ten cases, but whether or not there was a change in muscular strength as related to a single effort could not be determined accurately. In this connection, a study of two cases of eunuchism in which there were definite evidences of prepubertal hypogonadism is interesting. Both of the men were very intelligent. Long periods of systematic physical training failed to cause an important increase in the muscular strength or endurance of one man. A relatively long period of military training failed to increase the physical endurance of the second man to a degree comparable to that of the other men undergoing the same training. Neither of these patients had physical abnormalities except those associated with hypogonadism.

PHYSICAL SIGNS

Genitalia.—Of the physical features resulting from castration, those having to do with the genitalia, prostate and prostatic secretion deserve first consideration. Atrophy of the prostate was a constant and striking feature in all these cases except one in which prostatectomy had been performed prior to castration. The size of the prostate glands varied from one-half to one-fifth normal. In one case, Dr. W. E. Lower made the note that "this is the most complete prostatic atrophy I have ever seen." As further evidence of the atrophy, vigorous and repeated massage failed to produce any prostatic secretion in eight of the cases. In two instances, when secretion was obtained from the urethra it amounted to one or two drops and proved to be a thin, clear, milky-white fluid containing some lecithin bodies and an occasional leukocyte. No spermatozoa, granular prostatic cells or corpora amylacea were found.

Atrophy of the penis was less constant and less marked, and was recorded in only five cases. Even in these, the statement of the patient had to be accepted, since the organs could be considered to be within the limits of normal size. The seminal vesicles were not palpable in any of our cases.

Secondary Characteristics.—The pubic hair in all cases was scant and of the female type of distribution. The axillary, perineal and anal hair was very scant. The amount of body hair was definitely reduced in all but one case. The beard was less often affected. Five cases presented a slight hypotrichosis of the face. In one, the changes in the hair were questionable and six were not changed by castration. The scalp hair showed no consistent deviation from the normal.

Body Weight.—The weight of eight of the patients was increased within the first year after castration. Seven men showed abnormal accumulations of fat, chiefly about the abdomen and breasts. One man who had gained weight failed to show these features at the time of examination because of a subsequent progressive loss of weight caused by tuberculosis and syphilis.

From the Cleveland Clinic.

1. Rowe, A. W.: Studies of the Endocrine Glands; Differential Diagnosis of Endocrine Disorders, *Endocrinology* 13: 327 (July-Aug.) 1929.

2. Barker, L. F.: *Endocrinology and Metabolism*, New York, D. Appleton & Co. 1: 177, 1922.

One of the eight patients gained 20 pounds (9 Kg.); but, since he had lost 15 pounds (6.8 Kg.) before castration, the actual gain was only 5 pounds (2.3 Kg.). All the others gained 20 pounds or more, the maximum increase being 30 pounds (13.6 Kg.). One patient was 10 pounds (4.5 Kg.) under his average weight, which may have been due to the castration, although his habitus could still be classified as pyknic. The second of the two who lost weight had been losing for at least a year prior to orchidectomy. The weight loss was apparently not accentuated by the operation and was due, at least in large part, to dietary deficiency.

Skeletal Changes.—There were no gross skeletal changes in this series comparable to the changes seen in prepubertal castrates.

Skin.—The skin appeared somewhat atrophic and was thin, slightly dry and very finely wrinkled in eleven cases. It had usually a pale or pasty sallow appearance. In one case the skin was more coarsely wrinkled and of the senile type. There was no dystrophy of the finger nails. The teeth did not reveal any trophic changes and were not loose.

Thyroid.—The thyroid gland was considered to be of normal size or smaller than normal in all but one case, in which there was diffuse smooth enlargement to two or three times the size of the normal gland.

Pituitary.—One of the effects of castration in animals is enlargement of the pituitary gland, but the studies of the eyegrounds and visual fields of this group of castrates failed to reveal any significant changes clinically. Roentgenographic studies of the sella turcica were made in ten cases. Nine yielded normal pictures. In one patient, roentgenograms of the sella turcica on two occasions, five and six years after castration, showed some erosion of the clinoid processes. In this instance it is a matter of conjecture as to whether the pituitary enlargement was influenced by the castration or not, because it had been noted during physical examination that the patient had features suggestive of early acromegaly. Acromegaly has not been reported as a consistent sequel of castration, and it appears likely that other factors were prominent in the production of the pituitary enlargement observed in this case.

Other Organs.—Except for the fat deposits in the breasts and around the abdomen there were no physical abnormalities of the chest, lungs, heart or abdomen referable to the hypogonadism. Neurologic examination showed normal results.

BIO-ASSAYS

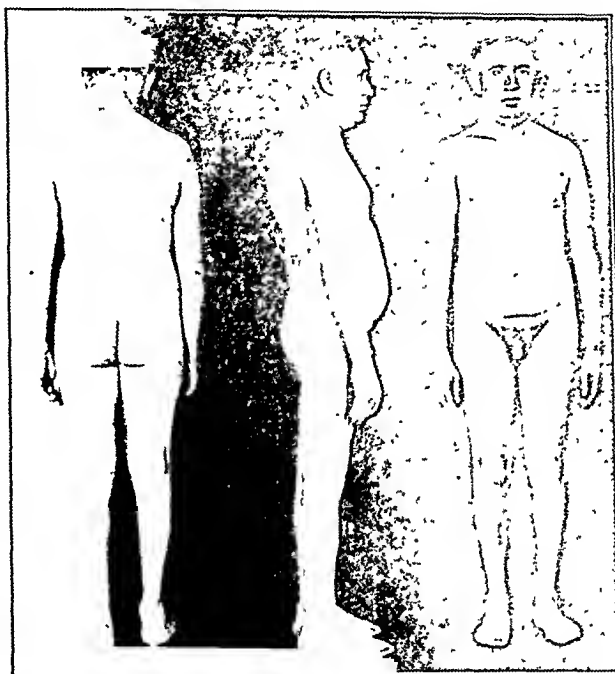
Comb-Growth Promoting Substance.³—Bio-assays for the comb-growth promoting substance in the urine were done in eleven patients and the amount of the substance in the blood was determined in eight cases. Androten was constantly absent. The method of extraction and assay have been described previously.⁴

Gonad-Stimulating Principle of the Urine.—Engelbach⁵ stated that an "excess amount of pituitary sex

hormone has not been demonstrated in the male castrate," but in our series of twelve cases a tendency to an increase in gonad-stimulating principle of the urine following castration in the male is evident. In eight of the nine patients who were subjected to the Friedman test there was definite evidence of increased gonad-stimulating principle in the urine, as compared to similar tests on normal men.

OTHER LABORATORY DATA

Dextrose Tolerance Tests.—The dextrose tolerance was considered normal in six cases. One patient was known to have diabetes, while two others showed an increased dextrose tolerance. Another patient showed a tendency toward relatively high blood sugar. At one estimation after operation the blood sugar was 179 mg. per hundred cubic centimeters three hours after eating, whereas the average estimation before castration was 108 mg. per hundred cubic centimeters.



Body conformation and distribution of hair in a typical case of adult hypogonadism resulting from castration.

Rowe¹ observed that castration does not change the galactose tolerance in males. The galactose tolerance has not been determined in our cases.

Basal Metabolism.—The basal metabolic rate tended to be low in this series of cases. In seven the rates were decreased to -14 or less, the lowest being -21 . One patient's rate was $+5$ per cent and another's was 0 per cent. It is interesting in this connection to note that the basal metabolic rate of one patient was -7 until six months after castration, whereas a year later it had fallen to -21 .

Blood Chemistry.—Serum calcium estimations⁶ in eleven cases were all within the normal limits. It is obvious that the amount of testicular hormone in the body influences bone growth as judged by the skeletal changes following castration early in life. If such changes are due to the alteration in the calcium metabolism and if similar metabolic changes take place in late castrates, they are not reflected in the total serum

3. We believe that the comb-growth promoting substance in extracts of male urine is a testicular hormone, because it has been demonstrated to be present in the blood, urine and spinal fluid of normal men but has been shown to be markedly diminished or absent in these body fluids of castrates. Measurable quantities of comb-growth producing substance have been demonstrated in some cases of castration in both sexes. It has been shown to be identical with similar extracts prepared from testes as judged by all known physical, chemical and physiologic properties.

4. McCullagh, D. R.; Hicken, N. F., and McCullagh, E. P.: *Diagnosis and Treatment of Hypogonadism*, *Endocrinology* 17: 49-63 (Jan.-Feb.) 1933.

5. Engelbach, William: *Endocrine Medicine*, Springfield, Ill., Charles C. Thomas, 1932, vol. 3, p. 736.

6. Clark's modification of the Kramer Tisdall method for estimation of the serum calcium was used.

calcium or total inorganic phosphate levels. The blood phosphate levels are 4.0 to 4.3 per cent in four cases. These are considered to be about the upper level of normal.

The cholesterol showed a tendency to be increased in the circulating blood and, with replacement therapy, to approach the normal level. It was above 200 mg. per hundred cubic centimeters in eight of the twelve cases, and rose to 400 mg. in one case.

We cannot draw any conclusions about the nitrogen metabolism, because in our series the nitrogen intake was not controlled. However, this feature has been studied by others. Korenchevsky⁷ observed a fall of nitrogen metabolism in the "fat" castrated dog and little or no fall in the "thin" type.

The blood counts showed no significant deviation from the normal

TREATMENT

In a few of these cases an attempt has been made at substitution therapy, with androgin, the male sex

the penis. Shortly after the operation he began to have severe hot flashes several times daily associated with nervousness, sweating and fatigue. Before 1925 he had weighed about 150 pounds (68 Kg.). Since the onset of the tuberculosis he had gained steadily. In March 1932 he weighed 174 pounds (79 Kg.). The increased fat was distributed chiefly about the breasts, abdomen and hips, as shown in the illustration. The scalp hair remained normal, and the beard growth may have been retarded somewhat. According to the patient's statement, the limbs and torso had previously been hairy, but within a year after castration hair on the body had practically disappeared.

At examination the patient was alert and cooperative. His skin was sallow, dry and of fine texture and showed peculiarly fine wrinkles. The scalp hair was normal and the beard tended to be slightly scant. There were a few short sparse hairs about the nipples and the axillae, and the pubic hair was scant and the distribution was of the feminine type. The examination of the eyes revealed the presence of the physiologic cup and ring; the lamina cribrosa sclerae was not seen. There was some retraction of the disks upward and outward. A slight parafibrosis was seen in both eyes but in the opinion of the ophthalmologist there were no significant changes. The visual fields were normal. There was a palpable, smooth, diffuse

Observation in Twelve Adult Male Castates

	A. K.	C. M.	N. T.	D. C.	A. N.	A. R.	H. M.	A. O.	J. K.	J. P.	P. C.	F. H.
Age	36	33	61	59	54	51	65	47	58	40	63	50
Duration (years)	2½	7½	5	27	14	1	½	1	1	1½	2	4
Nervousness	+	+	+	+	+	+	0	0	0	+	+	+
Hot flashes	+	+	+	0*	+	?	+	0	0	0*	+	+
Impotence	+	P	P	+	P	+	+	+	P	P	+	P
Diminished libido	+	P	+	+	P	+	+	+	+	+	+	P
Diminished energy	+	+	+	0	0	+	+	0	+	+	+	+
Vertigo	+	0	0	0	0	0	0	0	0	0	0	0
Atrophy of prostate	+	0	+	+	+	+	op	+	+	+	+	+
Prostatic secretion present	0	0	0	0	0	0	0	0	+	0	+	0
Atrophy of penis	+	+	op	0	0	0	?	0	0	+	+	+
Hypotrichosis of body	+	+	+	+	+	+	0	+	+	+	0	+
Hypotrichosis of face	0	?	+	+	+	+	0	+	0	0	0	+
Skin change	+	+	+	+	+	+	+	+	+	+	0	+
Weight gain (pounds)	25	24	27	0	5½	+	25	20	-10	20	-18	22
Abnormal accumulation of fat	+	+	+	0	+	0	+	+	0	0	0	+
Testicular hormone in urine	0	0	0	0	0	0	0	0	0	0	0	0
Testicular hormone in blood	0	0	0	0	0	0	0	0	0	0	0	0
Gonad stimulating principle in the urine	I;†	I	I	I	I	..	..	I	0	..	I	I
Abnormal sella turcica	0	0	0	0	0	..	0	0	0	0	0	0
Dextrose tolerance	N;‡	I	N	N	N	..	D;‡	N	N	..	..	I
Basal metabolic rate	-19	-16	..	-15	-18	..	+5	-21	-14	..	-21	0%
Calcium	11.4	10.9	9.7	10.9	11.4	..	10.4	11.6	10.6	11.2	9.3	11.1
Phosphates	3.2	3.4	4.2	4.3	..	..	4.3	4.0	2.8	3.8	..	3.1
Cholesterol	400	270	175	150	272	..	187	222	222	272	224	272
Urea	45	42	51	39	42	..	45	42	36	42	33	..
Nonprotein nitrogen	32.6	33.6	39.2	28	..	..	..	28	23	..	..	..

* Patients had hot flashes at one time but these had not been present for several years.

† Had gained 20 pounds, but this was only a 5 pound increase over his preoperative average.

‡ N, normal; I, increased, D, decreased; P, partial; op, operation

hormone prepared from urine.⁴ When sufficient material was available for adequate dosage, there was considerable improvement in the subjective symptoms of the hypogonadism. These results have been most encouraging, but it is too early to evaluate accurately the benefits that may be anticipated from this type of treatment.

The pertinent data in this group of cases are shown in the accompanying table. The following case history is typical for the group:

REPORT OF CASE

A married man, aged 33, had a bilateral orchidectomy in 1925 for tuberculous orchitis. Following the operation signs of pulmonary tuberculosis developed, but there has been no activity of the pulmonary disease since 1929. After the operation libido was greatly diminished but sexual potency, although diminished, persisted and he had been capable of intercourse every two to three weeks. He had a normal climax of sensation and the rhythmic contraction but he believed that ejaculation did not occur. There had been considerable atrophy of

enlargement of the thyroid, two to three times the size of the normal gland. There was no sign of activity of the pulmonary tuberculosis. The scrotum was empty and the penis smaller than normal. The prostate was from one-fourth to one-fifth the usual size. It was flat and solid but poorly defined. Vigorous massage failed to express any secretion.

The pulse rate was 80 and the blood pressure 120 systolic, 72 diastolic. A roentgenogram of the chest showed old healed tuberculosis. Roentgenograms of the sella turcica showed no abnormality. The basal metabolic rate was minus 16 per cent. Urinalyses, blood counts, and Wassermann reactions were normal. The dextrose tolerance was increased. Blood sugar estimations fasting and at the end of one-half hour, and at intervals of one, two, three and four hours after the oral administration of 100 Gm. of dextrose were 80, 116, 98, 82, 65 and 75 mg per hundred cubic centimeters. The blood cholesterol was high, 250 mg. per hundred cubic centimeters. Otherwise, chemical analyses of the blood for urea, uric acid, creatinine, nonprotein nitrogen, chlorides, calcium, phosphorus, proteins, albumin and globulin showed no deviation from the normal.

The Friedman test showed that there was an excess of gonad-stimulating principle in the urine. Bio-assays of the blood and urine failed to reveal any male sex hormone.

⁷ Korenchevsky, V. The Sexual Glands and Metabolism. I. Influence of Castration on Nitrogen and Gaseous Metabolism, *Brit J Exper Path* 6: 21-35 (Feb.) 1925

After treatment with androtrin, the patient first noted an increase in energy. Later the nervousness disappeared, but the hot flashes, although diminished, persisted in a mild form. After treatment had been carried out for about a month there was marked increase in libido and potency, and sexual dreams occurred.

Physical examination has not revealed any change except for improvement in the color of the skin. The only alteration in the results of the laboratory examination was reduction of the blood cholesterol from 250 to 184 mg per hundred cubic centimeters.

Clinical Notes, Suggestions and New Instruments

A PHASE OF STERILITY

CHARLES H. BIRNBERG, M.D., BROOKLYN

The phase of sterility to be discussed is familiar to all: "sterility in apparently normal women." A series of eighteen cases is presented. The results of treatment were so gratifying that a presentation of the observations and the method of treatment may be of interest even though the series is small.

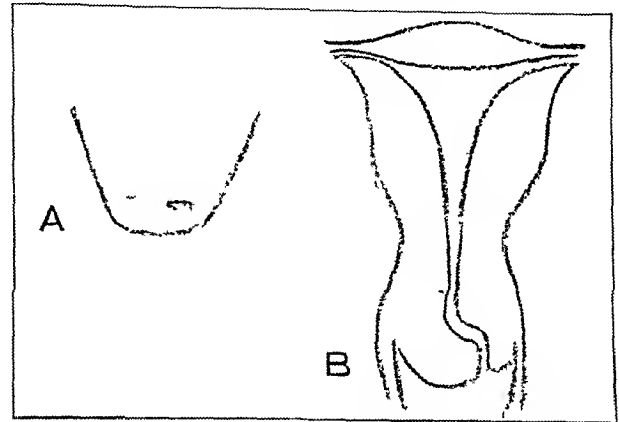
On examination, these patients showed no evidence of glandular dysfunction. The cervix, uterus and adnexa revealed no gross pathologic changes. The tubes were patent and examination of the husband's spermatozoa as to size, shape number and motility all proved normal.

The periods of sterility ranged from four to eighteen years. All known methods of treatment had been previously tried without success. These included dilation and curettage, artificial insemination, glandular therapy, corrective exercises, pessaries, diet and tubal insufflation.

was experienced in passing a fine probe. The course of the canal, instead of being straight, was slightly deviated. The displacement of the uterus, usually very slight, varied. The most common displacement was retroversion.

TREATMENT

Before treatment was instituted, all patients were roentgenographed to determine the patency of the tubes.



A, eccentric os at 11 on the clock dial, *B*, deviated cervical canal

The treatment in all these cases was identical. A gradual dilation of the cervix with Hegar dilators was instituted, until the cervix admitted a number 14 dilator. This procedure usually necessitated a period of two months. The early dilation was associated with some degree of pain. The patients presented themselves for dilation once a week. They were

Results of Treatment in Eighteen Cases of Sterility

Patient	Age	Sterility, years	Roentgen Examination	Position of Uterus	Location of External Os	Number of Treatments	Conception, Months	Delivery	Sex of Child	Dilation and Curettage	Procedures Previously Performed					
											Artificial Insemination	Gland Therapy	Corrective Exercises	Pessaries	Diet	Tubal Insufflation
P. G.	35	14	Both tubes patent	Retroverted	11	8	2	Low forceps	Male	Two times	No	Yes	Yes	Yes	Yes	Yes
M. K.	29	7	Both tubes patent	Retroverted	11	12	1	Mild forceps	Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes
L. K.	30	8	Both tubes patent	Retroverted	9	10	2	Low forceps	Male	Yes	No	Yes	Yes	Yes	No	No
L. G.	27	5	Both tubes patent	Dextriverted	2	12	2	Spontaneous	Female	No	No	Yes	Yes	Yes	Yes	Yes
C. W.	31	15	Both tubes patent	Normal	2	10	4	Spontaneous	Male	Three times	Yes	Yes	Yes	Yes	Yes	Yes
L. S.	32	8	Left tube closed	Antiflexed	5	6	10	Spontaneous	Female	Yes	Yes	Yes	Yes	No	Yes	Yes
B. G.	31	4	Both tubes patent	Retroverted	2	7	3	Low forceps	Female	No	No	Yes	Yes	No	Yes	Yes
C. H.	34	10	Both tubes patent	Retroverted	11	10	2	Low forceps	Male	Yes	No	Yes	Yes	Yes	Yes	Yes
M. C.	32	9	Both tubes patent	Retroverted	11	10	2	Spontaneous	Male	No	No	Yes	Yes	Yes	Yes	Yes
O. W.	28	5	Both tubes patent	Retroverted	11	8	2	Low forceps	Male	No	No	Yes	Yes	Yes	Yes	Yes
M. S.	42	18	Left open	Antiflexed	2	8	1	Low forceps	Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes
L. S.	27	5	Both tubes patent	Retroverted	2	16	5	Low forceps	Male	No	No	Yes	Yes	No	Yes	Yes
H. Z.	27	5	Both tubes patent	Normal	2	10	2	Low forceps	Male	Yes	No	Yes	No	No	Yes	Yes
S. S.	29	7	Both tubes patent	Antiflexed	11	10	1	Spontaneous	Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P. N.	32	5	Both tubes patent	Retroverted	11	5	1	Low forceps	Female	No	No	Yes	Yes	Yes	Yes	Yes
L. G.	35	12	Both tubes patent	Retroverted	2	10	5	Spontaneous	Male	Yes	Yes	Yes	Yes	Yes	Yes	Yes
L. R.	28	5	Right open	Retroverted	2	4	2	Spontaneous	Male	Yes	No	Yes	Yes	Yes	Yes	Yes
I. V.	33	7	Both tubes patent	Retroverted	2	10	1	Spontaneous	Male	Yes	No	Yes	Yes	Yes	Yes	Yes

When examined, these patients presented an eccentric external os, a very narrow and deviated cervical canal, and some slight displacement of the uterus. The external os instead of being located centrally as is usually noted, was situated eccentrically; either at 11 or 2, as on the face of a clock, and very rarely at 5. The cervical canal was so narrow that difficulty

was experienced in passing a fine probe. The course of the canal, instead of being straight, was slightly deviated. The displacement of the uterus, usually very slight, varied. The most common displacement was retroversion.

and an eccentric os when they presented themselves for examination at a subsequent visit. The failure in several of these cases to respond to a dilation and curettage previously performed was attributed to this phenomenon.

When the dilation had been completed and the cervical canal permanently opened, the patient was advised to try to become pregnant.

To make this report concise and brief, the table of cases is presented. Two cases in the series were so interesting that a more detailed description is given:

Mrs. M. S., aged 42, was sterile for eighteen years. She had been operated on four years previously for bilateral closed tubes and a plastic operation was performed in the attempt to open them. A roentgen examination performed after the operation revealed a patent left tube. However, all attempts at fertilization, even after operation, failed. As noted in the table, these attempts included a dilation and curettage, artificial insemination, gland therapy and tubal insufflation. Examination of the cervix revealed an eccentrically placed os at 2 on the clock dial. Treatment was instituted Feb. 8, 1932. After eight treatments the patient missed her period and was subsequently delivered of a normal male child.

Mrs. P. G., aged 38, was sterile for fourteen years. Her history was entirely normal. Her menses were regular and normal. Examination revealed a slightly retroverted uterus and an external os eccentrically placed at 11 on the clock dial. She had been extensively treated for her sterility. Two curettages, artificial insemination, prolonged gland therapy, corrective exercises and various pessaries, had been used, without success. Treatment was instituted, June 20, 1927. The patient missed her August period. She was delivered nine months later of a normal male child.

61 Eastern Parkway.

INTRAVESICAL EXPLOSIONS AS A COMPLICATION OF TRANSURETHRAL ELECTRORESECTION: REPORT OF TWO CASES

HERMAN L. KRETSCHMER, M.D., CHICAGO

Having recently had two intravesical explosions with rupture of the bladder at the end of transurethral electroresections, I wish to call attention to this possible complication.

In this connection I wish to emphasize the following points: First, that the explosions occurred at the end of the resections; second, that they occurred in the 313th and 344th resections, respectively; third, that the complication was recognized and the patients operated on immediately; fourth, that both patients made an uneventful recovery following the surgical repair, and, fifth, that one was an intraperitoneal and the other an extraperitoneal rupture.

Practically every urologist, during the course of fulguration treatment of bladder papillomas, has at some time or another experienced small intravesical explosions.

Interesting in this connection is the report of Cassuto,¹ who reported an intravesical explosion in a patient with a middle lobe hypertrophy. He was retouching certain points when there was produced a loud detonation within the bladder. A cystoscopic examination, made eight days later, showed lacerations of the mucosa that extended into, but not through, the muscular coat.

REPORT OF CASES

CASE 1 (313th resection).—A man, aged 65, complained chiefly on admission to the hospital of frequency of urination, both day and night, of ten years' duration. For the past three months, with the exception of the two weeks prior to the explosion when complete retention of urine occurred, he was obliged to void from fifteen to twenty times at night. There had been difficult urination, accompanied by burning, for six years.

The patient was thin and somewhat emaciated; he had evidently lost some weight and appeared to be in poor condition. The liver was palpable; there was tenderness over the bladder and an acute right-sided epididymitis. There was an enormous hypertrophy of the prostate.

A blood count showed red blood cells, 4,450,000; white blood cells, 8,400; hemoglobin, 87 per cent. The blood pressure was 128 systolic, 78 diastolic. The blood chemistry showed non-protein nitrogen, 31.6; creatinine, 1.0.

When the phenolsulphonphthalein test was done the time of appearance was four and one-half minutes; the total output for one hour was 65 per cent.

Examination of the urine revealed blood ++ and leukocytes 1,000 per cubic millimeter, and the culture yielded *Bacillus proteus*.

The patient was treated with an indwelling catheter and bladder irrigations.

Because of the large size of the prostate, a two-stage resection was advised. The first resection was done under nitrous oxide anesthesia, Aug. 24, 1933, at which time a bilateral vasectomy was also done. The second resection was done under sacral anesthesia, October 18. The resection proceeded very rapidly and there was no bleeding. Many of the resected pieces of the prostate were allowed to fall back into the bladder. At the end of the resection these were removed by aspiration with a Bigelow pump, after which a few small inconsequential tags were removed. At this time a loud sound was heard, and the patient stated that he had a severe pain in the abdomen. Irrigation fluid introduced into the bladder through the sheath could not be recovered. A diagnosis of intraperitoneal rupture of the bladder was made and immediate operation was done.

A large stellate tear was found on the posterior wall of the bladder. The tear in the peritoneum was closed with interrupted catgut, as was the tear in the bladder. A cigaret drain was left in the peritoneal cavity for twenty-four hours. The bladder was drained with a suprapubic Pezzar catheter.

The patient made an uneventful recovery and left the hospital, November 12.

CASE 2 (344th resection).—A man, aged 59, admitted to the Presbyterian Hospital, Dec. 13, 1933, complained of symptoms which began about three years before and consisted of frequency of urination both day and night, a very small stream, great difficulty in starting the urinary stream, dribbling, and pain in the back.

On physical examination a slight systolic blow was heard at the apex. There was moderate hypertrophy of the prostate.

A blood count showed red blood cells, 4,400,000; white blood cells, 7,900; hemoglobin, 88 per cent. The blood pressure was 135 systolic, 75 diastolic.

When the phenolsulphonphthalein test was done the time of appearance was six minutes; the total output for one hour was 65 per cent. Examination of the urine showed pus and *Bacillus coli*. The blood chemistry showed creatinine 1.4, nonprotein nitrogen 35.7.

Transurethral resection under sacral anesthesia was done, December 15. The resection proceeded rapidly and there was no bleeding. At the end of the resection the bladder was aspirated with the Bigelow pump. The resectoscope was inserted and a few tags were removed. A sudden dull puff was heard, but it was not as loud as in case 1. Only a portion of the water introduced into the bladder returned. A diagnosis of rupture of the bladder was made and immediate operation performed.

At the operation an extraperitoneal tear was found in the dome of the bladder. This was repaired. The bladder was drained with a suprapubic Pezzar catheter and the space of Retzius with Penrose tubing.

The patient made an uneventful recovery and left the hospital on the twenty-second day.

SUMMARY

1. In both cases there was a very small amount of bleeding.
2. The fragments of resected prostate were aspirated with the Bigelow pump.
3. After the aspiration, a few tags were removed with the resectoscope.
4. Both complications occurred well along in the series of resections.
5. Great care should be exercised in removing frequently the gases from the bladder. If the fragments are aspirated with a pump, thorough irrigation should be done to remove the mixture of gases.

1. Cassuto, A.: J. d'urolog. 22: 263 (Oct.) 1926.

6. Preferably, after aspiration, no further resection should be done.

7. This complication in no way detracts from the value and merits of this method of treatment.

122 South Michigan Avenue.

Special Articles

CONTROL OF AMEBIC DYSENTERY

CLINICAL LECTURE AT CLEVELAND SESSION

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AND

A. J. CHESLEY, M.D.

ST. PAUL

The papers by Drs. McCoy and Chesley and Dr. Lynch in this issue are part of a series of clinical lectures on amebiasis read at the Cleveland session. Of the other five papers, those by Drs. Craig and Simon appeared last week and those by Drs. Melency, Magath and Reed will be published next week.

Dysentery has been a well recognized clinical entity for centuries. It was not, however, until the latter half of the nineteenth century that the differentiation of specific etiologic agents, *Endamoeba histolytica* and *Eberthella dysenteriae*, was recognized. In the present discussion we are concerned only with the amebic type of infection.

The outbreak which had its focus of origin in Chicago in the summer of 1933 and which, on the basis of present evidence, seems to have been due largely to contaminated water, has stimulated and renewed the interest of both physicians and health officers in amebic dysentery. Because it is the first recorded instance in which amebic dysentery could be said to have occurred in such explosive epidemic form, this unusual outbreak has focused attention particularly on the mode of transmission and the means of prevention. Indeed, the extensive studies made promptly by the Chicago board of health, on recognition of the epidemic, later reviewed and confirmed by a special committee appointed by the Chicago health commissioner under counsel of the committee, have been extended and continued. These studies have yielded impressive lessons for the clinician, the research scientist and the student of preventive medicine. The clinician has learned that amebic dysentery must be thought of when abdominal conditions not otherwise explainable are encountered. The recognition of amebic dysentery is especially important, since specific treatment properly applied is usually successful. It is not only the internist who must be alert but the surgeon as well, since the experience in the Chicago outbreak has emphasized the fact that not a few cases of amebic dysentery are readily mistaken for conditions that require surgical treatment, such as appendicitis, cholecystitis, ulcerative colitis, hemorrhoids, and malignant growths, while it is well known that surgical intervention in either acute or chronic cases of dysentery reduces the chances of a favorable outcome.

The research worker wants to know more about the possible difference in virulence of races of amebas,

the life history of the parasite outside the body, and many other unsolved problems.

The health officer finds that he must learn more about the chain of circumstances leading to endemics and the direct cause or causes of such explosive epidemics as the one referred to. When he has this knowledge, the means of prevention can be more readily discovered and applied.

One of the difficulties involved in locating the source of infection in any given case or group of cases lies in the fact that the incubation period is, generally speaking, exceptionally long and most variable. When massive infection occurs it appears that the incubation period may be as short as from seven to nine days. There is good authority for believing that sometimes it may be as much as three months or even longer, though in the recent outbreak in Chicago, in which the incubation period could be calculated fairly satisfactorily, the great majority of individuals known to have developed dysentery became sick within thirty days after infection.

SOURCE OF INFECTION AND MODES OF TRANSMISSION

In amebic dysentery, as in typhoid, the only known true source is the infected human being. The possible modes of transmission generally recognized at present are through the agencies of water polluted with infected human discharges; flies infected from feeding on or by contact with infected human discharges, transferring the infection to food; uncooked vegetables contaminated by human discharges and the human carrier frequently as a food handler. The order of importance of the various modes of infection cannot be given at present. The recent experience strongly suggests that the means of transfer of the infection is not necessarily the same in endemic and epidemic amebic dysentery, that the same mode may not prevail in different epidemics, and that two or more modes may operate in the same epidemic.

Uncooked Vegetables.—These are thought to be a source of danger chiefly when human excreta have been used as a fertilizer. This probable means of transmission can be established only by rigorous epidemiologic and biologic investigations, which we fear have not been made. If, and when, such investigations identify the particular food involved, further infection from this source may readily be prevented.

Flies.—Flies have been incriminated, especially by students of military hygiene, and have often been incriminated also under the conditions of civil life. While suspicion points to the fly as the agent in transmission of the infection, convincing evidence is usually wanting. Transmission by flies should never be assumed simply because other sources of infection are not immediately apparent, but, in the event that flies appear to be the most likely mode of transfer of the infection, the means of prevention will depend on local conditions.

Water Supplies.—When a contaminated water supply is found to be the agent of spread of infection, means of prevention may readily be applied. Boiling, of course, is effective and is frequently used as a temporary expedient, but as a permanent measure the source of infection should be eliminated. For example, it appears most probable that the Chicago epidemic was largely due to a locally infected water supply, through improper and defective plumbing. Obviously, here the

remedy is to correct the faulty installation; to insist that new installations shall be satisfactory and through stated inspections to make necessary replacements.

Slow and rapid sand filtration and chemical treatment of water supplies have not been especially studied from the point of view of the prevention of amebic dysentery, but it is to be noted that the organism in the cyst stage is highly resistant to the usual chemical agents, such as chlorine—so resistant that contaminated water could hardly be made safe by this chemical treatment alone. Since the recognized purification methods, including coagulation, sedimentation and filtration, remove a very large proportion of the bacteria in a water supply, it is for the present assumed that it would remove also at least a corresponding proportion of amebic cysts.

The Carrier Problem.—The consideration of the rôle of the carrier in the spread of the infection has commanded more attention in recent years than all other means of transmission combined. It is so easy to assume that, because cyst carriers are found among the associates of a person sick with the disease, the source of infection has been discovered. A difficulty at once arises in the question as to why there is on the whole so little amebic dysentery in the population when it is well known that the proportion of the population recognized as carriers is very high, frequently from 5 to 10 per cent in the United States. This has not seriously discouraged advocates of the carrier transmission theory, who readily assume that only certain carriers are a menace or that only occasionally do conditions favorable to transmission become propitious. For those who advocate the importance of the rôle of carriers in the transmission of amebic dysentery the means for prevention are plain—elimination of the possibility of carriers contaminating the food of others.

While we have no inclination to argue this point with the distinguished proponents of this view, we feel that we may properly point out some of the difficulties encountered in endeavoring to carry out such a program. In the list of these difficulties is the uncertainty of the results of the examination itself. The most experienced workers in this field consider that not over a third, or a half, of the carriers will be disclosed by a single examination and that three examinations will still leave a considerable proportion (estimated at one-fourth to one-third) undisclosed. A second difficulty lies in the question of just where to stop in such an examination. In other words, just who are to be regarded as food handlers? In addition to the groups made up of cooks, waiters and others in hotels, restaurants and other eating places, one must consider whether to include dispensers of soft drinks, butchers, dairymen, milk handlers and, finally, retail grocers. Even if all these are included there is still to be considered a very much larger group made up of domestic employees and housewives. And if one agrees that all these need attention, there would seem to be a fairly good argument for making a "clean sweep" and doing carrier examinations on the whole population.

We have tried to envisage just what it would mean to test the food handlers of a city of half a million. As a very conservative figure, there would be at least 12,000 persons directly concerned in the preparation and serving of food in public eating places. As one well trained, industrious technician can examine thoroughly not more than ten stools a day, the time required to make one examination of all the food handlers in

the population mentioned would be about four years, and to give the minimum of probably useful service, the examinations would require twelve years. This would take no cognizance of the turnover of food handler employees, notoriously large in this class of occupation. The 12,000 food handlers in the hypothetical situation would yield perhaps a thousand carriers, the treatment of whom might present difficulties, although it is realized that the problem of dealing with them would be distributed over a period of years.

From what has been said, it will be appreciated that we consider general examination of food handlers for the detection of ameba carriers impracticable, even if desirable, and we are in doubt as to the desirability of the procedure, excepting under special circumstances, which will be referred to later. Perhaps it might be said that we are not disposed to view carriers of *Endamoeba histolytica* as we do carriers of the typhoid bacillus. The biologic differences of the two organisms are great. Knowledge as to the exact modes of transmission of *E. histolytica* is exceedingly meager. Much study is necessary before it will be possible to estimate even roughly what advantages would accrue to any wholesale attempt to identify ameba carriers, even though the methods of identification were to be perfected to a far greater degree than those possible today.

If epidemiologic investigations point to an individual or a group of individuals as a source of infection of amebic dysentery, obviously means should be taken to identify the carrier, or carriers, through stool examinations. Appropriate steps may then be taken to segregate temporarily and treat the infected persons. Those recognizing the difficulty inherent in the detection and removal of carriers from the food handler group in public eating places suggest another procedure. They would institute a campaign of education of food handlers and employers of food handlers to make the former group "hygiene conscious" with respect to thorough washing of the hands with hot water and soap, or even with disinfectants. This appears to be an admirable program, though presenting some difficulties of accomplishment, not the least of which may be the frequent lack of conveniently located and adequate hand washing and toilet facilities. Obviously the adoption of standard requirements as to hand washing and toilet facilities and the enforcement of their use would definitely minimize any possibility of transmission through food handled by carriers.

An interesting feature in connection with the carrier state lies in the tendency for the infection to spread within a family. According to good authority it is not unusual to have most of the members of a family infected, although it may be impracticable to say in which member infection originated.

Control of Acute Cases.—The clinical case of dysentery is regarded as not a source of danger by most students of the subject, and experience seems to bear this out. Multiple clinical cases with evidence of transmission from person to person are unusual. Cases of the disease are treated in general hospital wards without evidence of transmitting the infection.

Whether any special precautions need to be taken with the bowel discharge in active cases is open to question. The accepted lack of hazard of clinical cases is often explained by the fact that the motile forms (trophozoites) die soon after discharge from the

bowel; however, motile forms and cysts are frequently discharged at the same time in clinical cases. Stools should be treated with a disinfectant to be on the safe side, especially if they are likely to be exposed where flies may have access to them. Here again intensive biologic studies should be of value.

The carrier, on the other hand, must be considered from a different point of view; that is, in regard to the public health aspects of the condition. Students are divided in opinion as to whether or not there are carriers who harbor the parasites and discharge cysts but who remain quite free from any form or symptoms of the disease. True, this point is somewhat academic, but there is no doubt that there are many carriers who suffer no inconvenience. The problem here is What should be one's attitude to such persons with respect to treatment? Should treatment be advised or should the carrier condition be ignored? There is no doubt that in these individuals symptoms of dysentery occasionally develop; indeed, there have been numerous examples in which amebic abscesses of the liver have developed without previous recognizable symptoms of dysentery. As the treatment, by means of several drugs, is relatively safe and quite effective, the situation requires that the hazard of latent infection be explained to the carrier and that he be advised to submit to treatment.

Thus it is that we have endeavored to point out the difficulties which confront the health officer in an earnest endeavor to control amebic dysentery. At the same time, realizing the lack of precise knowledge as to the transmission of the infection, we feel justified in urging moderation in measures that may be adopted. Some states and some local jurisdictions have taken measures that, from the point of view of the individual subjected to them, are truly harsh and, from the point of view of the informed student and observer are unwarranted. We know of quarantine being imposed on the patient and the other members of the family, even to the exclusion of the children from school.

The following quotations from requirements illustrate what we regard as unnecessarily severe measures. One city has the following requirements:

The patient must be isolated during the acute stage of the disease. Bacillary as well as amebic cases are to be placarded.

Carriers, not food handlers, of amebic or bacillary dysentery, cannot be released from observation and from modified quarantine until twelve successive authentic specimens of freshly voided feces, taken one month apart and examined in the City Laboratory, give negative results for *Endamoeba histolytica* or dysentery bacilli, respectively.

Any food handler must show by laboratory test that he is free from *Endamoeba histolytica* or dysentery bacilli, and must not live on the premises with a case or carrier. . . . Public food handlers whose stools on examination are found to contain the *Endamoeba histolytica* or cysts shall not be permitted to continue in their vocation until treatment and twelve successive negative cultures, taken one month apart, have determined that they are free from the *Endamoeba histolytica* or cysts, he may then return to work and submit a culture every six months.

One state has the following requirements:

Cases of amebiasis are not to be released from isolation until two successive laboratory examinations made on specimens of stools taken one week apart show no *E. histolytica* present.

Carriers shall not be released from isolation and control until four successive authentic specimens of stool give upon laboratory examination negative results to *E. histolytica*. These specimens are to be taken one week apart.

Our previous experiences lead to the conclusions that such drastic restrictions are unnecessary; that further epidemiologic and biologic studies are necessary for the guidance of the health administrator in the control of food handlers, but that, when the epidemiologic investigation indicates the possibility of a carrier in an individual or in a group, the identification of the carrier should be attempted and the carrier, if found, appropriately restricted and treated.

What has been learned from the Chicago epidemic should serve to stimulate greater zeal in the protection of water supplies, with special reference to the distribution systems as well as the general supply itself. The larger cities in which the myriads of intercommunicating pipes, both public and private, supply the multiplicity of demands for water for numerous purposes other than for consumption, as for industrial purposes, cooling, flushing, sprinkling, fountain jets, and the like, would probably present the greatest possible hazards. The smaller cities and villages are not free from similar dangers. Old installations and any system under stress of overdemand may menace health. To insure safety there should be no physical connection between water supply systems that are safe for domestic use and those that are unsafe for domestic use.

The recent experiences also indicate that it is not too early to point to the goal of requiring that all rooms used for culinary work and for the storage of ready-to-eat food be properly constructed and located above the ground level, which would obviate the possibility of sewage flooding such rooms.

National Institute of Health.

PROLONGED INFLUENCES AND COMPLICATIONS OF INTESTINAL AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

KENNETH M. LYNCH, M.D.

CHARLESTON, S. C.

Let it be said at the outset that what is meant here by the term amebiasis is the condition of infestation of the human intestine by the protozoon *Endamoeba histolytica*. There may be some question as to whether this conception is too limited, whether other amebas should be included, but proof of that is lacking, and this working hypothesis is acceptable.

In spite of readily available information to the contrary, it remains the common conception that this state of parasitism is rare outside tropical regions. It may be reasonably calculated, from surveys in widely separated localities, that from six million to twelve million people in the United States are the hosts of this pathogenic organism.

The difficulty in accepting this apparent fact has been, no doubt, because of the prevalent conception that amebiasis consists of amebic dysentery, whereas in fact that phase constitutes the uncommon acute flare or end result of the parasitism and is probably largely dependent on complicating bacterial infection. Amebic dysentery is by no means common in this country, even in at least some sections of the so-called subtropical South, and to emphasize the danger of it becoming so may not only be a mistake but a means of continuing the sub-

ordination of the main problem. The larger problem relates to the state of prolonged infestation or chronic amebiasis, and this state is the phase of amebiasis least well understood by all and commonly without place in the conception of the general practicing profession.

For the purpose of this limited discussion of intestinal amebiasis it is necessary to call attention to the fact that the infection or infestation is essentially concerned with the large intestine, from the ileocecal valve to the anus. This is the natural habitat of the ameba, although at times the terminal ileum may be included. Here it becomes seated after ingestion, and here it prospers in variable condition, in accordance with factors still obscure to our knowledge. The whole story of what it may do here is not known.

The lack of knowledge has to do mainly with whether this ameba is an obligatory, facultative or accidental tissue invader, for it is apparently only in the event of penetration of the mucous lining and invasion of the tissues of the wall of the intestine that it becomes an actual disease producing agent.

There is still serious question as to whether this ameba may live at times, or in some hosts entirely, as a lumen dweller. This is a very important question, since on it hinges the individual problem in many cases. I have paid some attention to this question during routine necropsy work for a number of years, and, while no conclusion is now possible, a definite impression has been arrived at that *Endamoeba histolytica* may be only a lumen dweller frequently, and possibly in some hosts entirely so. That is not to say, however, that even so it cannot elaborate toxic substances absorbable from the intestinal lumen. Craig's complement fixation test demonstrates that humoral absorption of amebic products occurs and that there is some antibody production by the host; but whether it is only on the occasion of actual tissue invasion by the ameba is not known. The foundation of James's belief that amebiasis constitutes a condition of more importance to the human race than any other protozoal disease, even than malaria, and that it presents a disease as protean in its manifestations as syphilis itself must rest largely on the proposition of obligatory tissue invasion by the ameba and of humoral absorption of toxic products.

Once present in the intestine, the duration of parasitism by *Endamoeba histolytica* is indefinite, the possibility and actuality of its influence therefore being characteristically prolonged. An understanding of what may occur during its course is necessarily dependent on knowledge of the behavior of the ameba in its natural habitat, the large intestine.

It is capable of entering by its own efforts a mucous membrane previously normal. In the ordinary sense, therefore, it is not an accidental tissue invader. However, how thoroughly it accomplishes this is apparently dependent on factors unknown, which may be, in a sense, accidental. In consequence, the incubation period of the disease is indefinite and commonly is quite prolonged.

In a certain number of the parasitized there may be no evidence of resulting disturbance, this constituting the symptomless carrier state. Since it is not known at what time actual disease may occur in such cases, the parasite constitutes for the host concerned a constant personal menace, while possible transmission to others makes this condition of public concern. As long as such a carrier may be under close medical observation

there is apparently little or no urgency about the matter, so far as he is concerned.

In a certain number of cases quite active invasion by the ameba takes place, at a variable time, with the production of amebic dysentery. While it is not the province of this discussion to deal with that phase, it is necessary to draw the picture of what may subsequently occur largely from the knowledge obtained in study of that condition, since little opportunity is given to study the intestine of the human being except after death and since the parasitism is usually in this phase at death, no matter how long its duration.

The ameba penetrates the epithelial lining of the intestinal mucosa, apparently either on the surface or within the gland crypts, more particularly the latter, in my observation. It is a motile organism, and the inflammatory hindrance to its further penetration is not so great as against bacterial invaders generally. Its travels are slow; it produces a histolyzing substance that destroys fixed tissues within which it lives. When the invasion is active and large the characteristic acute ulcerative colitis results, and the clinical state of amebic dysentery, a humoral toxemia, and a fertile ground for secondary bacterial invasion.

BACTERIAL COMPLICATION

Associated bacterial infection in acute and probably in chronic amebic colitis is not infrequently an important complication.

Such bacterial complication may play considerable part in deep and extensive ulceration and in sepsis, in a nonspecific way. In such incidental infection, streptococci and the colon bacillus play important rôles. The rare complication of large, or even fatal, hemorrhage is the result of active erosion of vessels, in which bacterial action may be important.

A not uncommon coincidental or complicating specific infection of dysentery bacilli is an important event. Confusion may result from simultaneous infection by these two entirely different agents of colonic disease, in either acute or chronic form, unless their common association is realized. Treatment of either is hindered by the presence of the other. A case of chronic amebiasis with complicating acute bacillary dysentery may be diagnosed amebic dysentery, in which case treatment designed for the latter would have no effect on the dysentery. Failure of treatment in a case of dysentery should lead to investigation for dysentery bacilli, regardless of the presence of *Endamoeba histolytica*. Incidentally, bacillary dysentery is probably frequently erroneously diagnosed amebic dysentery on the identification of common harmless *Endamoeba coli* as *Endamoeba histolytica*.

PERITONITIS AND EXTRA-INTESTINAL ABSCESS

It is as a result of active invasion by the ameba itself that the most important complications arise, no matter whether they are exhibited during the acute clinical phase or not. The most immediately serious relate to deep penetration into or even through the wall of the colon, sometimes with perforation and bacterial peritonitis, sometimes peritonitis without complete perforation. Whether the peritonitis may be generalized or localized depends on the location of the peritoneal penetration and the aggressiveness with which it occurs, as well, probably, as the character of the associated bacterial infection. With slow penetration of peritoneal

coverings, the infection may be localized by plastic exudate and one or more peritoneal abscesses may occur, eventually tending to fibrous localization and extensive fibrous matting in the immediate abdominal area or areas. With more abrupt perforation or rupture of colonic peritoneal surfaces, especially in the upper abdominal region, generalized acute purulent peritonitis will usually occur.

It is quite important, as well, to recognize that penetration and perforation of the wall of the colon in its posterior aspects may occur, carrying not only amebas but also bacteria, with the production of tunneled abscesses in the retroperitoneal region, not infrequently of remarkably extensive proportions and with the probable consequence of generalized sepsis. Prolonged amebic colitis of continuous or intermittent clinical character may come to this fatal issue.

ABDOMINAL ADHESIONS

As a result of extension of the infection to the outer coat of the intestine, with or without actual perforation, an important complication of either acute amebic dysentery or chronic amebiasis is the production of adhesions between the colon and coils of small intestine or other peritoneal surfaces. This may be over a single peritoneal area, it may be in several locations, and it may be quite extensive, with firm fibrous matting between the colon, over more or less of its entire course, and adjacent surfaces. Such adhesions are naturally of more or less permanent character and may exhibit their sequelae after eradication of the ameba and apparent recovery from the disease. The attendant dangers of intestinal interference and of actual obstruction or strangulation are quite obviously of prime importance.

LIVER COMPLICATIONS

In consequence of the position of the infection, a complication of the acute phase is so-called acute hepatitis, with swelling and tenderness of the liver. Whether this state is dependent on actual transportation of amebas to the liver or only of amebic or other products is not clear. It by no means necessarily results in amebic abscess and may therefore be mainly the result of portal drainage of the products of the amebas or of the colitis. It appears to be quite susceptible to treatment with emetine.

Amebic abscess, the better known liver complication, is a natural result of amebic colitis. The amebas commonly penetrate into the portal vein branches in the invaded colon wall and the number of instances of their transportation to the liver is probably not well represented by the comparatively uncommon survival and production of an abscess-like area of liver necrosis, comparable in its manner of development to the intestinal ulcer. When this does occur it becomes a very important event. At the time when evidence of this complication is produced, it may apparently have no relation to acute intestinal amebiasis: it is probably more the result of that state, however, than of the strictly chronic form. One must be on guard against this complication in a known amebic infection, while the occurrence of an apparently primary liver abscess should lead to investigation of the stool and intestine, no matter what the geographic origin of the case may be.

Other more distal complicating events of amebic origin are comparatively rare and not to be anticipated. The ameba is not commonly distributed beyond the liver,

at least in disease producing proportions. Amebic abscess of the lung, possibly with even further extension in the thorax, is usually the result of penetration of the diaphragm and base of the right lung from amebic abscess of the liver, while amebic abscesses of the brain, testicle, or other areas are still more uncommon occurrences, from blood borne dissemination, and amebic ulcers of the skin are extensions from sinuses resulting from opening an infected colon or liver. All are, of course, important when they occur, and it is important to identify the nature of the offending agent and relate it to intestinal amebiasis.

AMEBIC APPENDICITIS AND INTESTINAL GRANULOMA

Two complicating events, of direct relation to the intestinal invasion, are infection of the vermiform appendix and amebic granuloma of the colon. Amebic appendicitis is a natural extension from the colon and is usually continuous with amebic ulceration of the cecum, although it has been reported as occurring independently of neighboring cecal ulceration. In view of the tendency of amebic colitis to be prominent in the reservoir portion of the large bowel, it should not be surprising if amebic appendicitis should be a common companion of amebic typhlitis. As an observable matter, however, it seems that except as a part of active amebic colitis it is comparatively unimportant. In study of some thousands of appendixes removed at operation I have never recognized an amebic appendicitis, although amebas have been seen in the lumen. That is not to say that a bacterial appendicitis may not be imposed on an amebic infection so as to hide it. However, it will require much further evidence to show that any material part of common appendicitis is of such origin or association.

From a practical working standpoint it is unnecessary to take amebic infection into account in the actual case of acute appendicitis demanding operation, except in a case of known amebic dysentery. It is important, of course, to take the ameba into account in the study of the appendix and in the event of continued intestinal trouble following acute appendicitis or in the clinical suspect of so-called chronic appendicitis. It is possible, although unproved, that an amebic harbor in the appendix may be more difficult of control than in the intestine proper.

Amebic granuloma of the colon has been recorded as a complicating event, particularly of prolonged amebiasis. In its occurrence there may be confusion with carcinoma or with a localized syphilitic or chronic tuberculous lesion, while it may be productive of intestinal occlusion and obstruction. In case of a granulomatous ulcer of the colon the possibility of amebic origin should be taken into account. As a condition to be separated from regulation amebic ulcer and occasionally related intestinal strictures, it will not be commonly encountered.

PROLONGED AMEBIASIS

It is in the minds of close students of intestinal amebiasis that what usually happens in the natural prolonged state of this infestation is the recurrent production of invasion of the lining of the large intestine, of proportions insufficient to produce a characteristic clinical disease but a chronic local disease and low grade systemic toxemia; that the nature of many obscure colonic and associated constitutional states of illness may be solved by proper examination of the stool and the large bowel.

While it is not my purpose to discuss this apparently common and important chronic intestinal amebiasis in detail here, it must be said that it is a most fertile field for erroneous diagnosis and treatment. The clinical picture is indefinite, constituted mainly of a below-par state, usually with abdominal soreness, tenderness, or pain, perhaps with neuritis, neurosis, joint and muscle pains, and other vague and indefinite symptoms. In its evaluation, roentgen study of the colon is most important but not in itself conclusive, while sigmoidoscopic examination is of great advantage in determining lower bowel involvement. Diagnosis must depend on reliable identification of *Endamoeba histolytica* in the stool; and although the presence of the ameba does not positively prove the case, it at least warrants therapeutic attack. The diagnosis of intestinal amebiasis, no matter how clear the clinical state may appear, in the face of persistent absence of the ameba is not justifiable. It is equally unjustifiable to treat a case of colitis, whether dysenteric or not, and no matter how prolonged, without taking into full account the possibility of amebic infection.

Prolonged amebic colitis commonly exhibits recurrences of the active dysenteric state, often, however, of comparatively minor character. This means periods of activity of invasion and extension followed by recuperation and at least partial healing. It appears that in the less aggressive form there is the production of superficial submucosal abscesses and ulcers, healing and recurring, perhaps in the cecum, sigmoid or rectum, perhaps simultaneously in several areas of the colon. The subject of such an infection is in danger of more aggressive invasion and of serious complication at times unforetellable and is therefore practically constantly menaced.

In the more aggressive prolonged disease there are periods of active and extensive ulceration and dysentery with intermissions of arrest and healing, leading into possible cicatrix production, stricture and colonic deformity of permanent and function disturbing proportions.

One has only to see the colon of prolonged amebiasis after extensive fibrosis, the product of healing and segregating reaction, with variable ulceration, contracting scars, strictures and dilatations, to appreciate the difficulty or impossibility of cure of such a condition, even on the eradication of the ameba.

It has not been within the purpose here to discuss either diagnosis or treatment of amebiasis, but any discussion of the prolonged infestation is incomplete without warning of the necessities in both considerations.

Positive diagnosis of intestinal amebiasis cannot be made without determining the presence of *Endamoeba histolytica*: no diagnosis of chronic amebiasis or of any of the complicating events can or should be maintained without this information.

In estimating the influence of treatment, no cure of the infection can be claimed without full proof of the absence of the ameba. Further, in addition to the eradication of the ameba it is necessary to have in mind the nature of the possible damage, in case of extensive and, particularly, prolonged colonic invasion, and the healing, which must be effected before recovery may be claimed. That is to say, when cicatricial deformity of the colon and extensive peritoneal fibrosis have resulted from prolonged or deep and extensive infection, the

damage is more or less permanent, even if the ameba is eradicated; and, further, the elimination of the ameba at this stage is most difficult of accomplishment, and problematic even when apparently concluded.

Medical College of the State of South Carolina.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. H. A. CARTER, Secretary.

LUXOR B ALPINE SUN LAMP ACCEPTABLE

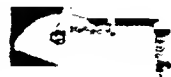
This is a quartz mercury vapor arc lamp designed for therapeutic ultraviolet applications. It is available in two forms, one for direct current 110 volt operation, the other for alternating current operation. It is manufactured by the Hanovia Chemical & Manufacturing Company of Newark, N. J.

The two lamps employ the same type of highly polished chromium steel reflector used on the Super Alpine Sun Lamp.

The hood and reflector may be rotated around the burner and secured in any position throughout an angle of 90 degrees by means of a handwheel located on the right side of the hood. The opening is 12 by 14 inches, and at a distance of 30 inches from the burner a plane surface receives relatively uniform radiation on an area measuring 5 by 2 feet.

The hood is supported on a telescopic upright, rising from the center of the electrical control housing, which is mounted on a tripod base equipped with three rubber-tired ball-bearing casters.

The light generator consists of a highly evacuated tubular vessel constructed entirely of fused quartz and equipped with the W-type Hanovia electrodes. The burner mounting is



Luxor B Model Alpine
Sun Lamp

devised to maintain the burner at the correct temperature for maximum output.

The electrical circuit for the direct current lamp consists of a rheostat and a double poled toggle type switch, the latter being located on the inlet cable.

The electrical circuit for the alternating current lamp consists of a combination alternating and direct current supply to a three poled burner. Its use results in enhanced intensity and efficiency for the alternating current burner, improves steadiness of the arc, insures ease of lighting, and improves burner life.

The Luxor B Alpine Sun Lamp produces the characteristic spectrum of mercury vapor arcs, and the spectral energy distribution is the same as that previously given for the Super Alpine Sun Lamp, a product already accepted by the Council.

The intensity of ultraviolet radiations 1,850 to 3,200 angstroms at a distance of 30 inches from the burner is at least 500 microwatts per square centimeter for the alternating current lamp, and at least 300 microwatts per square centimeter for the direct current lamp.

Operating Characteristics

Alternating Current

Line voltage: 110 to 120 volts 60 cycle (25 cycle requires special equipment)
Starting Current: 8 amperes
Operating current: 5 amperes
Burner voltage: (A. C.) 135 volts
(D. C.) 40 volts

Direct Current

Line voltage: 105 to 125 volts
Starting current: 7 amperes
Operating current: 3 amperes
Burner voltage: 70 volts

The Luxor B Alpine Sun Lamp, therefore, is included in the Council's list of accepted devices.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

HAWAIIAN FINEST QUALITY PINEAPPLE

- (1) AURORA BRAND BROKEN SLICES AND SLICED
- (2) BING BRAND CRUSHED AND TIDBITS
- (3) BLOSSOM BRAND BROKEN SLICES
- (4) CLOVERHILL CRUSHED AND SLICES
- (5) FOREST PARK BRAND CRUSHED, SLICES AND TIDBITS
- (6) GOOD KIND CRUSHED, SLICES AND SALAD CUT
- (7) LEHMANN'S DE LUXE CRUSHED AND SLICES
- (8) NONE-SUCH BRAND CRUSHED, SALAD CUTS AND SLICES
- (9) SAVOY CRUSHED, SALAD CUT, SLICES AND TIDBITS
- (10) WEDGWOOD BRAND CRUSHED AND SLICES

Distributors.—(1), (6) and (9) Steele-Weddes Company, Chicago. (2) McTighe Grocery Company, Binghamton, N. Y. (3), (4) and (8) Durand-McNeil-Horner Company, Chicago. (5) and (10) Downing, Taylor Company, Springfield, Mass. (7) Lehmann-Higginson Grocer Company, Wichita, Kan.

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p. 1106, and April 29, 1933, p. 1338).

IRRADIATED VITAMIN D PASTEURIZED MILK

- (1) ABBOTTS
- (2) BORDEN'S
- (3) BORDEN'S
- (4) BOWMAN DAIRY COMPANY'S
- (5) CAPITOL DAIRY COMPANY'S
- (6) DODDS
- (7) DRIGGS DAIRY'S
- (8) GRAFFENBURG DAIRY'S
- (9) PHENIX DAIRY
- (10) REID'S UNION DAIRY'S
- (11) WILLOW BROOK DAIRY'S

Distributors.—(1) Abbotts Dairies, Inc., Philadelphia. (2) Borden's Farm Products Company of Illinois, Chicago. (3) Borden's Farm Products Company, Inc., New York. (4) The Bowman Dairy Company, Chicago. (5) Capitol Dairy Company, Chicago. (6) Dodds Alderney Dairy, Inc., Buffalo. (7) Driggs Dairy Farms, Inc., Toledo, Ohio. (8) Graffenburg Dairy, Utica, N. Y. (9) Phenix Dairy, Houston, Texas. (10) Reid's Union Dairy, Brooklyn. (11) Willow Brook Dairy, Mount Vernon, N. Y.

Description.—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays (patent No. 1,680,818).

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation, see THE JOURNAL, Oct. 7, 1933, page 1155.

Vitamins.—Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used. Contains 135 U. S. P. X (Revised, 1934) vitamin D units per quart.

Claims of Distributors.—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

SNOW KING DOUBLE ACTION
BAKING POWDER

Manufacturer.—The Snow King Baking Powder Company, Cincinnati.

Description.—Baking powder consisting of starch, sodium bicarbonate, sodium aluminum sulphate and calcium acid phosphate.

Manufacture.—The raw materials and ingredients used are purchased under definite specifications for composition, purity, granulation, etc., all of which are checked analytically by the company laboratories to assure conformity with specifications and food law requirements.

Definite quantities of the ingredients are carefully weighed, thoroughly mixed and sifted; the mixture is stored in tanks until satisfactory laboratory tests assuring proper mixing and composition have been made, after which it is automatically filled into cans, which are labeled and varnished. A test baking check is made on each individual batch.

Analysis (submitted by manufacturer).—

	per cent
Total carbon dioxide (CO ₂)	15.3
Available CO ₂	15.1
Residual CO ₂	0.2
Aluminum (Al ₂ O ₃)	5.5
as Al	2.9
Arsenic (As)	less than 1.0 part per million
Calcium (CaO)	1.2
as Ca	0.9
Iron (Fe ₂ O ₃)	traces
Lead (Pb)	less than 2.0 parts per million
Magnesium (MgO)	0.2
as Mg	0.1
Phosphorus (P ₂ O ₅)	3.03
as P	1.3
Sodium (Na ₂ O)	10.9
as Na	8.1
Sulphur (SO ₃)	17.4
as S	6.9
Starch	40.0

Claims of Manufacturer.—For use in all baking and cooking recipes calling for baking powder. The product and ingredients conform to United States Department of Agriculture requirements as expressed in its definition and standard for baking powder. The two acid reacting ingredients for liberation of the leavening gas, because of their different solubilities, produce a "double leavening action" in the dough. The first action releases a portion of the leavening gas in the cold dough; the second releases the remaining gas in the heated dough in the oven.

FONTANA'S SEMOLINA MACARONI BUTTERFLIES
FONTANA'S SEMOLINA MACARONI SEA SHELLS
FONTANA'S SEMOLINA MACARONI DAISIES
FONTANA'S SEMOLINA MACARONI ALPHABET
FONTANA'S SEMOLINA MACARONI
FONTANA'S SEMOLINA ELBOW MACARONI
FONTANA'S SEMOLINA SPAGHETTI
FONTANA'S SEMOLINA ELBOW SPAGHETTI
FONTANA'S SEMOLINA SALAD MACARONI

Manufacturer.—Fontana Food Products Co., San Francisco.

Description.—Macaroni of various sizes and shapes prepared from durum wheat semolina.

Manufacture.—The sifted durum semolina and water, in definite proportions, are mechanically mixed and kneaded. The resulting dough is forced through various dies to form the different shapes of macaroni products, which are dried on racks under controlled conditions and packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	12.5
Ash	0.6
Fat (ether extraction method)	0.5
Protein (N × 5.7)	12.9
Reducing sugars as dextrose	0.6
Sucrose	0.1
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	73.2

Calories.—3.5 per gram; 99 per ounce.

Claims of Manufacturer.—Complies with the United States Department of Agriculture definition and standard.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 13, 1934

OXALIC ACID IN METABOLISM

Theories that include oxalic acid as an intermediate product of normal metabolism have received little serious consideration, because of its known toxicity. A number of the more popular ideas concerning oxalic acid in foods have been critically evaluated by Kohman¹ of the National Canners Association Research Laboratories in Washington, D. C. Although an accurate, reliable method is not available for the determination of oxalic acid in foods, Kohman has compiled a table presenting a close approximation of the content of this acid in some common foods. Almost every fruit and vegetable contains oxalic acid; pineapple and leafy vegetables, notably spinach, are strikingly high in this respect (from 0.01 to 0.03 and from 0.29 to 0.69 per cent, respectively). The author points out, however, that an individual would be required to consume from 2 to 5 pounds of a food containing 0.5 per cent of oxalic acid in order to secure an amount that might be considered a toxic dose. It appears that there is considerable unfounded misapprehension concerning the evil effects of oxalic acid in the diet.

The ubiquitous distribution of oxalic acid in fruits and vegetables stimulates questions concerning the metabolism of this compound. Recent investigations from Japanese laboratories² have supplied interesting information concerning the origin and fate of oxalic acid in the organism. This acid is apparently a normal product in the animal body, occurring in the blood in a concentration varying from 3 to 4 mg. per hundred cubic centimeters. Whereas a diet of either protein or fat had no effect on the level of oxalic acid in the blood, the ingestion of a carbohydrate diet by human subjects caused a marked rise in the oxalic acid concentration. The intravenous injection of large quantities of dextrose into rabbits resulted in a striking rise in the blood oxalic acid level; maximum values were obtained approximately two hours after the dextrose injection, the concentration thereafter gradually diminishing and reaching the normal level within from five to six hours.

This apparent relationship between oxalic acid and carbohydrate metabolism is of interest in view of the fact that derangements of carbohydrate combustion are frequently attended by an increased excretion of urinary oxalic acid. It has been demonstrated, for example, that insulin effects an increased ability of the organism to burn this organic acid.³

Oxalic acid assumes particular importance in metabolism when its possible effects on calcium utilization are considered. True, the calcium that is so generally ingested in foodstuffs would tend to detoxicate a portion of the oxalic acid present by the formation of insoluble calcium oxalate; the properties of the latter compound make its absorption unlikely. However, this mechanism at the same time deprives the organism of calcium, an element often present in insufficient amounts in the ordinary diet. It becomes evident, therefore, that the metabolic reactions involving oxalic acid may be of several types. Clarification of these processes must await further information regarding the rôle and fate of the acid in metabolism. This type of result would also aid in evaluating circumstances that determine possible deleterious effects of foods with a high oxalate content.

THE NOMENCLATURE OF GLANDULAR PRODUCTS

The novice in endocrinology finds himself bewildered not only by the tremendous number of recent contributions to glandular physiology but also by a new and unfortunately confused vocabulary. Ordinarily the addition of a few hundred words to the dictionary would concern chiefly the lexicographers; but the many names, synonyms (real and alleged) and trade marks in this field are so liberally interspersed in modern medical literature that the latter is all but incomprehensible to any one except an expert. In addition to the many terms invented from time to time by research workers in many parts of the world, the situation has been made even more difficult by the tendency of each of a number of commercial firms to register its own trade mark for a product to which otherwise, in most cases, it has no proprietary claim. The language of medicine appears to have been more burdened than enriched by the new nomenclature.

Perhaps the most striking case in point is that of the use and misuse of the numerous designations applied to estrogenic preparations. These are variously called female sex hormone, estrin (oestrin), follicular hormone, folliculin, theelin (ketohydroxyestrin, estrone), theelol (follicular hormone hydrate, trihydroxyestrin, estriol), and by such trade names as amniotin, progynon, emmenin and menformon. Still other names are employed. Many of the foregoing terms are not satisfactory designations and they may not all be considered synonymous. Theelin and theelol are recognized by the Council on Pharmacy and Chemistry as

1. Kohman, E. F.: J. Am. Dietet. A. 10:100 (July) 1934
2. Suzuki, S.: J. M. Sc. Japan 2:291, 373, 401, 1934

3. De Lucia, P.: Boll. d. Soc. ital. di biol. sper. 4:756 (June) 1929.

nonproprietary names for two crystalline compounds isolated from the urine of pregnant women. When these crystalline substances are referred to they should be designated by these names (English workers subsequently proposed the synonymous terms estrone and estriol). But at the present state of knowledge it is not warranted to refer to the estrogenic agent of unknown constitution in the blood stream, ovarian follicular fluid, certain plants and other sources by these names. All that is known is that these are "estrogenic substances"; they should therefore be so designated, and the source stated, until the chemical relationship of each particular substance to theelin and theelol is established. The only satisfactory method at present available for determining the presence of such agents is the production of estrus (or preestrual changes) in castrated animals. To speak of the "estrogenic factor" in the blood, for instance, is therefore clear, concise and unmistakable. If this factor is later shown chemically to be theelin or theelol, it may then be so designated. Such terms as "female sex hormone" imply more than may be true; there is doubt that such a hormone actually exists. Estrogenic substance may be found in male urine and it has been claimed that a substance having the characteristic actions of the testicular hormone has been obtained from female urine. There appear to be only slight chemical differences among theelin, theelol and the substance crystallized from male urine that affects the accessory male sexual apparatus. It is not known whether the estrogenic substance in male urine has any function in the male organism or whether the principle in female urine having the effects of the testis hormone has any essential activity in the female. It is therefore preferable to avoid referring to either male or female "sex hormones."

The situation with respect to the pituitary is hardly better. Little confusion would exist if it were customary to designate new and relatively impure extracts according to their effects, instead of coining new names for them. Thus such phrases as "growth hormone," "follicle-stimulating factor," "luteinizing principle" and "lactogenic factor of the anterior pituitary" convey the exact meaning intended. They are as clear to the novice as to the expert. In contrast, "prolan" is applied both to the gonadotropic factors of the pituitary and to the anterior pituitary-like gonadotropic principle from the urine of pregnant women; these were once thought identical, but more recent evidence indicates that they are different. "Antuitrin" is a trade name for an extract of the anterior pituitary; "antuitrin-S" is used to designate the anterior pituitary-like gonadotropic factor from the urine of pregnant women. Many other illustrative examples could be adduced.

By the use of short descriptive phrases, preferably instead of coined names but at least in conjunction with them, many unfortunate misapprehensions and much confusion may be avoided.

MAHLON LOCKE—FOOT TWISTER EXTRAORDINARY

The publicity accorded to Mahlon Locke, Canada's newest contribution to faith healing, has aroused great interest among both the medical profession and the public. The profits to be derived from the sale of shoes to persons suffering with chronic diseases affecting the bones and joints has induced many a department store to add a Locke department to its shoe section. Disciples of the Canadian healer journey about with a motion picture film demonstrating Locke himself in action at the shrine in Ontario. In this picture the stage is set for the introduction of Dr. Locke by pictures of trains, motor cars and other means of transportation bringing the searchers for relief from pain and crippling to Williamsburg. Then are seen his diplomas in medicine. The doctor is next viewed at home and one is privileged not only to meet him in person but to view his hands in a close-up, with all the impressiveness associated with the picture of two hands gigantically enlarged to the size of a motion picture screen. The doctor is observed, appropriately enough, leading his prize bull around on a halter. The doctor is then shown at work, sitting in a swivel chair while human beings come toward him from eight radiating paths to put their feet trustingly in his lap. Either just before or just after he receives the feet he also receives a dollar bill, which is deposited in his pants pocket. He then bends the foot outward and downward and the patient moves on. Some sort of an associate bends the hands of the patients and there are adjacent quarters in which women assistants wiggle the arms, bend the neck hither and thither and bend the back of the patient over a table. A few patients are introduced who say that they have been residents in Williamsburg for several years and have been taking the treatments day by day; they assert that their conditions are improved. There is no serious attempt at diagnosis of disease, nothing resembling a scientific study of the anatomy or physiology of the body as a whole—in fact, not even any serious study of the feet.

Then the scenes change to reveal the diploma in shoe fitting, given to those who study under Locke's system, and also a picture of the astute gentlemen who have evolved from this Williamsburg shrine of faith healing a massive shoe business. Such department stores as Marshall Field's in Chicago and Simpson's in Toronto are devoting whole sections to a participation in the profits to be derived from the Locke publicity. Mr. Hearst promotes his *Cosmopolitan* magazine by articles which Rex Beach is writing concerning the foot twister, and newspaper advertisements send prospective readers and applicants for foot twisting and Locke shoes to the *Hearst's International Cosmopolitan* as the accredited publicity source.

It should be obvious to any one that what Locke does is no more than what chiropractic does, much less than what osteopathy does, and probably much the same

thing that Aimee Semple McPherson Hutton, Emile Coué, Alexander Dowie and many of the disciples of Mary Morse Baker Glover Patterson Eddy have done. It represents psychologie suggestion reenforced by the laying on of hands; perhaps in a few instances the pulling of an adhesion such as any masseur might attempt. If bones are put back into place, what makes them stay back? While it pays, it pays handsomely, and when it moves on something else of the same nature usually comes in its place. In better times, institutions for the purveyal of merchandise which have for long held high standards would perhaps have turned thumbs down on such an obviously charlatanic promotion, but in these times the dollars are hard to get and the department stores seem not to be averse to a share in the profits of faith healing.

The activities of Dr. Loeke are a burlesque on the scientific practice of medicine. His promotion is a violation of every traditional, ethical tenet! Were not the results so lamentable, the comedy would be laughable. There are some who say that even psychologie relief for the chronic arthritic patient is worth while, regardless of the means by which it is accomplished. The reaction on the scientific practice of medicine and the chagrin and disappointment of those seriously sick do not permit this laissez faire attitude. Moreover, many a person who might be benefited by scientifically applied physical therapy and by competent orthopedic surgery is spending hard-earned money to make the long trek to Williamsburg in search of a pot of gold which those at the end of the rainbow are quite consistently saving for themselves. If Loeke's practices are right, the medical schools might just as well stop teaching anatomy, physiology, pathology and diagnosis. But they need have no fears. History shows that such charlatans and such systems come and go, while scientific fact and knowledge go on forever.

Current Comment

MOTION PICTURE OF HEAD- QUARTERS ACTIVITIES

From time to time the suggestion has been made that a motion picture be prepared of the headquarters activities of the American Medical Association so that county and state medical societies as well as other organizations might be informed of the nature of the work in the headquarters office. Last year the Board of Trustees appointed a committee, headed by Dr. Austin A. Hayden, to supervise the preparation of a 16 millimeter film for this purpose. The film has now been prepared and has already been shown at a meeting of the Chicago Medical Society and at a meeting of the editors and secretaries of state medical societies. As yet but one copy of the film is available. It shows the personnel of the various bureaus and councils of the Association, the executive officers, the members of the board of Trustees and of the House of Delegates,

the composing, printing, binding, addressing and mailing departments, the manuscript editing rooms and the library, and many other activities of the headquarters office. Arrangements have been made to lend this film to county and state medical societies together with a projector and a screen. Work on the picture is proceeding and it is not yet considered a finished task. It is planned to add pictures of all the different councils and official bodies so that the film will constitute a true record of the history of the Association at this time. Adequate subtitles explain the nature of the work shown, but the affairs are so complex that space is simply not available in a subtitle to indicate fully the significance of the various activities. The Board of Trustees and the office of the Secretary of the Association will be interested in hearing from county and state medical societies or other bodies that are interested in showing this film.

IRON AND COPPER RETENTION IN CHILDREN

As a result of experimental studies during the last six years, the necessity of both iron and copper in the cure of "nutritional" anemia, the condition resulting from the consumption of an exclusive milk diet, has been emphasized. Efforts have been made to cure various types of human anemias by supplementing the therapeutic doses of iron with copper. However, one commentator¹ has stated that the claims for the efficacy of copper in the treatment of clinical anemias have not thus far been convincing. Nevertheless the known indispensability of iron and the possible essential nature of copper lend interest to a recent investigation by Daniels and Wright² of the requirements of these two metals in children. Eight normal children (three girls and five boys) were given an adequate diet, and the total intake, loss and retention of iron and copper were determined in fifteen experimental periods. On daily intakes of from 0.57 to 0.75 mg. per kilogram of body weight there was a considerable variation in retention among the different subjects, the values ranging from 0.12 to 0.27 mg. daily per kilogram of body weight. The conclusion was reached that 0.6 mg. of iron daily per kilogram "should meet the needs for maintenance and growth of the average child of the age studied." With daily consumptions of from 0.069 to 0.113 mg. of copper per kilogram there was observed daily retention of from 0.012 to 0.048 mg. per kilogram, the diets containing the most copper favoring the greater storage. It was tentatively suggested on the basis of the observations that at least 0.1 mg. of copper per kilogram of body weight should be contained in the daily food of children of preschool age. It is of interest that in this investigation almost all (from 93 to 98 per cent) of the excreted iron and the copper appeared in the feces. The fact that on the higher levels of retention of copper there was a fairly close proportion between iron and copper retention (5:1) may indicate that there is in man also an interrelationship between the metabolism of iron and of copper.

1. Smith, A. H.: *Nutrition*, Annual Rev. Biochem. 2:299, 1933.
2. Daniels, Amy L., and Wright, Olive: *J. Nutrition* 8:125 (Aug.) 1934.

Medical Economics

SUCCESSFUL INDUSTRIAL GROUP PRACTICE

M. S. BLOOM, M.D.
BINGHAMTON, N. Y.

IN THE JOURNAL, over a year ago, I¹ discussed a plan of industrial group medicine referred to as the Spaulding plan and sponsored by Spaulding Bakeries, Binghamton, N. Y. At that time the plan had been successfully functioning for a full year. The broad circulation of THE JOURNAL, combined with an apparently widespread interest in the question of group medicine, brought inquiries and comments from every section of the United States, and from some sections of Canada. This interest made me wonder whether another article dealing with recent developments in the plan might not be worth while.

The Spaulding plan, of which I am medical adviser, has now definitely passed the experimental stage and has become a permanent organization offering various medical services to employee members of Spaulding Bakeries. I was chosen medical adviser of this plan because the sponsoring company felt that some one with medical training was necessary to administer the medical problems that arose. Apart from my general interest in the practical philosophy of group medicine as exemplified by this plan, my interest is academic.

Concerning this plan, a most significant point to the medical and dental professions is the provision for freedom of choice. It is the operating routine under this plan for officers never to suggest or urge on a member of the Spaulding Employees' Mutual Benefit Association to consult any particular doctor or dentist. When an employee obtains a physician's slip, the employee is simply asked what doctor or dentist he wishes to consult. No other questions are asked. The employee goes to whom he pleases for treatment. Occasionally employees wishing eye examinations, tonsil operations or other procedures ask the secretary or other officers to suggest a specialist. All officers are instructed, however, to give the name of all doctors performing the particular type of service desired but not to recommend any one specialist.

Accordingly, various evils are avoided by following strict rules governing the practice and preservation of the principle of freedom of choice. Under the Spaulding plan there is no possibility of politics playing a part in the choice of physicians and dentists, with a consequent lessening of efficiency in the plan and inevitable criticism by the medical and dental professions. Further, no loopholes are left for the employee to complain if he should not be satisfied with the physician or the service rendered. More important, perhaps, the plan recognizes the integrity and legitimacy of that ethical principle among doctors and dentists that treatment of the sick should be left to professional care and judgment, unhampered by lay intervention or pressure of any kind or sort.

As a result of this unyielding policy not to abridge or attempt to abridge the professional concepts of what is and what is not good medical practice, this plan has earned good will for itself among the doctors and dentists of the community. If I am permitted to make a conclusion before I conclude, it is this—I feel confident that it is possible to provide for satisfactory group medical practice, in some instances at least, without exciting controversy and rancor within the profession and without attempting to usurp from the physician and dentist the power and right to dictate the fundamental principles of professional practice.

Let it first be understood just what the Spaulding plan is and what it does. Then I will draw some broad conclusions, rooted in facts and experience, which indicate or suggest how the machinery of this plan fits social patterns as they exist today.

Briefly, this is the general plan: All employees of the bakery may become members on agreeing to abide by the by-laws and paying their weekly dues. Membership dues are governed by a wage classification of four groups and run from \$0.20 to \$0.45 per week. The company makes an equal contribution; that is, for every dollar in dues paid by the members, the company also contributes one dollar. The company contribution is essential to the financial success of the plan, as few industrial groups indeed could be found to bear willingly the whole burden.

There are now 200 members in the Binghamton division. Members are entitled to major and minor operations, hospitalization for thirty days in any one year (with a three dollar per day allowance for a room), plus all other hospital costs. Both office and house calls are permitted, including services of specialists. All laboratory fees and x-ray charges are paid by the association. Each member is entitled to ten weeks of sick benefits in any one year, these benefits running from \$7.50 to \$20 a week and determined by the member's respective wage classification. Dental services are confined to the x-rays and extraction of teeth. Certain limits other than those mentioned are made for various expenditures. For instance, house and office calls are limited to \$50 a year per member. Total expenditures for any one member are limited to \$350 a year, as provided by state law for organizations not incorporated.

Last December some of the features of this plan were extended to dependents of employees, the services including office calls, the allowance for the cost of an office call toward a house call, and laboratory and x-ray charges. Employees must be members of the general association to be entitled to these services for their dependents, and the additional dues constitute a flat \$0.25 a week for each member. In this case the company contributes one-half the amount contributed by the members. There are now approximately 100 members in the dependents' division, and the number of dependents varies from one to eight per family. When the dependents' division was organized the company had grave doubts of the division's future success, yet in less than a year a satisfactory surplus has been accumulated and further services may be extended as the growing surplus warrants.

With some minor change the general plan was offered to the employees at the Elmira plant of Spaulding Bakeries in December last year, and there are approximately 100 members in this division. Indications are that a protective surplus will have been built up by the Elmira division at the end of the fiscal year. Another division is now being organized in the Oneonta plant and will have a membership of approximately fifty.

This, then, is the Spaulding plan as it exists today. In an article of this kind, much detail must be avoided; hence I have only briefly sketched the plan. The success of the plan in Binghamton led to its adoption by two other firms in the city.

The Agfa Ansco Corporation, manufacturers of cameras, photographic films and other sensitized products, which has approximately 1,000 employees, has had in operation on a contract basis a mutual benefit association since May 1, 1929. May 1, 1933, a project similar to the Spaulding plan was instituted, which has been equally successful.

Truitt Brothers, shoe manufacturers employing 250 people, adopted the plan early in April of this year and is repeating the success of the other group plans.

1. Bloom, M. S.: A New Experiment in Industrial Medicine. J. A. M. A. 100: 1869 (June 10) 1933.

It may be of some interest to point out the percentages of expenditures made under the Spaulding plan for physicians' services, sick relief, hospitalization and dentists' services. They are given in the accompanying table.

Percentage of Expenditures

	Physicians	Sick Relief	Hospitalization	Dentists
1932-1933....	73.2	10.7	8.2	7.9
1933-1934....	66.2	12.3	13.8	7.7

There is no question in my mind or in the minds of the executives of Spaulding Bakeries that the interest and cooperation of the physicians and dentists in a given community are an essential consideration in the success of a plan of this kind. The right of the physicians and dentists to have their ideas known and respected before the plan is launched cannot be disputed. Before organizing a division in any community, executives of the company meet with the local medical society's committee on medical economics to discuss the whole plan and fully explain the details. Where divisions have been established, local physicians and dentists have invariably and enthusiastically approved this organization and have given splendid cooperation. The Spaulding plan has the approval of the New York State Medical Association and of the local medical societies as the plan relates to the ethics of group practice.

If this group plan deserves to be called successful, it certainly should meet rather fully the practical requirements of the profession, the employee and the employer. With the principle of freedom of choice unrestricted, every physician and dentist in the community has an equal opportunity to serve the members. The recognized fee schedule of the community is respected and preserved, and no attempts are made to bargain for medical and dental costs. All the association asks are standard fees for standard services.

Equally significant to the profession is the sureness of collections, because bills are paid fully and promptly. Even in these times the secretary finds it difficult to obtain statements promptly from many members of the profession, perhaps because doctors and dentists are sure of punctual payment. It seems possible that the profession as a whole derives more revenue from the men and women under the plan than if there were no plan. Experience proves that disease is sometimes neglected because an individual fears the doctor's bill. With payment for treatment guaranteed, members go to their physician without fear of the cost, yet few cases have been found in which privileges are abused.

No attempts have been made to analyze the benefits to be derived by the sponsoring company itself. That there is less absence from work on account of illness seems a natural conclusion to be drawn. The medical needs of the employees are certainly better provided for, and proper treatment is not so often neglected. Periodic physical examinations under the plan often disclose neglected conditions, which are pointed out by the examining physician. It has been the experience in organizing various divisions of this plan that a great many minor operations are necessary at first, which would seem to indicate negligence on the part of the individual before becoming a member of the association. It would seem that an employee, largely freed from the burden of unusual medical costs to himself, would be more happy and content in his work, and perhaps more efficient. There is no quantitative method for determining this point.

In the more serious cases it is possible to get medical consultation more quickly, because multiple costs are borne by the association instead of by the patient himself; hence he more readily accedes to the suggestion for consultation. One might perhaps be accused of injecting too much theory to say that

probably the general state of health of the community is raised to some degree by this plan.

It is true that the member pays while he is well and that he must be sick to draw on the treasury. In a sense the plan provides health insurance, but a type of health insurance controlled by the professional community, without benefit to political and lay dictation.

Under the plan, the company provides for all administrative expense, and competent executives are entrusted with the administration of the plan. This is an important phase of the work. The company is just as interested in this department as it is in its manufacturing, sales, accounting and advertising departments. Supervision is close and strict, and the work of the department is executed as quickly and efficiently as in any other department. At this juncture I may draw one of the broad conclusions that were promised. Group medicine, fostered by such a plan, is free from politics.

Each officer in the association has a definite job to perform, and his success in performing his tasks in the association determines his success with the company itself. He is paid for performance, not out of association funds, not because he knew a certain influential politician, but because in the first place he was intelligent and industrious enough to get and hold a business position. His duties in the association are accessory to his regular business duties, and part of them.

Group medicine, provided by this plan, does not attempt to regulate medical practice, does not place in the hands of the layman political power to control the destiny of the medical profession. Free and independent, it leaves the profession to work out its own destiny, to develop its own ethical concepts and to enjoy the fruits of its genius without considerations of political patronage or spoils.

I am making no claim that the Spaulding plan could be adopted universally, in toto, nor am I claiming that, if it were, the problems of providing medical care would be solved. I clearly recognize its limitations and its lack of adaptation to many groups. Nor do I suggest that all-business enterprises possess sufficient generosity and foresight to initiate and administer such a plan. It may be that the natural inclination of the business executive is to overlook all ethical considerations of the profession and the very personal needs and desires of the workers respecting individual medical care. Industrial medicine to such executives means simply going out and hiring professional talent just as their employment department hires stenographers. Under such conditions, treating the sick through respect for accepted standards among physicians and patients is out of the question.

In spite of these and other possible limitations, there are some noteworthy features of the Spaulding plan that do merit more than casual interest because they conform to certain proved characteristics of human nature. First is the absence of politics as a directing force in the plan. Second, the plan does not savor of a health dole. The employee pays part of the cost and feels that he is helping himself, and he is. This makes him self respecting. Free goods and services of any kind never helped build the character of a man, although they may temporarily have relieved hunger pangs. The law of compensation is still inviolate. If one gives a man everything, one takes away his self respect; and when one takes away his self respect, one takes that much character away from the man. Nothing is cherished that is free, that involves no cost, no responsibility and no obligation.

The plan provides that a man pays when he is well, for most industrial workers cannot pay when they are sick. Dues deductions are small and, by the majority of the employees, not missed. How doubly serious is great illness when the patient must lie in bed wondering where the money is coming

from to pay his expenses! How often is he tempted to lie there longer than he should, or arise sooner than he ought? How often complete discouragement accompanies a man back to his feet after a serious illness. I have marveled at the quick intelligence of the average worker when this plan is explained to him. He sees its merits immediately. He sees that no portion of what he pays is diverted to questionable administrative expenditures, elaborate office fixtures and political sinecures. Everything that he pays in belongs to him. The surplus is deposited in a bank and draws interest until needed. The employee is not forced to become a member, not even coaxed. He joins of his own free will and knows what he is joining. He can still go to his own family physician, who has been serving himself, his wife and his children satisfactorily for many years, a man in whom the employee has the greatest confidence.

Finally, the plan boils down to this residue: All along the line, self-respecting men are left to pursue independently their own ideals. They have to do nothing, accept nothing that is repugnant to their own self-felt decision. Is it not better than hordes of political officeholders driving business men, doctors and workers into a tight-fenced enclosure under the guise of offering an extraordinary medical bargain, when as a matter of fact all these groups concerned are deprived of the right to self-determined action?

This plan cannot possibly be stretched to include the chronically sick, the unemployed sick, the sick poor or the malingerers, but it can be extended with limitations to employed groups, and these groups constitute a large percentage of the population. That is, it can be extended when intelligent and generous-spirited employers would like to do it and when employees themselves are ready to receive it.

110 Oak Street.

Association News

THE ATLANTIC CITY SESSION

Invitation to Contributors for Program of Section on Surgery

Prevailing concepts of the relative significance of gross and minute normal and morbid anatomy and of normal and morbid physiology are directing, as they always have directed, modes of investigation as well as of practice. Concepts are distorted through failure to collect, to correlate and to utilize information from all sources—in short, to resort to biology for guidance in laboratory and clinic. Presentation and discussion of correlated data will advance working knowledge of fundamental processes productive of health and disease and simultaneously disclose therapeutic principles of widest applicability. The council of the Section on Surgery, General and Abdominal, urges members of the Canadian and the American Medical Association, and not only surgeons, to present papers at the meeting to be held June 10-14, 1935, that will emphasize biologic concepts of health, pathogenesis and therapy.

Processes productive of health are the formation and equable distribution of an adequate volume of good blood. Bernard showed that blood and lymph constitute the internal environment of a body and that balance in and among its constituents is compatible (imbalance incompatible) with health. Numbers of cellular and volumes of noncellular constituents fluctuate with an individual's activities, but alterations do not exceed wholesome limits because of automatic adjustments (Cannon). Similarly, myocardial and vascular activities fluctuate and are restricted within wholesome limits by pressor and depressor automatic adjusting influences. Processes productive of disease cause anomalies (unwholesome surpluses and deficits) in the constituents of the blood or impair the balance in myocardial

or vascular functions. Pathogenic processes, exclusive of those occasioned by trauma, temperature, electricity and so on are primarily nonantigenic or nonparasitic or primarily antigenic or parasitic.

Nonantigenic processes arise from derangement in the divers automatic adjustments constituting the regulatory organization of a body. Consequences thereof are manifest; e. g., in polycythemia vera and in pernicious anemia; in hyper- and hypothyroxinemia and -cortinemia in hyper- and hypo-glycemia, -calcemia, and in the unwholesome sympathinemia, parasympathinemia and adreninemia, provocative of cardiac, vascular and other visceral disturbances (malignant hypertension, peptic ulcer, and the like).

Antigenic processes are caused by presence in blood or lymph of a pathogenic excess of toxic egesta of parasites or of comparable noxious substance (antigens) that cause an overproduction of leukocytes and an elaboration of antibodies. Antigens are in the internal environment from soon after establishment of a fetal circulation until death. Health is maintained by an increased production of leukocytes and an elaboration of antibodies, which in effect produces an antigen-antibody balance. Pathogenic excess of antigens occurs when there is a deficit in antibodies and in some leukocytes and a surplus in other leukocytes, which together create anomalies. Disturbances in myocardial and vascular activities are frequently secondary complications of primarily antigenic processes.

Progressing alterations in the constituents of the blood that have not exceeded wholesome limits usually occur as susceptibility to nonantigenic and antigenic diseases in developing. Anomalies are present when a disease is incipient, progress as the disease advances and regress as it recedes, to disappear with recovery. The practical value of recognition and interpretation of alterations in blood in conjunction with all other data is great. Thus can be recognized earlier the needs for prevention and treatment and the indications for efficacious measures. It is not yet possible to recognize consistently and to interpret accurately alterations approaching anomalies or to interpret correctly existing anomalies in the cellular constituents. Not all constituents of plasma are known and only in a part of those recognized can the volume be estimated accurately. Investigation and discussion of these matters are requisite to a sustained advance in clinical medicine. Authors are invited to submit summaries of their papers as soon as convenient to the secretary of the section, Dr. H. M. Clute, 605 Commonwealth Avenue, Boston, but not later than Jan. 1, 1935. Not all papers will be limited to the subjects indicated. Acceptances will be based on merit, priority and fitness as judged by the council to the end that the program shall, so far as possible be beneficial to all.

J. L. YATES, M.D., Milwaukee.

Chairman, Section on Surgery,
General and Abdominal.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

October 18. Keep Fighting Diphtheria, W. W. Bauer, M.D.
October 25. What Is a Serum? W. W. Bauer, M.D.
November 1. The Common Drinking Cup, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

October 16. Research in Medicine, A. C. Ivy, M.D.
October 23. Reading About Health, W. W. Bauer, M.D.
October 30. Diphtheria Must Go, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Dr. Vinsonhaler Retires from Practice.—Dr. Francis Vinsonhaler retired from active practice, September 1, to devote full time to his duties as dean of the University of Arkansas School of Medicine. Dr. Vinsonhaler has engaged in practice in Little Rock for forty-two years, and since 1927 has been dean of the medical school. He is also professor of medical ethics.

Society News.—The Mississippi County Medical Society entertained members of the faculty of the University of Tennessee College of Medicine, Memphis, in a reunion at Blytheville, September 14; among the speakers were Drs. Benjamin F. Turner, James B. McElroy, William Battle Malone, Joseph A. Crisler, James L. Andrews, Elmer E. Francis and Eugene M. Holder, and Orren W. Hyman, Ph.D. At a meeting of the Greene County Medical Society, September 13, Dr. Jones H. Lamb, Paragould, spoke on the treatment of pneumonia.

CALIFORNIA

Symposium on Heart Disease.—The heart committee of the San Francisco County Medical Society will hold its fifth annual symposium on heart disease, November 21-22. No fee is charged for the course, which is open to all physicians who are interested in diseases of the heart. Further information may be obtained from Dr. Jay Marion Read, 490 Post Street, San Francisco.

Society News.—Ralph W. Chaney, Ph.D., Berkeley, delivered an address before the San Francisco County Medical Society, October 9, entitled "Studying the Oldest Man in Asia," and Dr. Frank B. Young, Long Beach, on "Evidences of Diseased Conditions in Ancient Organisms." At a meeting of the Los Angeles Surgical Society and the Hollywood Hospital staff, October 12, papers were presented by Drs. Arthur E. Guedel on "Cyclopropane Anesthesia"; Joseph W. Warren, "Radiographic Study of the Breast," and Gurn T. Stout, "Physiologic Control in the Use of Gastro-Intestinal Drainage Apparatus."

Research Study Club.—The fourth annual clinical course of the Research Study Club of Los Angeles will be presented in Los Angeles, January 21-February 1. Guest lecturers in otolaryngology will be Drs. Georges Portmann of Bordeaux, France, and John F. Barnhill, Miami Beach, Fla. Guest speakers in ophthalmology will be Drs. Webb W. Weeks, New York, and Harry S. Gradle, Chicago. The courses in dissection, given by Dr. Barnhill, will be offered in conjunction with the University of Southern California Medical School. The fee for the entire course will be \$50. Further information and a detailed program may be obtained from Dr. Donald S. Dryer, 2007 Wilshire Boulevard, Los Angeles.

COLORADO

State Medical Election.—Dr. Walter W. King, Denver, was chosen president-elect of the Colorado State Medical Society at its annual meeting in Colorado Springs, and Dr. Nicholas A. Madler, Greeley, was installed as president. Vice presidents elected are Drs. Royal H. Finney, Pueblo; Charles E. Lockwood, Montrose; Fred A. Humphrey, Fort Collins, and Guy E. Calonge, La Junta.

DISTRICT OF COLUMBIA

Health at Washington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 29, indicate that the highest mortality rate (18.2) appears for Washington, and the rate for the group of cities as a whole was 10.1. The mortality rate for Washington for the corresponding period last year was 13 and for the group of cities, 10. The annual rate for eighty-six cities for the thirty-nine weeks of 1934 was 11.4 as compared with a rate of 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

GEORGIA

Tuberculosis Program.—With funds made available by the FERA, the Georgia State Department of Health is carrying out a program to locate and place under care patients suffering with tuberculosis. Ten field nurses and two supervisors have been added to the staff. The nurses organize clinics and do follow-up work in the ten districts into which the state was divided, helping not only to secure medical care for patients but also to obtain financial assistance and to rehabilitate them. In addition, through the family physician the nurses schedule 300 patients a week for examination by the x-ray unit of the state board.

Society News.—Dr. Guy J. Dillard, Columbus, read a paper before the Randolph County Medical Society at Cuthbert, September 6, on pulmonary tuberculosis. The Burke-Jenkins-Screven Counties Medical Society was addressed at Millen, September 6, by Drs. Robert L. Miller, Waynesboro, on coronary thrombosis, and James M. Byne Jr., Waynesboro, angina pectoris. A paper on acute poliomyelitis was presented before the Ware County Medical Society at Waycross, September 5, by Dr. John E. Penland. Dr. James L. Campbell, Atlanta, conducted a symposium on cancer before the Ninth District Medical Society at Gainesville, September 19, and Dr. James E. Paullin, Atlanta, discussed rheumatoid arthritis. Dr. Hugo Robinson, Albany, was elected president of the Georgia Health Officers' Association in Atlanta, August 30; Dr. Silas C. Rutland, La Grange, vice president, and Dr. Millard E. Winchester, Brunswick, secretary, reelected. At a meeting of the Fulton County Medical Society in Atlanta, October 4, Dr. Ebert Van Buren discussed "Pulmonary Tuberculosis Complicating Diabetes Mellitus."

IDAHO

State Medical Election.—Dr. Joseph H. Crampton, Lewiston, was chosen president-elect of the Idaho State Medical Association at its annual meeting in Lewiston, September 8, and Dr. Charles R. Scott, Twin Falls, was installed as president. Dr. Harold W. Stone, Boise, was reelected secretary-treasurer. The next annual meeting will be held in Boise.

ILLINOIS

Society News.—Dr. Harry R. Hoffman, Chicago, addressed the Randolph County Medical Society at Menard, September 27, on mental defects in criminals. Speakers before the Adams County Medical Society in Quincy, October 8, were Drs. Dan G. Stine, Columbia, Mo., on "Value of the Leukocyte Count in Pulmonary Tuberculosis," and Marcus Pinson Neal, Columbia, Mo., "The Leukocyte Blood Pictures in Acute Infections." At a meeting of the Will-Grundy County Medical Society at Joliet, September 26, Dr. Francis L. Lederer, Chicago, spoke on "Cancer About the Head and Neck—A Critical Analysis of the Available Therapeutic Measures." Dr. Frank F. Maple, Chicago, addressed the Fulton County Medical Society, September 27, on "Septic Abortion." Dr. Gilbert FitzPatrick, Chicago, discussed cancer before the Marion County Medical Society, September 27. Dr. Aaron Arkin, Chicago, addressed the Rock Island County Medical Society in Moline, September 11, on lesions of the gastrointestinal tract. Dr. Cyrus C. Sturgis, Ann Arbor, addressed the Peoria City Medical Society, October 2, on "Treatment of Secondary Anemias."

Chicago

Lay Educational Program.—Heart disease will be the theme of an educational program to be presented for the public, October 17, in the Medical Arts Building, under the auspices of the Chicago Medical Society. Dr. Iago Galdston, New York, will discuss "The Nature of the Increase of Heart Disease," and Dr. Newell C. Gilbert, "The Principal Causes of Heart Disease."

Dr. Moore to Lecture at Illinois.—A series of graduate lectures on "The Physiological Basis of Individuality in the Early Embryo" will be delivered at the University of Illinois College of Medicine, October 15-20, by Arthur R. Moore, Ph.D., professor of general physiology, University of Oregon, Eugene. Dr. Moore will present the following lectures on the dates indicated:

The Cytoplasm as a Biophysical System, October 15.
Special Cytoplasmic Structures, October 16.
The Individual in Motor Reactions of Simple Forms, October 17.
Phylogenetic Beginnings of the Central Nervous System, October 18.
Modifiability of Reactions, October 18.

Society News.—At a meeting of the Chicago Gynecological Society, October 19, the speakers will be Drs. Fred L. Adair and M. Edward Davis on "Chronic Atrophic Dermatitis of the

Vulva," and Carl Henry Davis, Milwaukee, "Use of the Colposcope in the Diagnosis of Cervical Lesions." Dr. Fred J. Taussig, St. Louis, will be the society's guest at dinner and the meeting and will discuss the papers. A clinical meeting will be conducted at Michael Reese Hospital in the morning. —Dr. Arthur Steindler, Iowa City, addressed the Chicago Orthopedic Club, October 12, on "Tuberculosis of the Wrist." Other speakers included Drs. Frank G. Murphy on "Traumatic Rupture of Quadriceps Tendon Above the Patella with Surgical Repair" (case presentation), and Edson B. Fowler, Evanston, Ill., "Internal Fixation of Fractures with Horn: Cortico-Medullary Technic."

MAINE

Society News.—Speakers before the Hancock County Medical Society at Bar Harbor, August 15, were Drs. John J. Moorhead, New York, on "Traumatic Surgery," and David Riesman, Philadelphia, "Subacute and Chronic Bronchopneumonia and Its Relation to Disense of the Upper Air Passages." —A symposium on thoracic disease was presented before the Washington County Medical Society in Calais, August 24, by Drs. Bertram L. Bryant, John L. Johnson and Theodore S. Moise, Bangor. —At a recent meeting of the Androscoggin County Medical Society Dr. William H. Watters, Boston, discussed asthma with special reference to the nasal factors.

MICHIGAN

New County Medical Society.—The Van Buren County Medical Society was created at a dinner meeting, recently, when physicians of the county were guests of the county health department and the W. K. Kellogg Foundation. Dr. Arthur A. McNabb, Lawrence, was chosen president, and Dr. John F. Itzen, South Haven, secretary.

Course for Rural Practitioners.—A course in differential diagnosis of communicable and infectious diseases was recently given at the Herman Kiefer Hospital, Detroit, for the physicians of Allegan, Barry and Eaton counties. The course, sponsored by the W. K. Kellogg Foundation, is the second of its kind. For the first, the foundation sent physicians from these counties to medical centers in Chicago and Rochester, Minn. Dr. John E. Gordon, epidemiologist, Detroit Department of Health, conducted the course with the assistance of Drs. Ray S. Dixon and Joseph A. Kasper, and Henry F. Vaughan, Dr.P.H., health commissioner of Detroit.

Society News.—Dr. Roseo G. Leland, Chicago, will address the Wayne County Medical Society, Detroit, October 15, on "Sickness Insurance Is Not the Remedy." A symposium on typhoid was conducted before the society, October 1, by Henry F. Vaughan, Dr.P.H., Dr. Joseph A. Kasper and Dr. Hugo A. Freund. —Dr. William H. Gordon, Detroit, recently addressed the Oakland County Medical Society on "Malignant Neutropenia, Its Etiology and Treatment." —A symposium on infantile paralysis was presented before the Livingston County Medical Society, September 7, by Drs. Clarence D. Barrett, Lansing, Raymond W. Waggoner and Clarence H. Snyder, Ann Arbor.

MISSOURI

Personal.—Dr. Frank M. Grogan, superintendent of the state hospital at St. Joseph, has been appointed to a similar position with the City Sanitarium, St. Louis, succeeding Dr. George A. Johns. The latter became superintendent of the St. Louis Training School, following the resignation of Dr. James Lewald, who plans to go to Laurel, Md. —Dr. Clifford L. Van Pelt, Paola, has been appointed health officer of Miami County, succeeding his father, the late Dr. Levi A. Van Pelt.

Society News.—Speakers before the St. Louis County Medical Society in Clayton, September 26, were Drs. James F. McFadden, on "Functional Nervous Diseases as Met in Daily Practice," and Joseph Hoy Sanford, "Urology and Its Relationship to the General Practitioner." —Speakers before the St. Louis Medical Society, September 25, were Drs. Quitman U. Newell, who presented "A Statistical Study of a Series of Corpus Uteri Carcinoma"; Samuel D. Katz, "Acute Intra-Abdominal Vascular Conditions," and Thomas K. Brown, "Puerperal Infection."

Candidates for Congress.—Dr. James A. Logan, Warsaw, secretary of the Benton County Medical Society, was selected as Republican nominee for Congress from the second congressional district, and Dr. William H. Breuer, St. James, was selected as nominee from the eighth district at a meeting of the district committee in Jefferson City, August 28.

Dr. Logan is mayor of Warsaw and has twice been a member of the state legislature from Benton County. Dr. Breuer is a past president of the Missouri State Medical Association, a councilor of the twenty-seventh district and a vice chairman of the council.

NEVADA

State Medical Meeting and Election.—The thirty-first annual session of the Nevada State Medical Association was held in Reno, September 21-22, with headquarters at the Hotel Golden. The program was as follows:

Dr. Miley B. Wesson, San Francisco, Urinary Calculi, Cause and Treatment.

Dr. Colin C. McRae, San Francisco, Treatment of Fractures of the Forearm.

Dr. George L. Stivers, Fall River, Mass., Types of Pleuropulmonary Adhesions.

Dr. William P. Lucas, San Francisco, Problems of Growth and Development During Childhood.

Dr. Richard O. Schofield, Boulder City, Industrial Work at Boulder Dam.

Dr. Lewis Michelson, San Francisco, Stricture of the Uterus in the Female: Its Diagnosis and Treatment.

Dr. William W. Washburn, San Francisco, Malignancies of the Gastro-Intestinal Tract.

Dr. George N. Hosford, San Francisco, Present Status of the Treatment of Strabismus.

Dr. Richard O. Schofield, Boulder City, was chosen president-elect and Dr. Edward E. Hamer, Carson City, was installed as president. Dr. Horace J. Brown, Reno, was reelected secretary and Elko was chosen as the place for the 1935 session.

NEW YORK

Society News.—Dr. Walter A. Reynolds, Albany, addressed the Medical Society of the County of Albany, September 26, on "Geriatrics." —Dr. Gerard H. Cox, Glen Cove, addressed the Medical Society of the County of Nassau, September 22, on "Correction of Facial Deformities by Plastic Surgery." —Dr. Lewellys F. Barker, Baltimore, addressed the Medical Society of the County of Monroe, Rochester, October 4, on "Contemporary Views of Angina Pectoris and Coronary Thrombosis." The society in cooperation with the Rochester Hospital Council has recently adopted regulations governing admissions to outpatient departments of hospitals. —Dr. Thomas Parran Jr., Albany, state health officer, was the guest speaker at the annual meeting of the Tuberculosis and Health Association of Rochester and Monroe County, September 26, on "Accomplishments and Possibilities in Conserving Health."

New York City

First Harvey Lecture.—Dr. William B. Castle, associate professor of medicine, Harvard University Medical School, Boston, will give the first lecture this season before the Harvey Society, October 18, at the New York Academy of Medicine, on "The Etiology of Pernicious and Related Macrocytic Anemias."

Schneller Returned to Prison.—Max R. Schneller, also known as Carl R. Elfes, who was sentenced last April to serve a year in New York County Penitentiary for illegal practice of medicine, was again in court, October 2, charged with escaping from prison. He was found guilty, sentence was suspended and he was returned to prison to serve out his original sentence. Schneller escaped from the prison on Riker's Island, July 23, and was found the next night in the Bronx. He spent the intervening time in the psychopathic ward of Bellevue Hospital, where physicians said he was suffering from hysteria, and in the Bronx County jail.

Personal.—Dr. William Salant, Cold Spring Station, has been elected guest professor of pharmacology at the New York Homeopathic Medical College and Flower Hospital. —Dr. G. Canby Robinson, who recently received a year's leave of absence as director of the New York Hospital-Cornell University Medical Center, has been appointed visiting professor of medicine at Peiping Union Medical College, Peiping, China. He will sail by way of Europe November 1. —Dr. Marie P. Levinson Warner presented a paper at the recent congress of the International Medical Women's Association in Stockholm on "The Status of Birth Control in the United States." —Dr. Samuel Silbert addressed the French Congress of Surgery, October 8-12, on "Surgery of the Adrenal Gland in Relation to the Treatment of Thrombo-Angiitis Obliterans."

NORTH DAKOTA

New Medical Board.—New members appointed to the North Dakota State Medical Board include Drs. John E. Hetherington, Grand Forks; Jesse W. Bowen, Dickinson, and William C. Fawcett, Starkweather.

OHIO

Society News.—Dr. Herrman L. Blumgart, Boston, addressed the Academy of Medicine of Cincinnati, October 8, on "Total Removal of the Thyroid."—Common infections of the eye, the skin and the genito-urinary tract were discussed by Drs. Arthur M. Culler, Elmer C. Loomis and Raymond E. Tyvand, respectively, at the first fall meeting of the Montgomery County Medical Society, Dayton, September 28.

Institute on Cardiovascular Disease.—The Heart Council of Greater Cincinnati and the Academy of Medicine of Cincinnati announce the second annual institute on cardiovascular disease under their joint auspices, to be held October 29. The opening session will be held at the Cincinnati General Hospital, where the medical, pediatric and pathology departments will present material dealing with different phases of circulatory disorder. Visiting guests and local physicians will conduct clinics and present cases at several other hospitals. At 4 o'clock in the afternoon a meeting of interested physicians will be called to consider organization of a regional heart association. In the evening the academy will present a symposium on cardiac pain, with Drs. Louis Hamman, Baltimore, and Walter W. Hamburger, Chicago, as speakers.

OREGON

State Medical Election.—Dr. George A. Massey, Klamath Falls, was named president-elect of the Oregon State Medical Society at the annual session in Corvallis, September 30. Dr. Albert M. Webster, Portland, was installed as president and other officers elected were Drs. Karl H. Martzloff, Portland, William J. Weese, Ontario, and R. Wayne Espersen, Bend, all vice presidents, and Blair Holcomb, Portland, secretary. The 1935 convention will be held in Gearhart.

PENNSYLVANIA

Society News.—Dr. Charles Geschickter, Baltimore, addressed the Dauphin County Medical Society, Harrisburg, October 9, on "Breast Tumors—Their Diagnosis, Treatment and Etiology in Relation to Ovarian Hormones."—Dr. Bernard P. Widmann, Philadelphia, addressed the Harrisburg Academy of Medicine, September 18, on "Evaluation of Treatment Procedure for Cancer with Special Reference to X-Ray and Radium."

Philadelphia

Society News.—Drs. Joseph V. Klauder and Lewis K. Ferguson addressed the Philadelphia Academy of Surgery, October 1, on "Erysiploid: Bacillus of Swine Erysipelas Infection—a Disease of Industry" and "Ambulatory Ligation in the Treatment of Varicose Veins," respectively.—A symposium on "Newer Concepts of Renal Physiology and Bright's Disease" was presented before the College of Physicians of Philadelphia, October 3, by Drs. Alfred N. Richards, Baldwin H. E. W. Lucke, Eugene M. Landis and Harold W. Jones.—Dr. Charles P. Noble, Radnor, among others, addressed the Obstetrical Society of Philadelphia, October 4, on "Dyspareunia: A Psychoneurosis."—Dr. Samuel R. Skillern Jr. was elected president of the Philadelphia Laryngological Society at the annual meeting in June, and Dr. Benjamin H. Shuster, secretary.

Saturday Morning Clinics Revived.—The Philadelphia General Hospital has inaugurated a series of clinics to be given by members of the staff on Saturday mornings from 11 to 1 o'clock. The clinics, which are a revival of a former custom, will be arranged and conducted in the interests of the general practitioner and will be open to the medical profession and medical students. They will cover a broad variety of medical and surgical subjects, with demonstration of cases, but not with operative clinics. At the first meeting, October 6, Drs. David Riesman and Thomas M. McMillan discussed "Recognition of the Failing Heart" and Dr. Edward A. Strecker, "The Neuroses as Encountered by the General Practitioner." The remaining programs for October are as follows:

October 13: Dr. James W. McConnell, Disturbances of Locomotion and Their Meanings; Dr. Arthur C. Morgan, Physical Signs of Pulmonary Tuberculosis.

October 20: Dr. Hubley R. Owen, Fractures of the Long Bones; Dr. Daniel J. McCarthy, The Cerebral Apoplexies.

October 27: Dr. Robert G. Torrey, Rheumatic Heart Disease; Dr. Earl D. Bond, Onset of Encephalitis in General Practice.

Dr. Russell S. Boles is chairman of the committee that has arranged the Saturday morning clinics.

Pittsburgh

Personal.—Philip B. Hadley, Ph.D., formerly associate professor of bacteriology, University of Michigan Medical School, Ann Arbor, and Arthur P. Locke, Ph.D., former chief of

biochemical research at St. Luke's Hospital, Chicago, have been appointed to the research staff of the Institute of Pathology of Western Pennsylvania Hospital. The institute is the medical research affiliate of the Mellon Institute for Industrial Research.

SOUTH CAROLINA

Personal.—Dr. William A. Carrigan, Conway, has been appointed health officer of Beaufort County.—Dr. Leonidas M. Stokes, Walterboro, has been appointed a member of the South Carolina Board of Medical Examiners to succeed Dr. Joseph T. Taylor, Adams Run, resigned.

Founders Day Celebration.—The Medical College of South Carolina, Charleston, will hold its first celebration of Founders Day, November 8. A program of clinics has been arranged for the day and in the evening a banquet will be held at which Dr. Stewart R. Roberts, Atlanta, will deliver an address on "Neurocirculatory Asthenia." The institution is 110 years old.

Society News.—Bruce Mayne of the U. S. Public Health Service addressed the Columbia Medical Society, August 13, on "Modern Views of the Economic Control of Malaria."—At a meeting of the Ridge Medical Society in Batesburg, August 20, Drs. Eddie H. Thomason and Leo F. Hall, State Park, presented papers on "Pneumothorax in Treatment of Tuberculosis" and "Childhood Type of Tuberculosis," respectively. Dr. William W. King, Batesburg, discussed "Dysentery, Bacillary and Amebic."

TEXAS

Personal.—Drs. James W. Bass, city health officer of Dallas, and Horace E. Duncan, health officer of Dallas County, were guests of honor at a dinner given by the Dallas Public Health Institute, September 11.

Society News.—Drs. Curtice Rosser and Samuel A. Shelburne will address the Dallas County Medical Society, October 25, on "Cancer of the Anal Canal" and "Etiology of Heart Disease in Texas," respectively.—Speakers at a meeting of the Nine Counties Medical Society (Medina-Uvalde-Maverick-Val Verde-Terrell-Edwards-Real-Kinney-Zavala counties) in Castroville, August 10, included Drs. Isaac Dudley Jackson, San Antonio, on "Treatment of Various Types of Malignancies"; Thomas M. Johnson, Del Rio, "The Doctor's View of Contraception," and William G. Brymer, Castroville, "Hydrochloric Acid Intravenously as a Therapeutic Measure."

WEST VIRGINIA

Society News.—Dr. William W. G. MacLachlan, Pittsburgh, addressed the Ohio County Medical Society, Wheeling, October 5, on "Experimental and Clinical Observations on Pneumococcal Pneumonia."—Dr. Paul Titus, Pittsburgh, addressed the Monongalia County Medical Society, Morgantown, September 4, on "Causes and Treatment of Sterility."—Drs. Virgil E. Holcombe and Walter W. Point, Charleston, were speakers at a meeting of the Kanawha Medical Society, September 11, on "Lesions of the Esophagus" and "Management of the Average Normal Obstetrical Delivery," respectively.—Dr. Royd R. Sayers, Washington, D. C., addressed the Fayette County Medical Society, Oak Hill, September 18, on industrial hygiene and sanitation. Members of the Kanawha and Raleigh County medical societies were guests.—Interns from three Huntington hospitals presented case reports at a meeting of the Cabell County Medical Society, September 13: Drs. Clarence H. Plymale, on "Acute Glossitis"; Charles F. Davis Jr., "Coronary Occlusion Without Pain," and Wilber V. Bradshaw, "Stab Wound of the Liver."

Wassermann Tests for Barbers and Beauticians.—A ruling which denied a license to any barber or beautician found to have a positive Wassermann test was recently modified by the State Committee of Barbers and Beauticians. The final decision was that any applicant found to have a positive reaction to the test may have forty-five days in which to take treatment. At the expiration of that time he or she may present to the state health commissioner a certificate from a licensed physician who is in good standing in his county or state medical society, stating that the applicant has been under active treatment during the forty-five-day period. The applicant must show that he is free from clinical signs of syphilis. The health commissioner may then issue a certificate of registration with the proviso that the applicant must file with the health commissioner every six months a certificate from a physician stating that he or she has been under the care or supervision of that physician during the period. Failure of

the applicant to carry out this provision shall result in the revoking of the certificate granted. When so revoked, it may be restored at the discretion of the committee.

GENERAL

Special Board Examinations.—The American Board of Otolaryngology will hold an examination in San Antonio, Texas, November 13, during the meeting of the Southern Medical Association. Sixty-two candidates were examined in Chicago, September 8, of whom thirteen failed or were conditioned. During 1935 the board will hold examinations in New York City during the annual session of the American Medical Association in June and in Cincinnati in the fall during the meeting of the American Academy of Ophthalmology and Otolaryngology.

Society News.—The Inter-State Postgraduate Medical Association of North America will hold its annual assembly in Philadelphia, November 5-9. —Dr. Louis E. Phaneuf, Boston, was chosen president-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at the annual meeting in White Sulphur Springs, W. Va., in September, and Dr. Marvin Pierce Rucker, Richmond, Va., became president. Dr. William H. Weir, Cleveland, was elected vice president and Dr. Arthur M. Meidenhall, Indianapolis, reelected secretary. Next year's meeting will be held in Skytop, Pa., September 16-18.

Ceremony in Jerusalem to be Broadcast.—A description of a ceremony in Jerusalem at which the cornerstone will be laid for the first medical center and graduate medical school in Palestine will be broadcast Tuesday, October 16, as a feature of the annual convention of Hadassah, the Women's Zionist Organization of America, in Washington, D. C. The new institution, which will be affiliated with the Hebrew University, will be built by Hadassah and the American Jewish Physicians Committee. On its staff will be a number of German scientists who have gone to Palestine to continue teaching and research.

Auxiliary Board Meeting.—Twenty members of the board of directors of the Woman's Auxiliary to the American Medical Association attended a meeting in Chicago, September 22. The revisions committee submitted a new constitution and by-laws which were approved unanimously. Members of this committee are Mrs. John A. McCaw, Denver, chairman, Mrs. T. Mitchell Burns, Denver, Mrs. J. Newton Hunsberger, Norristown, Pa., Mrs. William Wayne Babcock, Philadelphia, and Mrs. Arthur B. McGlothlin, St. Joseph, Mo. The Woman's Auxiliary to the Chicago Medical Society entertained the directors at luncheon.

Directory of Health Officers.—The U. S. Public Health Service has published a directory of the full time county health officers in the United States, compiled from data furnished by state health officers as of Jan. 1, 1934. The list contains more than 500 names of health officers of single counties and in addition shows a number of those in charge of units of two or three counties. Some states are organized on the district basis or with the town as a unit and in many cases the health officer's position is on a part time basis. Similar directories have been published annually since 1922, except for 1932, when funds were not available. The list appears in *Public Health Reports* for September 28, page 1134.

Association of American Medical Colleges.—The forty-fifth annual meeting of the Association of American Medical Colleges will be held in Nashville, Tenn., October 29-31, with headquarters at the Andrew Jackson Hotel. A symposium on graduate teaching will be presented by Drs. William McKim Marriott, St. Louis; Thomas Ordway, Albany, N. Y.; Willard C. Rappleye, New York; Frank R. Ober, Boston; John B. Youmans, Nashville, and Leroy E. Parkins, Boston. Among other speakers will be:

Dr. Ray Lyman Wilbur, Stanford University, Calif., Inspection of Medical Schools and Survey of Medical Education.

Dr. Charles C. Macklin, London, Ont., Relationship of Histology to Pathology.

Dr. John J. Mulowney, Nashville, Effect of the Depression on Medical Students of the Negro Group and on Internships Available.

Importations of Radium.—During the past ten years the United States has imported less than one third of a pound of radium, for which more than \$6,000,000 has been paid. Radium is one of the few commodities that has not been affected by economic conditions, according to the U. S. Department of Commerce. In fact, the heaviest importations have been made since 1929. Imports were fairly steady during the past ten years at from 125 to 170 grains valued at from \$400,000 to \$575,000 per annum until 1930. In that year the amount increased to 260 grains valued at \$925,000, the largest amount

ever imported in one year. In 1933, 179 grains valued at \$576,000 was imported at an average invoice price of \$3,217 per grain and during the first seven months of the current year \$400,000 worth was purchased abroad, it was stated. Most radium imports come from Belgium, which controls the world's principal supply in the Belgian Congo, but smaller consignments are received from Canada, where radium ore was discovered in 1930, and elsewhere.

Government Services

Bayer Company Ordered to Cease Unfair Competitive Practices

The Federal Trade Commission has issued an order to the Bayer Company, Inc., New York, to cease and desist from using unfair competitive practices in the sale of its acetylsalicylic acid tablets. The company is directed to cease using language in its printed advertising or radio broadcasting stating or giving the impression that "aspirin" is a trademark of the Bayer company. This order does not apply to advertising or packages to be sold in foreign countries in which the word "aspirin" has been held to be the Bayer Company's valid trademark. A list of seventeen representations are given in the commission's order, which the company is not to use unless properly qualified, limited or explained. Among them are such expressions as "It cannot harm the heart," "Bayer aspirin is always safe," "Take Bayer aspirin for any ache or pain, and take enough to end it. There is no harm in its free use," "Genuine Bayer Aspirin tablets promptly relieve headaches, neuritis, colds, toothache, neuralgia, sore throat, lumbago, rheumatism." The order is not to be construed, however, as preventing the company from making proper therapeutic claims or recommendations based on reputable medical opinion or pharmaceutical literature, it was stated. The third prohibition in the order is one providing that the company shall not in any way represent that acetylsalicylic acid tablets manufactured by other firms are counterfeit or spurious. The company waived a hearing and did not contest the proceeding of the commission.

Medical Research Correlating Bureau—A Warning

Recently a number of complaints have been received by the Army Medical Library directly or indirectly concerning the "Medical Research Correlating Bureau of Washington, D. C." A copy of a receipt for \$10 from a Mr. J. J. Sharkey, representative of this "Bureau," has been sent to the Library. He states in effect that for \$30 the "Bureau" will furnish "routine evaluated reports" secured by and through the "facilities of the Surgeon General's Library," currently by mail and later the same in printed form with a suitable binder. The complaints are that money has been accepted by this representative and nothing sent in return and letters not answered.

From time to time in the past complaints of this nature have been made to the Army Medical Library regarding various unofficial "services," which are supposed to furnish certain abstracts, answer enquiries and otherwise serve their subscribers. It should be obvious that such "bureaus" and individuals in no way represent the Army Medical Library. The Library is a national institution and its collections are available to those who come to its reading rooms and through the inter-library loan system to physicians, dentists, veterinarians and others throughout the country. Persons who abstract the medical literature for a fee are as much entitled to use the library as others. The Library, however, objects to the implication that any "bureau" or other unofficial organization or individual has access to material in the Library that is not open to all readers. Usually such organizations and individuals are careful not to make the direct statement that such is the case, but they at times imply as much.

The Library, except for the letters of complaint above mentioned, has never heard of the "Medical Correlating Bureau" nor of the individual acting as its representative.

CORRECTION

The Agglomerular Kidney.—In an editorial with this title, THE JOURNAL, Sept. 22, 1934, page 922, the statement "within sixty days after partial urethral obstruction plus unilateral exposure to x-rays" should be changed to read "within sixty days after partial ureteral obstruction or unilateral exposure to x-rays."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 14, 1934.

The British Association for the Advancement of Science

At the annual meeting of the British Association for the Advancement of Science, held at Aberdeen, a number of subjects of interest especially to physicians were discussed.

THE MECHANISM OF COLOR SENSATION: COLOR BLINDNESS

In the Section of Physiology, the president, Dr. H. E. Roaf, professor of physiology in the University of Liverpool, devoted his address to a new view of color sensation. His tentative conclusion was that to explain the phenomena of color vision three groups of nerve fibers passing to the brain must be assumed. Helmholtz had suggested that the differentiation is due to three photo-active substances acted on by the long, medium and short wavelengths of the spectrum, respectively. The ranges of radiation which affected these three substances overlapped so that, for example, some rays affected all three. But there was no evidence of the presence of three photo-active substances, only one (rhodopsin or visual purple) having been found. Moreover, in order to explain color blindness it had to be assumed that one photo-active substance was not absent but that the range of activity was shifted, so that the one substance was activated by the range which was formerly active on two substances. It did not seem likely that such a transformation would occur. The president thought that "normal vision might be due to a receptor which gave rise to a red sensation, one which gave rise to a blue sensation, and one which gave rise to a not-blue, not-red sensation, which of course corresponded to green. The wavelengths that stimulated the several receptors were not known. The real difference between the various hypotheses was the extent and region of the spectrum which stimulated the end organs."

A NEW TEST FOR THE WATERING OF MILK

At a joint meeting of the chemistry and agriculture sections, Dr. J. F. Tocher criticized the freezing point test now used to detect the watering of milk, for which the claim is made that it can detect 5 per cent of watering. Dr. Tocher thought that this test was too unreliable to be the basis of convictions for adulteration. There was no standard for the freezing point of milk, and analytic authorities were not yet agreed as to the nearest approach to the freezing point of water that occurred in genuine samples of milk. Dr. Tocher brought forward his "constituents test," which is based on his discovery that, when solids-not-fat percentages are high, the proportions of the individual constituents differ from the relative percentages in the cases in which the solids-not-fat percentages are low. Therefore rich milk when watered will show on an average different proportions of the constituents from those of poor milk. The problem is one of probability. On the basis of analyses of 474 samples of milk from individual cows, he solved an equation that gave the relations of the four chief constituents to the total solids other than butter fat. The predicted solids were found to approximate closely to the actual solids in samples from individual cows. But when a sample was watered the predicted values differed significantly from the actual values. Reverting to the freezing point test, Dr. Tocher was grieved that judges were misled by witnesses who failed to recognize their responsibilities and the gravity of statements that the accused, if innocent, were not in a position to rebut.

DIET AND DENTAL DISEASE

Mrs. May Mellanby gave some interesting applications of her doctrine of the importance of diet in the prevention of dental disease. She said that in spite of the excellent work of dentists there was more dental decay than ever in the world. Sad to relate, educated people suffered more than natives living their primitive life. But when such natives came into contact with civilization their teeth began to suffer. The Eskimos had beautiful teeth—only 3 per cent were said to suffer. The primitive Negro of the tropics had white pearly teeth free from decay, but his descendants in the United States were almost as prone to dental disease as Europeans. Mrs. Mellanby said that wrong diet (mainly deficiency of vitamin D) and lack of sunshine especially in early life were the primary causes of caries and pyorrhea. Cereals, including oatmeal and maize, were harmful and anticalcifying foods. The Eskimo had good teeth because in his natural condition he hardly ate cereals and his diet was rich in animal fat, with which vitamin D was associated. It was true that the diet of natives in tropical countries included much cereal, but most of, if not all, their skin was exposed to the sun's rays and the necessary vitamin was synthesized in their bodies. Dental decay was prevalent in countries such as England because cereals were the cheapest food, there was little sunshine, and what there was was not allowed to play on either the body or the food.

Crossing Places for Pedestrians

The latest measure for the prevention of road casualties—the provision of marked crossing places for pedestrians—has been highly successful. It is not an absolute safeguard, for persons have already been killed at these safety lanes. But an accident at them greatly increases the responsibility of the motorist. Pedestrians can signal that they are about to cross, and it is the duty of the motorist to slow down at every crossing and exercise every care. In case of an accident it is no excuse for him to say that he did not see the pedestrian step off the sidewalk. If pedestrians cross at these appointed places they have the law behind them. It is proposed to warn them that if they cross at other places they do so at their own peril. These crossings are not equipped with automatic signals nor are they under the control of traffic officers. Crossings of the latter type have for some time been in existence at important road junctions.

The British Medical Association in Conflict with a Scheme of Contract Practice

A long-standing dispute exists in South Wales between the Caermarthenshire physicians and a local workmen's medical committee. It affects 18,000 workers and their dependents, and it originated in an attempt to reduce the subscription rates that had existed for some time. These were 40 cents per month for men with dependents and 20 cents for men without them. The workmen's committee intimated that it was dissatisfied with the services rendered and proposed that the rates be reduced to 32 and 12 cents respectively. At the same time, the rates of subscription by the workers would be maintained at the same level and the saving be used for supplying an ancillary specialist service, for which the staff would be recruited by the committee. Thus conflict with the local medical profession arose as to the terms of remuneration and the appropriate method for providing an ancillary specialist service. The existing contract was terminated. The physicians brought forward a scheme of their own for a public medical service, both general practitioner and specialist, at rates graded to suit the varying income of different classes. This scheme is on lines approved by the British Medical Association. The workmen's committee made the countermove of introducing into the area three physicians to do the work on a

salaried basis. But they are meeting with difficulties. One of the physicians, a member of the British Medical Association, soon resigned. Two specialists, previously under contract with the committee, also resigned. The British Medical Association holds that the counterstroke of the committee militates against the interests of the patients and professional tradition. It is not a far step from this system to the employment of salaried whole time physicians by the state for domiciliary treatment, which the association has always opposed. Also, a lay body is not fully equipped for the selection of a staff for the medical service. The workers are reminded of what happens when they quarrel with their employer and he seeks to introduce other workers to replace them. The association is not a trade union but it will support the professional well being of its members. The dispute was the subject of a report by the council to the representative body at the recent annual meeting of the association, when Sir Ewen MacLean said that if the association failed in this area it would be faced with a situation that would imperil the medical services in the industrial areas of South Wales.

Women in Medicine in Great Britain

The present position of women in medicine in Great Britain is shown in the educational number of the *British Medical Journal*. Coeducation is the general rule outside London, where the only schools open to women are the London School of Medicine for Women (which is confined to them) and, to a limited extent, University College Hospital and King's College Hospital. The total number of women medical and dental students in the medical schools of Great Britain in the session 1931-1932 was 1,272, while the corresponding number for males was 9,107. The London School of Medicine for Women (Royal Free Hospital) was established for the training of women in medicine in the days before there were any coeducational facilities for them, and it is still the principal school. Arrangements are made for the students of the school to obtain clinical instruction in special subjects at the National Hospital for Nervous Diseases, the Royal London Ophthalmic Hospital, the Great Ormond Street Hospital for Children, the Elizabeth Garrett Anderson Hospital, the South London Hospital for Women, the Cancer Hospital and the Central London Ophthalmic Hospital. The London School of Medicine is of great importance to medical women. All its postgraduate appointments are open to women as well as to men. There is a gynecologic unit under a woman professor, entirely staffed by medical women. There are now more than 5,000 women in the Medical Register. There is an increasing demand for the services of women physicians, and the proportion of them who make good is as high as that of their male colleagues, if not somewhat higher. In the municipal hospitals a number of new resident appointments to be held by medical women have been created, for which the supply is not equal to the demand. The number of women doing specialist and consulting work is rapidly increasing. In the large cities there are hospitals staffed entirely by women doing excellent work.

Records of Centenarians

As skepticism has been expressed with regard to the existence of centenarians, the following, taken from the *Times* of September 4, should be of interest: Mrs. Palmer of Ulundi Road, Blackheath, London, will celebrate her 107th birthday today, when she hopes to entertain some members of her family. She will have a birthday cake bearing 107 candles, presented by an old friend. Yesterday she gave a party to a number of intimate friends. Her mental faculties are still good and she takes a keen interest in her home. She looks with pride on a portrait of herself painted on the occasion of her 100th birthday, when she received a telegram of congratulation from the king.

Mrs. Elizabeth Miller of Murthly, Perthshire, celebrates her 104th birthday today. When she was born in 1830 a holly tree was planted in front of her home beside the river Tay. She still lives there and the holly tree flourishes.

Mrs. Caroline Merriott, an inmate of the Mayday Hospital, Thornton Heath (near London), will be 109 at the end of this month. It is noteworthy that all these centenarians are women, which is in keeping with the general rule of the greater longevity of women than of men.

PARIS

(From Our Regular Correspondent)

Aug. 29, 1934.

Congress of French-Speaking Pediatricians

The seventh congress of French-speaking pediatricians was held in Paris, under the chairmanship of Professor Ombrédanne. Scientists from Belgium, Ireland, Italy, Switzerland, Uruguay and other countries participated. In his address the president, who is a surgeon, called attention to the important rôle of operative procedures in infantile therapeutics; for example, in pyloric stenosis and disorders of the parathyroids. The pediatricians of the future will be worked out through close collaboration of physicians and surgeons. Three well defined topics constituted the agenda:

INFLUENCE OF CLIMATE ON THE DISEASES OF CHILDREN

Prof. Georges Monrquand of Lyons considered in his paper the medical repercussions associated with changes in the weather. He discussed the symptoms of "heat stroke" and "cold stroke," or chill, both of which are grave manifestations in children, because their heat-regulatory functions are insufficiently developed. He called attention to the effects of the overheated air of nurseries, cubicles and incubators, and of too much clothing. He reviewed the symptoms associated with barometric changes, changes in the intensity of the solar rays, changes in the electrical tension of the atmosphere, and complex changes in the weather (symptoms due to south winds, east winds, west winds and stormy weather). Some persons show a peculiar sensitiveness and even have "premonitions" in advance of other persons. These reactions include the simple irritative type, accompanied by nervousness and insomnia; the thermic type, and the grave type with dehydration. In "weather-sensitive" children the reactions are varied, the following manifestations having been observed: irritability, inattention, urticaria, pruritus, asthenia, insomnia, and respiratory disturbances. Then there are the symptoms associated with a change of climate, occurring in children transported from their customary milieu. Monrquand divides children into two classes, the "meteorosensitive" and the "meteororesistant," the former presenting a morbid state unsuitable to resistance (disturbances of the vagosympathetic system, hepatic involvement, endocrine insufficiency, tendency to colloïdoelastic reactions and to humoral flocculation). Meteoropathology is a recent science, but many facts that cannot be explained by ordinary pathology may some day be understood through the applications of meteoropathology. P. F. Armand Delille of Paris developed the same theme, discussing morbid constitutions as a result of which some children are sensitive to climatic changes: lymphatism, state of the rhinopharynx, vagosympathetic disequilibrium, sequels of previous infections, avitaminosis. He considered the effects of seaside and mountain climate. P. Woringer of Strasbourg read a paper on the influence of the seasons on the evolution of disease. He described the method for correctly establishing seasonal curves in their relations to medical statistics. These curves present nearly always an annual maximum and minimum, separated by an interval of six months. Measles occurs mainly between March and July, scarlet fever between January and

March, diphtheria between November and January, and epidemic meningitis and epidemic (lethargic) encephalitis between December and July, with the peak in March. Whooping cough and influenza may appear at any season. Rickets is most common during the months having the least sunshine. Woringer gave as an explanation for the seasonal nature of various epidemics the habitual alimentary regimen, and the phases of exaltation and depression in the functioning of the organs themselves. He endorses the hypothesis of Moro with regard to the hormonal crisis of springtime, the changes in the sun's rays, the temperature, the hygrometric condition of the air, and finally the common direction of the regional winds. The general discussion was participated in by Jaubert of Hyères, Gauthier of Geneva, Lereboullet of Paris, de Chabanolle of Chamonix, Bauza of Montevideo, Pechère of Brussels, Cathala and Marfan. Many further communications were presented.

RÔLE OF THE FILTRABLE TUBERCULOUS VIRUS IN PEDIATRICS

In their paper, Paiseau and Valtis defined a filtrable tuberculous virus and described the methods that enable one to observe its effects on experimental animals. They concluded that the technic of the diagnosis of tuberculosis by inoculation in the guinea-pig should be revised, for one is not justified in concluding that tuberculosis is not present because such inoculation is not followed by the appearance of the ordinary signs of the disease. Several unofficial communications followed this presentation.

OMPHALOMESENTERIC VESTIGES IN THE CHILD

The third topic, "Pathology of the Omphalomesenteric Vestiges in the Child," was discussed by Fèvre and Semclaigne of Paris. The accidents due to Meckel's diverticulum are not so rare as is supposed. Sixteen cases were observed in six years in the department of Professor Ombrédanne, and an operation was performed in twelve of the cases by one of the speakers. One finds Meckel's diverticulum six times more often in boys than in girls; it sometimes opens into the umbilical vesicle and sometimes into the intestine and sometimes is closed at both ends and forms a cyst. The paper gave a survey of the possible accidents, including ulcer of Meckel's diverticulum, hernia, cysts, intestinal perforations and peritonitis. The treatment is always operative. During the discussion, Mr. Perrot of Geneva stated that he had observed within two years five cases of lesions of Meckel's diverticulum.

BERLIN

(From Our Regular Correspondent)

Aug. 20, 1934.

Meeting of German Psychiatrists

At the recent annual session of the Deutscher Verein für Psychiatrie, in Münster, there was an extensive discussion on the practical application of the law for the prevention of posterity with hereditary defects. In his paper on "Clinical Psychiatry and Eugenics," the Munich psychiatrist Bumke pointed out that, among the methods for the prevention of posterity with hereditary defects, birth control must be absolutely rejected, since such methods, in view of the existing reduced birth rate, would be adopted chiefly in circles that are essentially eugenically sound and would thus bring about a further reduction in the birth rate. Also, if interruption of pregnancy on eugenic grounds should be permitted, the danger of abuses would be great. Bumke is of the opinion that by wisely directed sterilization of weakminded persons a rapid elimination of these strains can be obtained. However, with schizophrenia, by reason of its unfavorable hereditary prognosis, its recessive character and its transmission by phenotypically sound intermediate progenitors, a rapid improvement cannot be

expected. With regard to epilepsy, it appears necessary to sterilize every person whose condition cannot be shown to be due to exogenous causes. In manic-depressive insanity the law should be applied only to patients with pronounced symptoms and not to persons with mild depressive tendencies, as the latter may be valuable members of society. In the case of severe chronic alcoholism the hereditary predisposition is of such a dominant nature that, from the eugenic point of view, offspring are not desirable. These pronouncements were supplemented by a paper of Rüdin of Munich on "Psychiatry and Eugenics," which dealt with eugenic selection. A further need is the establishment of a graduated scale of the best and of the worst families, from the hereditary point of view.

Among some interesting facts reported in various papers, Geyer of Kiel found that in 80 per cent of his imbecile patients the condition could be traced to endogenous causes, whereas the idiots were mostly of exogenous origin. Pohlisch of Berlin found in 395 offspring of 3,500 morphine addicts no evidence of the existence of germinal damage. On the other hand, the children of women addicted to morphine showed serious evidence of withdrawal injuries, from which many of them died.

Pönitz of Halle brought out that encephalography applied to patients with dementia paralytica will reveal to a certain extent what success may be expected from malaria treatment.

A paper by Kretschmer of Marburg dealt with the "Development of Personality in Psychotherapy," which was supplemented by further papers on "Responsibility in Hospitals" and on the "Present Situation in Psychotherapy." Other papers brought out that, because of the increased abuses of hypnotics sold over the counter without a prescription, restrictive legislative measures will doubtless soon be enacted.

Berlin's "Biologic Group" of Physicians

Under the new government the nature cure movement and, in general, the so-called biologic methods have received far-reaching encouragement. A pronouncement of Professor Reiter, the head of the federal bureau of health, reads "The reich will not rear medical men but physicians who can think biologically." But there can be no objection to this statement, since it is entirely in line with the principles of scientific medicine. Recently a so-called biologic group of physicians, which has organized evening discussions for physicians, was created in Berlin. On the first evening set apart for such discussions, Professor Jansen, who has been appointed to the newly created chair for "nature cure and natural mode of living," spoke on the general aspects of his assignment. He emphasized that the chief task and duty of the physician is to prevent disease—by medical advice so to organize the mode of living of the German people that the predisposition to disease shall disappear. In order to bring this about, one of the chief things necessary is to familiarize physicians with the newer knowledge of nutrition and the health-promoting factors light, air, sunshine, water and the like. As compared with the paramount importance of these primary factors, the petty controversies concerning methods are insignificant. The genuine physician should be able to offer solutions also for psychic problems. He should become again a real family adviser—not only in times of sickness but also in days of health. Serving in the capacity of a new type of priest-physician, the people must be led away from the worship of "progress" back to a solid but quiet fulcrum. While disclaiming any desire to belittle the accomplishments of the present epoch, it must be insisted that mankind shall again become the pivot about which all technical discoveries must turn instead of expecting man to revolve about the inventions and discoveries of science like insects about a light. Jansen stated that it was not his aim to create hospitals with never so modern and never so hygienic equipment and arrange-

ments. His goal was an immense "house of health" in the heart of Berlin, where hundreds of thousands of compatriots might become familiar with wholesome food and the value of a life spent in the open, with a maximum of fresh air and sunshine. The "lost connection" between the people and the universities might thus be reestablished. Through such an institution the key to true healing of disease would be found, and in an atmosphere of positive psychic influence, and through the utilization of biologic therapeutic methods, it would be most feasible to bring back health to the whole German people.

On the second evening Dr. Bastanier, instructor in homeopathy at the University of Berlin, spoke on the "Problems of Homeopathy." On the third evening the topic will be "Treatment with Leeches," and on the fourth evening "Nasal Reflex Therapy." On these two evenings not only representatives of well known "schools" will speak but also a number of trail-blazing individualists.

Statistics on Prussian Hospitals

The Prussian bureau of statistics has published a report on the activities of Prussian hospitals during the period from 1879 to 1929, which furnishes evidence of the prodigious development of hospital services. The number of general hospitals rose in this period from 998 to 2,320, and the number of beds increased from 42,497 to 251,545, or from 15.8 to 64 to 10,000 inhabitants. In 1929, 2,470,595 persons received treatment, and the total number of days of hospitalization was 67,500,000, which denoted an eightfold increase over the year 1879. The unprecedented development of the *kranken-kassen*, or health insurance societies (membership in 1885, 2,200,000, and in 1929, 11,700,000), has obviously contributed no small part to the development of the hospitals. In 1879 the average stay in a hospital was 31.6 days, and in 1929 it had dropped to 27.4 days. In 1879 there were 1,360 physicians and 4,728 nurses actively engaged in the hospitals; in 1929 their numbers had risen to 8,533 and 39,958, respectively. Of the diseases treated in the hospitals it may be mentioned as an example that 30,650 persons with tuberculosis were treated during the period 1877-1879, while 419,417 persons were under treatment for that disease in 1929.

Involvement of the Hypophysis in Eclampsia

The hypophysis is commonly assumed to play a part in the origin of eclampsia. Not all manifestations, however, as Bickenbach in a recent address before the Göttingen Medical Society pointed out, can be traced to the unassisted action of the posterior lobe of the hypophysis. Particularly with respect to glomerulosis and the liver changes, doubtless other influences besides the action of the posterior lobe play a part. A discrepancy lies in the fact that the secretion of the posterior lobe induces an excretion of chlorine, whereas in pregnancy and in eclampsia there is a retention of chlorine. In rabbits no difference between the gravid state and the nongravid state, with reference to the excretion of chlorine, was found as a result of the influence of the hormone of the posterior lobe. In the woman in an advanced state of pregnancy, the total excretion of chlorine following injection of posterior lobe is diminished as compared with the results under the same conditions without hypophysis. Tests were likewise instituted to discover to what extent the blood serum is capable of counteracting the antidiuretic and chlorine-evacuating influence of the hormone. It was found that the blood can, for the most part, nullify the action of the hormone; there is, however, no marked difference between the serum of gravidas, nongravidas and preeclamptic subjects. These researches would indicate, therefore, that the hormone theory alone does not suffice to explain the genesis of eclampsia.

JAPAN

(From Our Regular Correspondent)

Aug. 20, 1934.

Doctors for Villages

A donation of 6,000,000 yen has recently been contributed by Mitsubishi, the most famous millionaire here, for social welfare work. One million yen is to be spent to establish medical facilities in villages where there have not been any. The number of such villages is reported officially to amount to 3,527 throughout the country. But about 1,000 villages are reported to be in urgent need of medical facilities. The government is busy preparing to appoint the official doctors within the year in about 500 villages. The building of the clinic or offices, costing each about 2,000 yen, will be begun before long under the superintendence of the local government. By 1936, 1,000 doctors will be appointed to these remote villages. As a rule, there will be no medical fee in case of poor farmers and fishermen, but for well-to-do people there will be a small fee, which is expected to be paid chiefly by the annual relief fund or from special grants made by the emperor yearly.

Regulations for Prevention of Accidents

The home office has drawn up regulations concerning the prevention of accidents and for safety in workshops and places engaged in all major industries other than factories and mines, which are already covered by the factory law, the regulations concerning accident prevention and hygiene in factories, the regulations concerning dormitories attached to factories, the mining law, and the regulations concerning work and relief of miners. The regulations concerning safety and hygiene in places of quarrying or digging or extracting stone, gravel, sand or soil from the earth came into force June 1. The regulations provide facilities and equipment concerning prevention of accidents and hygiene in workshops. They are as follows:

1. Selection and appointment of supervisors to take charge of matters concerning prevention of accidents and hygiene.
2. Provision of safety passages, safety facilities and equipment in shafts, passages and ladders underground.
3. Facilities and equipment in open mines.
4. Measures for the prevention of falling bodies.
5. Safety facilities in transportation by vehicles on rails.
6. Safety devices for winches.
7. Care in handling gunpowder and other explosives.
8. Facilities to prevent workers in dangerous places from falling.
9. Prevention of dust.

Opticians and Ophthalmoscopy

It is said that 40 per cent of the school children and more than half of the adults are affected with subnormal sight. Ophthalmoscopy, naturally, is demanded on all sides. The opticians in the greater cities and towns have of late established a dark room for the examination of the eyes. When the examiners are the clerks, the examination is usually free. When qualified doctors do this work, some charge but others require no fee. At present there are few who go to the doctor for the examination, but many go to the optician's to have an examination free of charge. Therefore, whether ophthalmoscopy is practicing medicine or not has come to be discussed loudly. The opticians and those who work in the shops have petitioned the government to the effect that a license should be granted to them in recognition of their experience or the license should be granted through some kind of examination. They want the title "ophthalmometrist" independent of the doctors. The Japan Ophthalmologic Association has also made a representation to the government in opposition to the opticians' petition. Sooner or later, the ophthalmometrist probably will be licensed, as the public need for more refraction tests is urgent.

Subnormal School Children

The department of physical education of Tokyo has reported a recent investigation of the weak boys and girls in 541 primary schools containing 694,147 children in which methods differing from any previous investigation were used. The department asked the teachers to report the number of boys and girls whom they thought to be too weak, physically or mentally, to be among the normal boys or girls. Formerly this was usually done by means of physical or mental examination by specialists. The following seven items were reported on by the teachers: (1) inferior mental power; (2) feeble-mindedness; (3) reduced hearing; (4) weak sight; (5) stammering; (6) sickness; (7) deformity. A comparatively small number was so reported. The criteria were whether weak boys or girls should be specially educated. The numbers were as follows: (1) 7,783, (2) 7,206, (3) 1,023, (4) 2,020, (5) 2,880, (6) 3,841, (7) 1,865. Special classes for such children are as yet insufficient but the authorities are making a great effort to establish special schools.

Increase in Suicide

In the Tokyo Prefecture 1,805 persons committed suicide in 1933 and 2,000 attempted suicide, while 1,585 committed suicide in 1932 and 1,048 attempted suicide. When in 1922 the population of this prefecture was 3,790,000, the suicides numbered 916 and attempted suicides 453. Ten years after this, in 1932, the population was 5,870,000. The causes were sickness 20 per cent, poverty and unemployment 13 per cent, and family trouble and disappointment in love 9 per cent. The favorite place for committing suicide is the crater of the volcano Miharayama on a small island near the bay of Tokyo, where 125 suicides occurred during 1933 and 826 attempted suicides. It has long been believed in this country that suicide for a cause is noble, and few think it is wrong to kill oneself. The government and the private social welfare agencies have joined in providing medical care for the distressed.

Current Medical Literature

The *Japan Medical World*, a weekly journal, whose proprietor is Dr. S. Tsuchiya, a member of parliament, will add to every issue more than four pages of all the Japanese medical literature written in foreign languages. This material will be abstracted from about forty medical journals in this country and will be sent to all the important universities, laboratories, manufacturers, scholars and publishers all over the world from July this year.

Dr. Rudolph Bolling Teusler

Dr. Rudolph Bolling Teusler, director of St. Luke's Medical Center, died August 10 at St. Luke's Hospital. He had been suffering from heart disease for four years. At the earnest request of his family and friends, he went to Arizona last September to recover his health. He returned to Japan last July. It is believed that he worked too hard here for the institution to which he had devoted thirty-four years of his life. In recognition of his merits, he was decorated with the fifth class Order of the Rising Sun. The completion of the new St. Luke's Hospital last year crowned his career as medical missionary in Japan. Acknowledged as the best in the Orient, the institution is an impressive example of the work of American Christian philanthropy. He was born at Rome, Ga., Feb. 25, 1878. He was graduated with the degree of Doctor of Medicine from the medical college of Virginia in 1894, where from 1896 to 1900 he was assistant professor of pathology and bacteriology. He came to Japan in 1900. He was once physician to the British embassy and later was a member of a commission to provide postgraduate medical training in the United States for Japanese students. He did valuable work with the Red Cross in the Allied expedition to Siberia. He began working in 1903 on the institution that was to become the St. Luke's International Medical Center of today.

Marriages

CLAIRE M. DIXON, Ina, Ill., to Miss Lucile Montane of Sacramento, Calif., in East St. Louis, Ill., September 8.

WILLIAM DORUS STUBENBORD, New York, to Miss Jean Cardiff Tennant of Jersey City, N. J., June 16.

EUGENE LA FORREST SWAN, Brooklyn, to Miss Elizabeth Farwell Mann of Waltham, Mass., August 31.

CYRIL FANTUS SHERMAN, Danville, Ill., to Miss Jennie Eylene Worden of Hillsboro, Wis., May 27.

LEWIS MONROE SMITH, Atlanta, Ga., to Miss Edna Louise Mabee of Saratoga Springs, N. Y., June 2.

BENJAMIN MARVIN HAND to Miss Adelaid A. Hancock, both of Philadelphia, June 9.

VERNON SHELTON DICK to Miss Blossom Bacon, both of Ann Arbor, Mich., Sept. 5.

EDWARD L. SPANGLER, Ouray, Colo., to Miss Mabel Sanders of Chicago, May 19.

IRVING SCHOENFELD to Miss Ruth Levy, both of New York, June 14.

Deaths

Thomas Edward Satterthwaite, New York; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, 1867; member of the Medical Society of the State of New York; a founder and fellow of the American College of Physicians; served in the Franco-Prussian War; one of the founders, and at one time secretary, vice president, professor of pathologic anatomy and general medicine, Post Graduate Medical School; lecturer on comparative pathology, Columbia Veterinary College, 1881-1882; organized the medical and surgical staff of the Chambers Street House of Relief, now the Hudson Street Hospital, in 1875; a founder and president, 1894-1899, of the Babies' Hospital; microscopist and later pathologist at St. Luke's Hospital, 1872-1882; pathologist to the Presbyterian Hospital, 1873-1888; consulting physician to the Post-Graduate, Orthopedic and Manhattan State hospitals; served as a first lieutenant in the U. S. Army Reserve Corps, 1911-1917; author of "Manual of Histology," "Practical Bacteriology," "Diseases of the Heart and Aorta," "Cardio-Vascular Diseases," and "Diseases of the Heart and Blood Vessels" and many other works; aged 91; died, September 19, of senility.

Frank Tryon Stevens ☉ Colorado Springs, Colo.; Northwestern University Medical School, Chicago, 1893; member of the American Psychiatric Association, Association for Research in Nervous and Mental Diseases and the Central Neuropsychiatric Association; past president of the El Paso County Medical Society; on the staffs of the Mount Pleasant (Iowa) State Hospital, 1896-1912, and the Milwaukee Sanitarium, Wauwatosa, 1912-1913; on the staffs of the Union Printers' Home and Tuberculosis Sanatorium, Glockner Hospital, Bethel Hospital and St. Francis Hospital; aged 67; died, September 6, of arteriosclerosis and cerebral hemorrhage.

William Palm, Brazil, Ind.; Medical College of Indiana, Indianapolis, 1905; member of the Indiana State Medical Association; at one time secretary of the Clay County Medical Society; served during the World War; county health officer; formerly coroner and jail physician; on the staff of the Clay County Hospital; aged 51; died, September 10, at his home in Harmony, of heart disease.

John Henry Kuser ☉ San Rafael, Calif.; Universität München Medizinische Fakultät, Munich, Bavaria, Germany, 1885; past president and secretary of the Marin County Medical Society; formerly on the staff of the San Rafael Cottage Hospital; aged 71; died, August 27, of acute hepatitis, atrophic cirrhosis of the liver and arteriosclerosis.

Marcus Fitzherbert Wheatland ☉ Newport, R. I.; Howard University School of Medicine, Washington, D. C., 1895; member of the New England Roentgen Ray Society; formerly trustee to the Howard University, Washington, D. C.; visiting physician to the Newport Hospital; aged 66; died, August 16, of diabetes mellitus and bronchopneumonia.

Abram Barnes Hooe, Washington, D. C.; Columbian University Medical Department, Washington, 1896; member of the Medical Society of the District of Columbia; fellow of the American College of Surgeons; served during the World War; aged 63; died, September 19, in the Walter Reed General Hospital, of carcinoma of the ileum.

Alexander W. Acheson, Denison, Texas; University of Pennsylvania School of Medicine, Philadelphia, 1867; member of the State Medical Association of Texas; past president and secretary of the Grayson County Medical Society; on the staff of the Denison City Hospital; aged 91; died, September 7, of myocarditis and chronic nephritis.

Alden Blodgett MacDonald, Warren, Pa.; Jefferson Medical College of Philadelphia, 1904; member of the Medical Society of the State of Pennsylvania; president of the Warren County Medical Society; on the staffs of the Warren General and Warren State hospitals; aged 54; died, August 16, of carcinoma of the liver.

George Willard Mehl, Ashland, Ohio; Ohio Medical University, Columbus, 1904; member of the Ohio State Medical Association; veteran of the Spanish-American War; formerly county health officer; on the staff of the Samaritan Hospital; aged 68; died, August 29, of myocarditis and chronic interstitial nephritis.

Martyn David Sheehan @ Stoneham, Mass. (licensed in Massachusetts in 1895); member of the New England Obstetrical and Gynecological Society; member of the board of health; aged 63; on the staff of the Winchester (Mass.) Hospital, where he died, September 4, as the result of an automobile accident.

Russell Edward Titman @ East Orange, N. J.; New York Homeopathic Medical College and Flower Hospital, 1912; on the staff of the Montclair (N. J.) Community Hospital; aged 44; died suddenly, September 8, in the Mountainside Hospital, Montclair, of sciatica, anaphylaxis and pulmonary edema.

Eudora Pierce Higgins Chismán, Boston; Woman's Medical College of the New York Infirmary for Women and Children, 1894; an affiliate Fellow of the American Medical Association; aged 70; died, August 22, in the Palmer Memorial Hospital, following an operation for removal of the gallbladder.

James Joseph La Salle, Phoenix, Ariz.; University of Michigan Medical School, Ann Arbor, 1896; member of the American Laryngological, Rhinological and Otological Society; formerly health officer of Toledo, Ohio; aged 59; died, July 22, of malignancy of the left brachial plexus.

Gerald Stinson Glasco, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1893; member of the American Psychiatric Association; member of the local lunacy commission and director of the mental hygiene clinic of the board of health; aged 62; died, July 22.

Wesley Johnson Barrett @ Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1901; fellow of the American College of Surgeons; surgeon to the West Jersey Homeopathic Hospital; aged 60; died, September 13, in Haddonfield, of cerebral hemorrhage.

Jay Clarence Knipe @ Philadelphia; Jefferson Medical College of Philadelphia, 1890; associate professor of ophthalmology at his alma mater; on the staffs of the Jefferson, Jewish and Mary J. Drexel hospitals; aged 65; died, September 2, of coronary thrombosis.

Edwin Woodbridge Morse, Portland, Ore.; Jefferson Medical College of Philadelphia, 1908; member of the Oregon State Medical Society; served during the World War; aged 58; died, August 22, in San Francisco, of carcinoma of the prostate and uremia.

Jay Hathaway Utley, Beverly Hills, Calif.; Bellevue Hospital Medical College, New York, 1883; member of the California Medical Association; formerly emeritus professor of medicine, University of California Medical Department; aged 75; died, July 12.

Charles Lusby Pearson, Newton, Mass.; University of Maryland School of Medicine, Baltimore, 1883; an Affiliate Fellow of the American Medical Association; aged 73; died, September 8, of coronary thrombosis and gastric ulcer with hemorrhage.

Elias Harry Pofcher, Worcester, Mass.; Tufts College Medical School, Boston, 1904; member of the Massachusetts Medical Society; also a lawyer; alderman; aged 53; died, August 28, in the Beth Israel Hospital, Boston, of cirrhosis of the liver.

Bertram Edwin Marshall @ New Brighton, Pa.; New York Homeopathic Medical College and Hospital, 1899; served during the World War; on the staff of the Beaver Valley General Hospital; aged 60; died suddenly, August 30, of heart disease.

Joseph W. Largent, McKinney, Texas; University of Louisville (Ky.) School of Medicine, 1888; past president of the State Medical Association of Texas and the Collin County Medical Society; aged 71; died, July 31, of angina pectoris.

William Arthur Warner, Claude, Texas; Northwestern University Medical School, Chicago, 1894; member of the State Medical Association of Texas; served during the World War; aged 69; died, July 31, in a hospital at Amarillo.

Joseph Zimmerman Wild, Brooklyn; Victoria University Medical Department, Coburg, Ont., Canada, 1883; member of the Medical Society of the State of New York; aged 74; died, August 11, of carcinoma of the stomach.

Charles Wills King, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1878; member of the Ohio State Medical Association; formerly superintendent of the Dayton State Hospital; aged 79; died, August 23, of senility.

Frank A. Winneman, Merrill, Wis.; Milwaukee Medical College, 1897; member of the State Medical Society of Wisconsin; on the staff of the Holy Cross Hospital; aged 70; died, August 25, of angina pectoris.

Samuel H. Snow, Kansas City, Mo.; Kansas City Hahnemann Medical College, 1908; member of the Associated Anesthetists of the United States and Canada; aged 62; died, August 23, of chronic myocarditis.

H. Marion Williams, Oklahoma City (registered in Oklahoma by the state board of health, under the Act of 1908); member of the Oklahoma State Medical Association; aged 62; died, in August, of heart disease.

Thomas T. Waggoner, Freeport, Ill.; Barnes Medical College, St. Louis, 1899; member of the Illinois State Medical Society; on the staff of St. Francis Hospital; aged 71; died, September 2, of heart disease.

Edwin A. Jarecki, Philadelphia; University of Michigan Medical School, Ann Arbor, 1891; for many years chief resident physician at the Jewish Hospital; aged 67; died, September 9, of heart disease.

Harold Payne Lawrence, Bay City, Mich.; Detroit College of Medicine, 1905; on the staff of the Mercy Hospital; aged 50; died, August 16, of injuries received in a fall from a second story window.

Gordon Flewellen Chambers, Columbus, Ga.; Atlanta College of Physicians and Surgeons, 1900; formerly member of the city council; aged 59; was found dead, August 2, of pulmonary hemorrhage.

John A. Welch, Letts, Ind.; Hospital College of Medicine, Louisville, Ky., 1898; member of the Indiana State Medical Association; aged 60; died, August 24, of uremia and hypostatic pneumonia.

Edward Kirtland Morton, Point Loma, Calif.; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, 1884; aged 78; died, July 24, of myocarditis.

James Martin Melvin, St. Louis; Missouri Medical College, St. Louis, 1891; for many years member of the city health department; aged 68; died, July 24, of a self inflicted bullet wound.

Elmer Ellsworth Harrison, West Concord, Minn.; University of Minnesota Medical School, Minneapolis, 1897; member of the Minnesota State Medical Association; aged 68; died in June.

Jacob Warren Smith, Terre Haute, Ind.; Homeopathic Medical College of Missouri, St. Louis, 1891; aged 72; died, July 26, in St. Anthony's Hospital, of lobar pneumonia and myocarditis.

John W. Watzek, Davenport, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1881; aged 76; died, August 25, in Portland, Ore., of coronary thrombosis.

William G. Spence, Chestnut Bluff, Tenn.; Memphis Hospital Medical College, 1903; aged 53; died, August 28, in the Baptist Memorial Hospital, Memphis, of ruptured appendix and peritonitis.

Thomas Bernard Butler, St. Louis; St. Louis University School of Medicine, 1911; member of the Missouri State Medical Association; aged 49; died, September 1, of chronic nephritis.

Louis Legault, Cornwall, Ont., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Que., 1901; aged 61; died, July 11.

Harry Irvin Shoenthal @ New Paris, Pa.; Jefferson Medical College of Philadelphia, 1906; past president and secretary of the Bedford County Medical Society; aged 52; died, July 10.

Fred H. A. Mallinson, Houston, Texas (registered by Texas State Board of Medical Examiners under the Act of 1907); aged 56; died, August 23, of a self inflicted bullet wound.

John Joseph Loughlin, Wakefield, Mass.; Boston University School of Medicine, 1903; member of the Massachusetts Medical Society; aged 54; died, September 6, of cerebral hemorrhage.

Thomas Benton Mansfield, St. Louis; Barnes Medical College, St. Louis, 1904; formerly professor of anatomy at his alma mater; aged 63; died, July 21, of cerebral hemorrhage.

Francis Ernest Thornton, East Aurora, N. Y.; University of the City of New York Medical Department, 1886; aged 71; died, September 17, of uremia, myocarditis and nephritis.

Jonathan Blythe Core, Bethesda, Tenn.; Vanderbilt University School of Medicine, Nashville, 1892; member of the Tennessee State Medical Association; aged 63; died, July 12.

Chester A. Wright, Fulton, Ky.; Hospital College of Medicine, Louisville, 1907; aged 52; died, August 13, in the Western State Hospital, Hopkinsville, of cerebral hemorrhage.

Ernest Paul Wheeler, Long Beach, Calif.; State College of Physicians and Surgeons, Indianapolis, 1907; aged 56; died, July 27, in the Community Hospital, of acute coronary occlusion.

Emma E. Crook McKay, Hollister, Calif.; University of California Medical Department, San Francisco, 1892; member of the California Medical Association; aged 73; died, July 8.

Herman Corwin Homer, Cheyenne Wells, Colo.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 64; died, July 7.

William E. Kelsey, Monterey, Ind. (licensed in Indiana in 1899); also a druggist; for many years postmaster of Monterey; aged 75; died, August 16, of cerebral hemorrhage.

Reuben Ellsworth Mercer, Pittsburgh; Western Pennsylvania Medical College, 1892; aged 64; died, June 26, in the Southside Hospital, of lung abscess and hemorrhage.

Charles Wilbur Smith, Springfield, Mo.; Beaumont Hospital Medical College, St. Louis, 1901; member of the Missouri State Medical Association; aged 61; died, July 8.

Arthur Henry Reinstein @ San Francisco; Cooper Medical College, San Francisco, 1907; aged 50; died, August 17, in St. Francis Hospital, of cerebral hemorrhage.

De Witt Clinton Van Zile, New York; Baltimore Medical College, 1905; ship surgeon to the *Morro Castle*; aged 54; died, September 8, in the *Morro Castle* disaster.

Younger Pitts Robards, St. Louis; Barnes Medical College, St. Louis, 1902; aged 61; was found dead, July 6, of chronic myocarditis and pulmonary hemorrhage.

Harry Hood Whitten, Temple City, Calif.; Northwestern University Medical School, Chicago, 1896; aged 65; died, July 30, in Alhambra, of cerebral hemorrhage.

John Whalen Doyle, Boone, Iowa; University of Michigan Medical School, Ann Arbor, 1888; aged 77; died, July 31, of diabetes mellitus and carbuncle of the neck.

Clarence D. Whipple, Minneapolis; University of Minnesota Medical School, Minneapolis, 1903; aged 71; died, July 27, of arteriosclerosis and myocarditis.

George Clarence Shepard, El Cajon, Calif.; Harvard University Medical School, Boston, 1884; aged 80; died, July 20, of pulmonary tuberculosis.

William Samuel Taylor, Mount Airy, N. C.; Jefferson Medical College of Philadelphia, 1873; aged 84; died, August 29, in Greensboro, of heart disease.

Charles G. Rankin, Glastonbury, Conn.; Chicago Medical College, 1886; for many years health officer; aged 74; died, August 11, of chronic myocarditis.

Simon Horowitz, East Orange, N. J.; Syracuse University College of Medicine, 1892; aged 30; was found dead, September 6, of accidental asphyxiation.

Clark Watson Banks, Derry, Pa.; Toledo Medical College, 1888; aged 74; died, August 31, at the Latrobe (Pa.) Hospital, of chronic myocarditis.

John William Lorenz, Evansville, Ind.; Louisville (Ky.) School of Medicine, 1903; aged 76; died, July 28, of uremia and parenchymatous nephritis.

Samuel Dixon Mayhew, Wildwood, N. J.; Jefferson Medical College of Philadelphia, 1900; aged 60; died, August 24, in Millville, of heart disease.

George Parkin Stubbs, Pasadena, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1890; aged 68; died, August 15, of influenza.

John Tyler Williams, Washington, D. C.; Milwaukee Medical College, 1910; aged 56; died, July 21, of cerebral hemorrhage and hemiplegia.

Russel Bennett Miller, Chicago; Columbus Medical College, 1880; aged 77; died, September 19, at Gleason, Wis., of pulmonary tuberculosis.

James F. Smith, Martha, Ky.; Kentucky School of Medicine, Louisville, 1903; aged 57; died, August 27, of a self inflicted bullet wound.

Mary Muriel Currie MacLennan, London, Ont., McGill University Faculty of Medicine, Montreal, Que., 1927; aged 42; died, August 22.

Joel S. Morris, Fort Worth, Texas; Kentucky School of Medicine, Louisville, 1875; aged 85; died, August 18, of cerebral arteriosclerosis.

Max C. Handley, Longmont, Colo.; Kansas City University of Physicians and Surgeons, 1925; aged 38; was found dead, September 4.

Howard M. Wood, Mears, Mich.; Vanderbilt University School of Medicine, Nashville, Tenn., 1886; aged 85; died, July 23, of senility.

William Alexander McCracken, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1910; aged 47; died, June 22.

Nelson O. Brenizer, Austin, Texas; Homeopathic Hospital College, Cleveland, 1880; aged 80; died, August 7, of chronic nephritis.

Alfred W. Girvin, Calgary, Alta., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1905; aged 54; died, June 11.

J. T. Hawkins, Bartow, Fla.; University of Georgia Medical Department, Augusta, 1891; aged 69; died, August 9, of heart disease.

Fletcher T. Mixon, East Point, Ga.; University of Georgia Medical Department, Augusta, 1881; aged 79; died, August 8, of nephritis.

Jacob J. Simonds, Kingston, N. Y.; University of Buffalo School of Medicine, 1890; aged 76; died, August 3, of myocarditis.

Robert Edward Lee Hughes, St. Louis; Barnes Medical College, St. Louis, 1910; aged 62; died, August 31, of pneumonia.

Donald MacGregor Mackay, Vancouver, B. C., Canada; Jefferson Medical College of Philadelphia, 1896; aged 63; died, August 29.

Thomas Lowell Butters, Vancouver, B. C., Canada; University of Toronto Faculty of Medicine, 1913; aged 44; died, August 11.

Thomas Symes Genge, Verona, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1901; aged 64; died, June 29.

Joao Pinto, Los Angeles; Faculdade de Medicina de Lisbon, Portugal, 1903; aged 60; died, July 14, of arthritis and angina pectoris.

William Edward Sullivan, Brooklyn; Long Island College Hospital, Brooklyn, 1889; aged 67; died, September 4, of heart disease.

George S. La Moree, Highland, N. Y.; Albany (N. Y.) Medical College, 1872; formerly postmaster; aged 85; died, July 7.

Douglas Craddock Murden, Los Angeles; Meharry Medical College, Nashville, Tenn., 1913; aged 50; died, July 10.

Clarence Otho Jefferies, Savannah, Mo.; University Medical College of Kansas City, 1888; aged 81; died, July 11.

Harley N. Baker, Wayland, Mich.; Hering Medical College, Chicago, 1894; aged 70; died, August 24, of pneumonia.

Charles A. King, Sussex, N. B., Canada; College of Physicians and Surgeons, Baltimore, 1904; aged 59; died, June 11.

Elmer Otis Richardson, Marion, Ohio; Columbus Medical College, 1884; aged 73; died, July 6, of cerebral hemorrhage.

Hiram Orville King, Curwensville, Pa.; Jefferson Medical College of Philadelphia, 1893; aged 66; died, July 5.

Thomas P. Bradley, Sarnia, Ont., Canada; Trinity Medical College, Toronto, 1897; aged 61; died, June 30.

George B. Foster, Toronto, Ont., Canada; Pulte Medical College, Cincinnati, 1876; aged 85; died recently.

Isaac L. Edwards, Benton, Pa.; Jefferson Medical College of Philadelphia, 1870; aged 89; died, June 12.

Rufus S. Harvey, National City, Calif. (licensed in Nebraska in 1891); died, June 27.

Correspondence

BIRTH CONTROL AND CONTRACEPTION

To the Editor:—The editorial on "Birth Control and Contraception" in *THE JOURNAL*, September 8, is naturally of interest to the National Committee on Maternal Health, which since 1923 has been studying these and allied questions as problems of public health and the practice of medicine. Since 1929 we have conducted a systematic and comprehensive investigation into the nature and merits of various contraceptive products and methods. The result of the first three years study, done in cooperation with the University of Edinburgh, was published in a volume by Cecil I. B. Voge, Ph.D., F.R.S.E., F.R.S.M., under the title of "The Chemistry and Physics of Contraceptives" (London, Jonathan Cape, 1933).

Voge's study established the factual basis for the evaluation of contraceptives in terms of physics, chemistry and biology. The next step was obviously to apply the tests to the commercial products now most widely used and exploited, and concomitantly the development of a plan for the control of the contraceptive industry in the interest of a sound practice of preventive medicine.

The present undertaking has two phases: First, a laboratory and clinical investigation centered in London, under Dr. Voge's direction, for determining the harmlessness and efficacy of particular products, is concerned primarily with the development of appropriate tests and mechanisms for use in routine checking and evaluating of large quantities of material, as required by the dimensions of the industry and practice. Especial attention is given to American products. The second is an intensive and extensive study of medical-economic features, including methods of manufacture, testing, distribution, merchandising, and advertising through medical and lay channels. This is under the direction of our standards consultant, Mr. Randolph Cautley, business analyst.

Our ultimate objective is the development of a reference and standardization service, and consequent control of the practice of contraception by the medical profession, through its duly constituted authorities. We have accordingly been studying the existing laws and agencies that might be involved in a plan for control, such as the postal laws, the food and drug acts, the federal trade commission or national scientific and professional societies and boards of pharmacy and medicine.

Since 1924 the committee has repeatedly urged on the Board of Trustees of the American Medical Association, and especially the Council on Pharmacy and Chemistry, that it take these matters into serious consideration and furnish guidance in the choice of materials and methods. Until now the trustees have declined any such undertaking, as has the U. S. Public Health Service, when similarly approached.

Clearly, however, no private organization could serve adequately, and only the American Medical Association or a national governmental agency would function with the requisite scope and authority. The committee therefore welcomes the expression of interest by the American Medical Association, especially the final statement that "the situation now prevailing is warrant for some type of action leading to scientific control" and offers to place at its disposal our accumulated material and information, together with programs, plans and outlines of projects evolved during our studies of more than ten years.

Incidentally, the committee has long been interested in the question of the "safe period" as a birth control method and in 1927 published the first elaborate study and evaluation of available data (Dickinson, R. L.: *Am. J. Obst. & Gynec.* 14:718 [Dec.] 1927). In 1931 the matter was again reviewed

in the illustrated manual "Control of Conception" (Dickinson and Bryant, Baltimore, Williams and Wilkins Company, 1931) and we have been in touch with the later developments, various investigators and the rapidly accumulating literature.

Certain concrete achievements in the direction of scientific control are to be noted. Especially significant is the action of the *British Medical Journal* in adopting a policy of accepting advertisements of contraceptives, if and when their presumptive harmlessness and relative efficacy have been assured, and the truthfulness of the advertising accredited. Since early in 1933, Dr. Voge has acted as referee on the matter for the *British Medical Journal* and later for the *Lancet* and *Proctitioner*. In the spring of 1934 the *American Journal of Obstetrics and Gynecology* adopted a similar policy, with our committee as referee.

These mark the beginning of a program for the control by the medical profession of contraception as a recognized part of preventive medicine, for the primary object of such selective advertisement is not the negative one of censorship but the positive one of informing the doctor of reliable measures.

The whole situation with respect to contraception is changing so rapidly, and at so many levels and in so many directions, that any attempt to affect it must be both comprehensively conceived and decisively executed.

HAVEN EMERSON, M.D., Chairman.

WILBUR WARD, M.D., Chairman Executive Committee.

FREDERICK C. HOLDEN, M.D., Acting Secretary.

NATIONAL COMMITTEE ON MATERNAL HEALTH, INC.,
2 East One Hundred and Third Street, New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NERVOUS SYSTEM IN PERNICIOUS ANEMIA

To the Editor:—Is there anything that can be done to prevent complications due to pernicious anemia, especially posterolateral sclerosis? I have two patients under my care at the present time, both receiving treatment for pernicious anemia, one 55 and the other 60, who have developed symptoms of posterolateral sclerosis. They have done so in spite of the fact that they have been receiving liver treatment, which raised the blood count to practically normal level. Can the degenerative factors develop in the posterolateral cord at the same time that the anemia develops and only later show symptoms?

NATHAN STEINBERG, M.D., Philadelphia.

ANSWER.—The most serious complication of pernicious anemia is usually the disturbance of the nervous system. The development of posterolateral sclerosis may occur early or late in relation to the development of anemia and may sometimes occur under treatment sufficient to maintain a normal blood count. It is probable, however, that the neurologic complications will not usually develop in patients who are receiving large amounts of active material (liver extract or desiccated stomach) by mouth with regularity. If, under these conditions, paresthesias appear, the treatment immediately indicated is an increase of the dosage of active principle, irrespective of the blood level. It is usually easy to effect this increase by changing from oral therapy to therapy with parenteral liver extract; but if parenteral liver extract is already being administered, its dosage should be increased and so maintained for a period of months. It is of course important to use products known to be effective.

The first principle of the treatment of posterolateral sclerosis is prophylaxis; in other words, an increase of the potency of active material whenever symptoms referable to the nervous system appear, irrespective of the blood level or of the condition of the patient in other respects. In a general way, the longer the symptoms and signs of posterolateral sclerosis have existed, the greater the difficulty in treating them. If the complication has been present for six months or a year, further progress can be arrested with adequate amounts of effective substances, but the damage to the nervous system is probably not susceptible of repair. Although improvement of the objective neurologic

signs under these conditions will usually not occur, the relief of paresthesias is usually complete and there may be great improvement in coordination. No effort should be spared in persisting in large doses of active principle, especially in the use of liver extract parenterally administered and in orthopedic measures for the improvement of walking ability.

TREATMENT OF DUODENAL ULCER AFTER HEMORRHAGE

To the Editor:—Would you be good enough to suggest treatment of duodenal ulcer following hemorrhage, giving specific details as to amount of activity allowed and modification, if any, of Sippy diet and within what time limits?

M.D., Quebec.

ANSWER.—If there has been no emesis, the patient should be fed from the outset, beginning with small amounts of frozen or ice cold milk or cream followed by a powder of calcium carbonate, 1 Gm. (15 grains), and bismuth subcarbonate 0.3 Gm. (5 grains). These should be given fifteen minutes after and on the hour between feedings with water. Feedings should be every two hours from 8 a. m. to 8 p. m. In addition, atropine sulphate should be given, 0.4 mg. ($\frac{1}{150}$ grain), with water by mouth twice a day. The milk and cream feedings are gradually increased day by day until at the end of the week the patient is taking 8 ounces of milk and cream every two hours. Orange juice at this time may be added in increasing amounts. From this point on foods that go to make an ulcer diet are gradually added. At the end of the third or fourth day, if there has been no bowel movement, the patient should have a small retention enema of from 3 to 4 ounces of warm liquid petrolatum, and this is to be repeated once or twice a day until the patient has a bowel movement and kept up as long as necessary. All stools should be examined daily for occult blood. The hemoglobin and erythrocyte count should be made daily as an index to the cessation of bleeding. The patient's blood should be typed at the outset for possible transfusion, which may be necessary during the course of treatment. Frequent determination should be made of the blood chemistry, particularly the carbon dioxide, nonprotein nitrogen and sugar. If there is any tendency toward alkalosis, calcium carbonate should be omitted and tertiary calcium phosphate substituted. After the stools have become negative for occult blood, magnesium carbonate, 0.3 or 0.65 Gm. (5 or 10 grains) may be added to the powders. As a rule the average uncomplicated duodenal ulcer stops bleeding in a week or ten days. If bleeding persists beyond a period of two weeks' management and into the third week, one should seriously consider giving a blood transfusion and, if bleeding continues, surgical intervention for a complicated and indolent chronic ulcer should be seriously considered. If occult blood has disappeared from the stool, the patient should remain in the hospital for a period of three or four weeks and then from four to six weeks should be allowed to elapse before any roentgen investigation is done. Following the patient's dismissal from the hospital, one should determine possible foci of infection as etiologic factors in the life cycle of the ulcer. Particularly is this true of diseased teeth and tonsils, which, from the standpoint of empiricism, should be removed. If hemorrhage has been recurring for a period of years after the cessation of this hemorrhage, surgical intervention may be the wisest permanent procedure.

FLUID INTAKE IN EDEMA

To the Editor:—Will you clarify for me the problem of fluid intake in various types of edema? I was taught that it is not "work" for the kidney to put out water. I am not thinking so much of cardiac decompensation when obviously the entire circulation is impaired and the heart is the primary organ to be considered, as I am of nephritides and especially of preeclamptic toxemia. Please omit name and town.

M.D., Massachusetts.

ANSWER.—Toxemia of pregnancy is not characterized by one typical form of pathologic lesion but may manifest itself in one of three ways: (1) by general vascular injury, (2) by involvement of the renal glomeruli, and (3) by degenerative processes, especially in the liver and in the renal tubules. The renal disturbances in preeclamptic toxemia may appear as acute glomerulonephritis or as acute nephrosis. Edema is more characteristic of the second type than of the first.

Edema may be the result of (1) a decrease in colloid osmotic pressure of the plasma proteins, as in nephrosis, (2) an increase in permeability of capillaries, as in glomerulonephritis, and (3) an increase in hydrostatic pressure in the capillaries, as occurs with cardiac decompensation. These three types of edema may coexist in some cases. Estimations of the protein content of

edematous fluid may aid in the differential diagnosis. In nephritic edema the protein content of the fluid is low (less than 0.1 per cent). In the edema of glomerulonephritis the protein content is sometimes high (more than 1 per cent). In cardiac edema the protein content of edematous fluid is variable, but it generally is about 0.5 per cent. Water is filtered through glomeruli in enormous quantities, and about 97 per cent of it is reabsorbed through the tubules, since it is vital to the body and must not be lost. Edema may therefore result from diminution of glomerular excretion or increased tubular reabsorption, or from retention of fluid in diffuse intracellular tissue from disturbances in the concentration of the plasma proteins or electrolytes.

Although edema, of a certain amount at least, may be harmless per se, it seems good practice, regardless of the type of edema, to correct it, certainly to control it. This is done chiefly by strict attention to the patient's intake of salt and water and, if significant retention of urea is not present, by the newer mercurial diuretics and such diuretic salts as ammonium chloride, ammonium nitrate and potassium nitrate. The protein intake is a matter of distinct importance, as further depletion of body proteins may increase edema. In the edema of nephrosis (idiopathic or preeclamptic), when retention of urea generally is absent, the intake of water should be sharply lowered, perhaps to from 600 to 800 cc. daily; no salt should be added to the food during its preparation or taken when it is eaten. The protein intake may be generous, from 70 to 90 Gm. daily.

The presence of both edema and retention of urea presents a dilemma. A generous intake of fluid is desirable to lower the concentration of blood urea, but this may add to the edema. The lesser evil is to give a moderate amount of water, perhaps from 1,000 to 1,200 cc. daily, in order to foster the excretion of urea, and cautiously to ignore the edema for the time being.

DIAGNOSIS OF GENITAL INFECTION

To the Editor:—Three days after exposure, a man, aged 30, developed a copious, yellowish urethral discharge. After one urethral irrigation with plain distilled water and injections twice daily for four days of a weak silver solution, the discharge stopped except for a small drop in the morning. Numerous smears of the urethral discharges, including those from the massaged prostate, have so far failed to show microorganisms, in spite of the fact that they are teeming with pus and epithelial cells. The right lobe of the prostate was much larger than the left and somewhat spongy, but under massage the size seems to have decreased and the gland seems firmer. After the injections had been discontinued for twenty-four hours the discharge became as copious as it was the first day, but when the injections were resumed it stopped except for the morning drop. Neither before nor after the appearance of the discharge has there been the slightest pain in or near the genitalia, or the least discomfort on urination. The man is in perfect health but has had two chills in the evening, the second about a week after the first. Each chill lasted about half an hour. The urine is normal. The first few ounces of urine voided are invariably cloudy. As urination progresses the urine becomes clearer, but the rest is much clearer and gradually all of it is slightly turbid. He has never had any genitourinary trouble before. Can you suggest a diagnosis? Please omit name.

M.D., Illinois.

ANSWER.—The presence of a copious yellowish urethral discharge three days after exposure suggests strongly that there was an infection by the gonococcus. It is difficult to account for the origin of a profuse discharge, teeming with pus and epithelial cells without microorganisms, unless it is due to self medication by the patient; for example, urethral injections of strong solutions of mild silver protein, strong silver protein or silver nitrate. Under these circumstances the patient may be said to have a chemical urethritis, and this should disappear with cessation of the injections.

The fact that the discharge promptly recurs when local treatment is stopped suggests that the patient has an infection in the urethral glands. If this fact can be reasonably assumed, an examination of the anterior urethra with the urethroscope is in order and if infected glands or follicles are found they should be destroyed through the endoscope with a high frequency current.

The statement that the right lobe of the prostate was large and spongy would suggest that an old infection in the prostate is the cause of the trouble. In this event, treatment should be directed to the prostate gland; namely, hot sitz baths, mild prostatic massage, and local treatment of the urethra with mild irrigations of potassium permanganate or injections of mild or strong silver protein.

The presence of chills would corroborate the evidence of infection in the prostate, since infection of the anterior urethra is rarely, if ever, accompanied by chills and fever.

BLOOD SEDIMENTATION TESTS

To the Editor:—Will you kindly send me the technic, including the interpretation, of the Westergren method of blood sedimentation test?

HARRY L. PARKER, M.D., Lockport, N. Y.

ANSWER.—Westergren (*Ann. Rev. Tuberc.* 14:94 [July] 1926) has described a satisfactory method for determining the red blood cell sedimentation rate. Oxalated venous blood is used and the determination may be done at any time within three hours after venipuncture. The same blood can be used for blood chemistry. Only two readings, at fifteen and forty-five minutes, are required. The apparatus is cheap and the pipets are easily cleaned. Well mixed oxalated venous blood is drawn up to the zero mark on the pipet, the excess blood on the tip is wiped off, and the pipet is inserted in the special rack. The upper level of the red cells is read at fifteen and forty-five minutes after the start. Westergren recommended readings at one, two and twenty-four hours. The apparatus and pipets may be obtained from the Arthur H. Thomas Company, Philadelphia.

Also the Linzenmeier method is widely used. The tubes are 7 cm. long and 5 mm. in internal diameter. They must be watched until the cells reach the 18 mm. mark. Citrated blood is used. The Cutter method, given in Kolmer and Boerner's *Approved Laboratory Technic*, consists in drawing 0.5 cc. of 3-per cent sodium citrate and then venous blood to the 5 cc. mark of a syringe. The blood is mixed and placed in a special tube and read every five minutes for one hour and a curve drawn.

This test is not a special specific test for any disease. The rate of sedimentation is accelerated in active tuberculosis, acute inflammation, infectious diseases, carcinoma, pregnancy and the toxemias. It is of chief value in distinguishing between inflammatory and noninflammatory processes and for estimating the activity or progress of pulmonary tuberculosis. A normal curve is seldom seen in active tuberculosis of the lungs. In acute inflammations the rate of sedimentation is increased. An actively growing cancer is likely to give a greater rate than a slowly growing scirrhus carcinoma.

The rate is influenced by changes in plasma viscosity or in the number, size or hemoglobin content of the red blood cells. Significant increases in the rate are due to clumping of the corpuscles into larger aggregates than usual. This tendency to clumping is probably correlated with changes in the amount of plasma protein. Increase in globulin and also in fibrinogen causes an increased clumping and thus more rapid sedimentation. Increase in albumin seems to have an opposite effect.

Anything over 15 mm. in the forty-five minute period is definitely pathologic. A sedimentation rate of from 15 to 30 mm. in forty-five minutes represents a slight increase, from 30 to 50 mm. a moderate increase, and from 50 to 100 mm. a severe increase.

CARDIAC PAIN AND ANGINA PECTORIS

To the Editor:—A woman, aged 56, weighing 156 pounds (71 Kg.), of obese type, who appears to be 65, suffers excruciating pain over the upper part of the left arm, radiating from the scapula. According to the history given by her son, she has this attack every night. It comes on at about 11 o'clock and lasts ten minutes. She breaks out in perspiration but she does not complain of pain of the heart. She has at times pain around the left hypochondrium. Nothing but morphine gives her any relief, but when it is administered she usually gets over the attack. During the attack the son, who is an adult, has to step over her shoulder and twist her hands and hit the arm to relieve the spasm. The people are ignorant and uneducated miners. On physical examination I found the heart enlarged; the second aortic sound was accentuated; the Austin Flint murmur was absent; no murmurs were present. The Kahn blood test is negative; the urine is negative for sugar and albumin (acid in reaction); the patient asserts that the urine leaves stains on her underwear; the blood pressure is 220 systolic, 100 diastolic. After the administration of glyceryl trinitrate it came down to 178 systolic; the diastolic remained 100, within seven days. She tried various treatments. I placed her on potassium iodide, 10 grain doses (0.65 Gm.) three times a day, phenobarbital, 1½ grains (1 Gm.), at bedtime and glyceryl trinitrate, ¼ grain (0.6 mg.) every four hours. Is her angiospasm due to the arteriosclerotic condition? Would you consider angina pectoris without pain in the heart? (The pain is commencing around the left side of the neck and radiates downward through the arm, reaching the back also.) I may state that she gets amyl nitrate inhalant and ether during the attack as an inhalation. Hot towels or any physical therapeutic means have no effect. What shall I try? I cannot give her anything intravenously as she is fat and I cannot get to her veins. I thought of magnesium sulphate and dextrose but how shall I introduce it? Please omit name.

M.D., West Virginia.

ANSWER.—The character of the pain as described is quite typical of angina pectoris. The fact that it is not precordial in origin by no means excludes that diagnosis. There are many recorded instances of cardiac pain referred to either or both shoulders, arms and hands, the neck, the abdomen and

even more distant locations. The patient's age and evident long standing hypertension also favor this view. However, the fact that the attack always happens at night, presumably without effort, while not excluding angina, does not favor it. Failure of glyceryl trinitrate and amyl nitrite to relieve do oppose the assumption.

There is no reason to believe that peripheral arterial spasm would cause pain of such intensity without objective evidence of impairment of blood supply in the extremity involved. Localized muscle spasm is suggested by the description of the relief measures employed by the patient's son. If this is true, the condition should be evident.

Other possible causes to be considered are nerve pressure, the result of arthritis or other pathologic changes in the spine with nerve root irritation or involvement of the brachial plexus. Local bone and joint changes should be excluded. Diaphragmatic hernia of the von Bergman type may cause thoracic pain having the distribution of that of angina pectoris.

From the information given, the preponderance of evidence would favor the diagnosis of angina pectoris. Theobromine or theophylline compounds are often effective in the relief of pain of this type and may be used over long periods if there is no gastric distress. Theobromine sodium acetate may be given in 0.65 Gm. doses three times a day.

SODIUM IODIDE AND DRAINAGE OF SINUSES

To the Editor:—What value, if any, has sodium iodide, when injected intravenously for the purpose of inducing profuse drainage from infected paranasal sinuses? A case of anterior ethmoidal and frontal sinusitis with no drainage did not seem to progress well under treatment with ephedrine locally, nasal suction, dicalcium phosphate by mouth, haliver oil and viosterol by mouth and Proteolac (Searle) intramuscularly. The patient consulted another physician, who gave her two intravenous injections of a solution containing something like the following to 20 cc. of solution: 32 grains (2 Gm.) each of potassium iodide, sodium iodide and hypiodides (?), three-fourths grain (0.05 Gm.) of guanacolate (?), and one-fourth grain (0.016 Gm.) of potassium fluoride. Following two injections forty-eight hours apart, there was moderate drainage of clear fluid from the nose, and relief from pain. The right frontal sinus, formerly dark to transillumination, had cleared up about 50 per cent. Do you know of any preparation like this on the market and what is its value? Please omit name.

M.D., Ohio.

ANSWER.—The injection of a hypertonic solution, such as suggested, in addition to producing the effect of iodides usually produce, seriously alters, for a time at least, the electrolyte balance and the colloid equilibrium. It is not easy to believe that two injections intravenously forty-eight hours apart of a solution such as described would have a curative effect on sinusitis. In fact, there are cases on record in which the opposite has been noted and the therapeutic use of iodides, on the contrary, has been stated to produce sinusitis. Hence one must consider spontaneous recovery, without relationship to the therapy employed.

As said, intravenous medication of this type has definite risks because of the disturbances it produces. In addition, one must consider the delayed toxic effects of iodides in those susceptible. Iodides given by mouth or in any other way increase the secretions from the respiratory tract and do it efficiently if given orally. There is no reason to believe that iodides given in any fashion have a particularly curative behavior in sinusitis. The promiscuous use of medication intravenously should be discouraged unless for specific effect. The risk taken, then, is overbalanced by the benefit to be derived.

INTRAPERITONEAL TRANSFUSION OF BLOOD

To the Editor:—Is it necessary to type blood for intraperitoneal blood transfusion for an infant? What are the dangers of intraperitoneal blood transfusion and how are they avoided? Please omit name.

M.D., Connecticut.

ANSWER.—Blood injected into the peritoneal cavity is absorbed into the blood stream without much change and constitutes a true transfusion. Therefore the blood must be matched to insure compatibility. Some authors state that blood grouping tests are unnecessary with this procedure, but this is a dangerous assumption. Cases have been observed with moderate reaction following intraperitoneal transfusion from donors of the same group when cross agglutination had not been carried out. There also seems to be a popular idea among the profession that it is not necessary to carry out compatibility tests when the patient to be transfused is a small infant. While it is true that only a small number of infants below 6 months of age have fixed blood groups and that in many cases no reaction would occur in the absence of compatibility tests, the fact is established that some infants have fixed blood groups early in infancy. Thus the same careful procedure that is used in

choosing donors for intravenous transfusion in adults must be observed in preparing to transfuse infants by the intraperitoneal route.

With these facts in mind, the dangers of intraperitoneal blood transfusion are first in the technic and secondly in the choice of the patient to be transfused. Under errors in technic may be mentioned the possibility of penetrating the bowel or bladder. This can be easily avoided by making sure that these organs are completely evacuated before transfusion. A fold of the abdominal wall should be picked up and a short bevel needle inserted in the median line 2 inches below the umbilicus. The citrate solution should be freshly prepared and should not be buffered with dextrose. Old citrate solution and dextrose act as a peritoneal irritant. With regard to the patient, the contraindications are the same as for any other type of transfusion with the addition that it should never be used when there is any question of intra-abdominal disease. Whenever abdominal discomfort may be disadvantageous, as in severe cardiac disease or acute pulmonary infections, its use should be carefully considered. Finally, certain gravely ill infants have impaired capacity to absorb blood from the peritoneal cavity. Cases are on record in which a large part of the injected blood has remained in the peritoneal cavity as long as a week. Whenever there is any uncertainty as to absorption, blood should be given, if possible, by the intravenous route.

TREATMENT OF SEBORRHEIC DERMATITIS

To the Editor:—What is the most modern treatment of dermatitis seborrhoica (eczema seborrhoicum) of the scalp? Is an eruption, acute in onset, accompanied by moderate tenderness and mild itching, before the appearance of vesicles, which are pinhead in size and slightly elevated, with ease of rupture, exuding a thin serous fluid, the underlying layers of exposed skin appearing red and glossy also an eczematous condition? What is the most modern treatment of this condition? These conditions have appeared in the same person. What is the duration of the disease and what is the prognosis? The interdigital spaces of the fingers of the hand are the seat of this eruption, the condition appearing to extend to the dorsum and palmar surface also. Kindly omit name.

M.D., New York.

ANSWER:—The treatment of seborrheic dermatitis has not changed recently, but it has been discovered that some cases resembling this disease are caused by fungi. Salicylic acid, sulphur, resorcinol and the various tars are still the basis of the treatment. Ultraviolet radiation and roentgen rays are valuable aids. For ordinary cases, 3 per cent of salicylic acid and 5 per cent of sulphur in ointment of rose water is satisfactory. If action is slow, various strengths of the other drugs may be added, or the actinic rays may be used. Whitfield ointment, salicylic acid in varying strengths with twice as much benzoic acid in ointment of rose water, is successful in some cases, probably in those caused by fungi. The dermatitis between the fingers in the case under discussion suggests a monilia infection called *erosio interdigitalis blastomycetica*, and it is only reasonable to suspect that the scalp disease may be due to the same infection. The organism can be cultivated easily on Sabouraud's medium or other sugar mediums at room temperature. If this surmise is correct, daily swabbing between the fingers with half strength tincture of iodine or a 5 per cent solution of iodine in benzene should give prompt results. After apparent healing the treatment should be continued for some time to prevent recurrence, alternating with weak Whitfield ointment to avoid too much staining. The disease tends to recur, presumably by persistence of the infection in the scalp, under the finger nails or in the skin of the hands.

SPINAL ANESTHESIA IN CHILDREN

To the Editor:—What is the current opinion about the safety of spinal anesthesia in children? What dosage of procaine hydrochloride would you recommend for a child 2½ years of age? A child, aged 2½ years, is operated on under spinal anesthesia, and a gangrenous appendix with a localized peritonitis is found. Within twelve hours a temperature of 109.5 F. develops and nystagmus, convulsions and coma are noted in rapid succession, with a fatal outcome. No other physical signs suggestive of any other medical condition can be elicited. Would you consider this death the result of spinal anesthesia? Necropsy was not permitted. Kindly omit name.

M.D., New York.

ANSWER:—Spinal anesthesia has been advocated by Rocher (*Arch. de méd. d. enf.* 25:705 [Dec.] 1922), who used a dose of from 20 to 80 mg. of procaine for operations on children whose ages ranged from 4 to 15 years, by Junkin (*Canadian M. A. J.* 28:51 [Jan.] 1933), who used spinal anesthesia mainly for orthopedic operations on the lower extremities of children, and by Balacesco (*Bull. et mém. Soc. nat. de chir.* 57:370 [March 14] 1931), who used spinal anesthesia in 826 cases in which the patients were children, 150 of whom were between

the ages of 3½ years and 7 years. For those who were from 3½ to 5 years old, he used a dose of from 30 to 40 mg. of procaine. Salazar de Souza (*Arch. de méd. d. enf.* 35:441 [Aug.] 1932) stated that in a series of operations on 540 children the usual dose of procaine he had used was from 40 to 50 mg.; the youngest child in his series was 32 days old, and twenty-five others were a year old or younger. Forgue and Basset (*La rachianesthésie; sa valeur et sa place actuelle dans la pratique*, Paris, Masson et Cie, 1930) do not advise the use of spinal anesthesia for children less than 15 or 16 years of age. Their questionnaires led them to believe that the majority of surgeons reject spinal anesthesia for operations on children.

The dose of procaine to be used for children should be 1 mg. for each pound of body weight, as in adults, debility decreasing the dose in relation to its severity. Death in the case described probably was not due to spinal anesthesia.

USE OF PARATHYROID IN ARTHRITIS

To the Editor:—1. I should like to know whether there are any clinical data to support the use of parathyroid extract-Collip in the treatment of chronic arthritis deformans. 2. Is there any new treatment for this arthritis?

K. A. ANDERSON, M.D., Charlotte, Mich.

ANSWER:—1. A consistent and uniformly demonstrable alteration in calcium metabolism in arthritis would seem to be a prerequisite for the rational use of parathyroid therapy.

In atrophic (infectious, proliferative, rheumatoid) arthritis there is atrophy of the bony epiphyses of the affected joints, at least in well advanced cases. In hypertrophic (senescent, degenerative, osteo-) arthritis there is marginal osteophyte formation and thickening of subchondral bone. These alterations in the calcium deposition of articular bone have led to a search for some general disturbance of calcium metabolism. Studies on the calcium content of blood and serum in cases of "chronic arthritis," of infective, hypertrophic and atrophic arthritis, of fibrositis and of sciatica have given variable results. A few have reported a decrease in blood calcium, both total and ionic (Price, 1923; Vine, 1924). A dozen or so investigators have found evidences of a moderately increased blood or serum calcium, a little more frequently in hypertrophic arthritis than in atrophic arthritis or in nonarticular rheumatism (Goldthwaite, Painter and Osgood, 1904; Lindemann, 1914; Mark, 1923; Weil and Guillaumin, 1923; Watchorn, 1925; Horowitz, 1926; Copp, 1930). Many others, among them Pemberton and Foster (1920), Nachlas (1927) and especially Buckley and Race, have concluded that the calcium content of blood and serum presents no marked deviations from the normal in the various types of arthritis. Nor did they find any significant disturbance in the relative proportions of diffusible and nondiffusible calcium. Studies in urinary calcium of arthritic patients are meager and do not permit conclusions to be drawn. No consistent alterations in phosphate metabolism or in the phosphatase content of the blood have been found (Buckley and Race).

Regardless of these observations, in progressive diseases of uncertain origin, such as the arthritides, one is tempted to note, empirically, the effect of the newer endocrine preparations. Grove and Vines administered parathyroid extract (*Brit. M. J.* 1:791 [May 20] 1922). Snell and Hensch studied the effect of parathyroid extract (Hanson)-N. N. R. given to a patient with chronic infectious arthritis (*Mimosa Med.* 13:8, 1930). Weissenbach, Francon, Perles and Seidemann also administered parathyroid extract (*Bull. et mém. Soc. méd. d. hôp. de Paris* 54:1843 [Dec.] 1930). None of these investigators apparently have pursued these lines of treatment to any extent.

During the past five years there has been an attempt on the part of several (Oppel, 1929; Leriche, Simon and Jung, 1931; Ballin and Morse, 1931; Funsten, 1933) to include "ankylosing polyarthritis" and spondylitis deformans in the syndrome of hyperparathyroidism. Parathyroidectomy (sometimes only unilateral) has been performed by them in a number of instances with reported benefits. It is admitted (Camp, 1932) that, owing to the marked decalcification in parathyroidism, the surfaces of the joints may collapse and thus resemble somewhat a destructive arthritis, but in true arthritis the chemical changes characteristic of parathyroidism are absent. Lièvre, the French authority, and Bauer, one of the chief American investigators of this disease, have both emphatically objected to such adulteration of the syndrome of hyperparathyroidism by the inclusion of arthritis. Bauer has stated that arthritis is not associated with or due to experimental or clinical hyperparathyroidism. To this Compere and Camp agree.

It is possible that the parathyroids and other parts of the endocrine-sympathetic system may be affected somewhat by the disease whose major manifestation is arthritis. One must conclude, however, that no proof so far exists that either atrophic

or hypertrophic arthritis is related to any primary deficiency or to any superabundance of parathyroid hormone, and that either the use of parathyroid extracts or resort to parathyroidectomy must be considered an experimental procedure entirely.

Suggested references:

- Bauer, Walter: *J. Bone and Joint Surg.* 15:135 (Jan) 1933.
Buckley, C. W., and Race, Joseph: First Research Report of the Devonshire Hospital, Buxton, Bristol, John Wright and Sons, Ltd., 1928.
Compere, E. L.: *J. Bone and Joint Surg.* 15:142 (Jan) 1933.
Eaton, L. R., and Cocheu, L. F.: *J. Am. Inst. Homoeop.* 25:485 (May) 1932.
Furness, R. V.: *J. Bone and Joint Surg.* 15:112 (Jan) 1933.
Lievre, J. A.: *L'osteose parathyroïdienne et les osteopathies chroniques*, Paris, Masson et cie, 1932.

2. The "newest treatment" for chronic arthritis is fever therapy by means of diathermy, radiotherapy or, more recently, the safer and simpler hot, air conditioned cabinets. Fever sessions are given once or twice weekly. The patient's temperature is raised fairly rapidly to from 104 to 105 F. Certain special precautions are necessary to avoid untoward reactions, but when these are taken the procedure seems relatively safe.

The results to date are variable. Some assert that about 35 per cent of patients subjected to a series of from three to six fever sessions note marked amelioration in, and at times complete cessation of, the activity of the disease. This method of treatment is too new for final evaluation.

GLYCERIN AS SCLEROSIS INDUCING AGENT

To the Editor:—Can you give me any definite information as to the sclerotic action of glycerin, either pure or dilute, when injected into the tissues? Also, how strong a solution of glycerin can be used without discomfort to the patient? Glycerin and dextrose have been used for the injection of varicose veins. Just how much of the result is due to the dextrose and how much to the glycerin, I do not know. Also, can you advise me whether glycerin diluted say 50 per cent with water is more slowly absorbed when injected into the tissues than water? In other words, would an anesthetic dissolved in a solution of glycerin be absorbed more slowly and so give a more prolonged anesthesia than an aqueous solution? Lastly, can you advise me whether a solution of phenol in glycerin is less caustic if injected into the tissues than an aqueous solution of phenol? In other words, does glycerin act as an antidote to any degree to the local action of phenol?

W. A. HINCKLE, M.D., Peoria, Ill

ANSWER.—The sclerosis inducing action of glycerin is due to its hygroscopic power. Hence it is present only when the fluid is injected in relatively high concentration. There is some discomfort when glycerin in any concentration is injected subcutaneously. As both dextrose and glycerin act by withdrawing water from cells, the share of each of them in producing the phlebitis will depend on their relative concentration. Glycerin delays the absorption of fluid when injected into the tissues. It will also delay the absorption of chemicals, and the more so the more soluble the substance is in glycerin than in the tissue fluids. A solution of phenol in glycerin is less caustic than an aqueous solution. To a certain extent, glycerin is an antidote to the local action of picric acid; but it is less efficient as an antidote than alcohol in the treatment of phenol corrosion.

BLEEDING IN THE NEW-BORN

To the Editor.—A primipara was delivered at term, twenty hours after the beginning of labor. Ten hours before delivery she was given one sixth grain (0.01 Gm.) of morphine and $\frac{1}{320}$ grain (0.5 mg.) of scopolamine hydrobromide. The pains were rather weak and ineffective, and dilatation of the cervix was completed manually. The application of low forceps was preceded by an episiotomy. The fetus was in the left occipito anterior position. The delivery was accomplished easily, under a short chloroform anesthesia. The progress of the mother has been uneventful. The condition of the baby immediately after birth was entirely satisfactory. Sixteen hours after birth the baby vomited a moderate amount of bright red blood. The baby was given 10 cc of the father's blood intramuscularly. For four hours the baby's condition seemed satisfactory. Twenty hours after delivery the baby passed a large amount of clotted and fresh blood from the rectum and died immediately from the hemorrhage. The entire gastrointestinal tract was removed and examined. No malformation was present and no pathological changes other than a spongy condition of the mucosa of the stomach, ileum and colon were noted. No specific bleeding point could be found. The mother died severely ten years ago following a tooth extraction, and five years ago following a tonsil operation, otherwise there is nothing of importance in the mother's history. Two nuns (0.12 cc) of solution of pituitary was given three times at intervals of twenty minutes after the cervix was completely dilated. Please omit name. M.D., Colorado.

ANSWER.—The baby in this case most likely had melena neonatorum, or hemorrhage of the new-born, as evidenced by the vomiting of blood and the passage of old and fresh blood from the rectum. No mention is made of signs or symptoms of cerebral hemorrhage, which may occur as part of the syn-

drome of melena neonatorum or independently. Cerebral hemorrhage may, of course, take place after spontaneous labor as well as after instrumental deliveries and the use of solution of pituitary. Hence it is by no means always the fault of the attending physician. The cause of bleeding of the new-born is not definitely known. It is unfortunate that the bleeding time and coagulation time of this baby were not determined. The most effective remedy for bleeding of this type is transfusion of whole blood.

FIBROUS SCLEROSIS OF CORPORA CAVERNOSA OF PENIS

To the Editor.—I have under my care a case of fibrous sclerosis of the corpora cavernosa (multiple) of the penis. The patient is 47 years of age and has absolutely no disease condition, though he had a gonorrheal infection about twenty-five years ago. Physically he has no defect whatever. What would be your procedure in the handling of such a case, and also what is the usual outcome as to relief? If these questions are to be published, kindly withhold name.

M.D., Michigan.

ANSWER.—Fibrosis of the corpus cavernosum of the urethra or the penis may occur as a result of a thrombus associated with infection or as a sequel to severe gonorrhea, periurethral abscess, septic wounds or severe contusion of the penis.

The penis assumes a lopsided and distorted stance on erection. It bends toward the lesion, where fibrosis prevents vascular engorgement and frequently produces pain.

Early treatment consists in giving iodides and eitrates by mouth and the local application of fomentations and gentle massage to reestablish circulation. In old-standing cases the prognosis is bad. Bromides may be given at night and the fibrous cords divided surgically.

Massage over a sound may be of some value with dilation of the urethra, which is usually narrowed.

When the fibrous bands are localized, excision with suture of the normal ends of the corpora cavernosa may be tried. The patient should not expect too much, as the penis will be shortened and it may take considerable time before erection becomes established.

DEPRESSION AND NARCISSISM

To the Editor.—A man, aged 28, of good appearance and with a university education, came to me with the complaint of morbid depression. He cannot get out of his mind the idea of the futility of things. He has perfect insight into his condition, but it seems that he cannot alter it. He states that the only time he is happy is when he is unconscious of self, only when sleeping or absorbed in reading. Otherwise his mind is in a continuous depressed state and he feels shy in talking to people. He cannot become interested in the commonplace things of everyday life. He states that he has been introspective and melancholy and withdrawn in himself all his life. He has no hallucinations, no warped ideas, except in the evil of the world and the drabness of existence, which he exaggerates in his own mind. He has no physical complaints, except a disability to concentrate well unless he deliberately tries to shake off his gloom, which he finds it hard to do. He is of normal weight. No defects were found on examination except a high degree of astigmatism in the left eye, which has been corrected as well as possible by a competent eye man. The sclera has a slight yellow tinge. The Wassermann reaction is negative. The blood count and the urine are normal. I have had him take phenobarbital when he feels terribly depressed. Also I have made him take saline laxatives. His main contention is that, because of his gloom and self-consciousness and inability to become interested in people or things, he is a poor companion. His continuous apprehensive gloom keeps his mind in a blank as far as outside events go, and thus he is reluctant to inflict himself on others, as much as he would enjoy being "normal" and enjoying the companionship of others. He would like to become interested in others, but his self-consciousness or self interest will not let him. He is afraid that others think him peculiar. Materially he is fairly well off and he has fair prospects if he can only snap himself out of it. The reason I write to you about this case is that I am interested in it. I am afraid that the patient may be contemplating suicide. I wonder if a psychoanalyst would do him good. Also where is a psychoanalyst near here to whom I could send him? I do not think that change of scene would help him, as he could not get away from his thoughts. Is this a case of psychasthenia?

M. J. FRANK, M.D., Beacon, N. Y.

ANSWER.—It is just as difficult to make a diagnosis in psychiatry without examining the patient personally as it is in other fields of medicine. The picture described is that of a chronic depression which seems to be a reaction to a strong withdrawal of interest from the external world, which leads to an incapacity of having any positive attachments outside the patient's own person. Such a self-centered attitude (narcissistic state of mind) often leads to inner conflicts, as it provokes self criticism and even feelings of guilt. In this case the depression apparently is not a reaction to any external event but a chronic state of mind which has persisted for a long time, and therefore it must be assumed that it is based on deep emotional conflicts. Only if the latter are influenced can a radical change

be expected. The therapy of choice, if this diagnosis is correct, is psychoanalysis.

Other psychotherapeutic approaches, such as persuasion or suggestion, would only touch the surface and can be employed in cases in which the morbid state of mind develops mainly as a reaction to an acute traumatic experience.

There are quite a series of competent psychoanalysts in New York, a list of which can be obtained from the New York Psychoanalytic Society, 324 West Eighty-Sixth Street, New York City.

RECURRENT UTERINE BLEEDING

To the Editor—A white woman, aged 27, consulted me, March 24, 1934, because of uterine bleeding since the onset of her last period two months previously. The hemorrhage was moderate, with no clots. She had a similar attack of menorrhagia ten years ago, which cleared up readily with some liquid medication orally, and a period that lasted one week four years ago, which ended apparently with the help of fluidextract of ergot. The present attack failed to clear up under fractional doses of the same drug. Catamenia started at 13, the periods being irregular (every three to six weeks) and lasting four days. The flow is moderate and usually clots. The patient had scarlet fever, measles and chickenpox in childhood. She stated that she had never had intercourse and said that there never had been leukorrhea. Examination revealed no apparent abnormalities, except for hemorrhage from the uterine cavity. The blood pressure was 116 systolic, 72 diastolic. Hemoglobin was 74. The bleeding time was two and one-half minutes, the coagulation time five minutes. (At a later date the patient said that she bled profusely and for a long time from cuts of the fingers and hands. A brother had severe epistaxis in his youth.) The urine was normal. I made a diagnosis of functional menorrhagia and prescribed a remedy containing ergot for oral administration. In six days the bleeding had practically ceased. Sixteen days later the uterine hemorrhage recurred, was profuse in amount, and to date (two weeks after the onset) still persists to a slight degree in spite of medication and bed rest. I think that the patient is practically over this attack but I fear a recurrence. The patient is working and wishes to avoid recurrence of this disorder. Any suggestions that you can give will be appreciated. Please omit name. M D, Ohio.

ANSWER—Although recurrent uterine bleeding in an unmarried woman of 27, without demonstrable evidence of pelvic disease, is usually ascribable to functional disturbance of the ovaries or other endocrine glands, diagnostic curettage is advisable because one sometimes encounters a submucous fibroid that is responsible for the bleeding. In the event that the curet reveals endometrial polyps, it is to be remembered that overgrowth of the endometrium is a frequent accompaniment of functional bleeding.

The care of functional uterine hemorrhage is often difficult and unsatisfactory. Many patients have a low basal metabolic rate. In these cases thyroid extract is almost specific.

Hypodermic injection of the pituitary-like luteinizing hormone has recently been used with success, but its value remains to be determined.

Röntgen treatment of the ovaries may be depended on to control the bleeding, but there remains the likelihood of permanent injury to the ovaries of younger women. The same would appear true of fractional intra-uterine applications of radium, although Keene is convinced of its therapeutic value and believes that radium in small amounts is harmless. Many gynecologists hold that supravaginal hysterectomy is preferable and is less radical because it spares the ovaries.

In selected cases of uterine retrodisplacement with associated functional bleeding, operative replacement of the uterus and ovaries is followed by a gradual return to regular menstruation, the result of reestablishment of normal ovarian function.

DANGERS OF BENZENE DICHLORIDE

To the Editor—Is it injurious to breathe air containing small amounts of the insecticide paradichlorobenzene? I have an 18 months old baby. When the nursery door is open to allow ventilation, fumes of paradichlorobenzene, which has been liberally used to protect clothing from moths in adjacent closets, floats into the room and the odor is rather distinct. Will this injure the baby? Please omit name.

M D, New York.

ANSWER—Paradichlorobenzene (benzene dichloride, dichloride) as used as a disinfectant is not known to produce harm to persons. Being a chlorinated hydrocarbon, it at once is to be associated with a number of related substances of well known toxicity. The fact that this crystalline substance becomes liquid at 53 C. and boils at 172 C. may be related to its apparent harmlessness, since these vapors are not freely produced at ordinary temperatures. While no equal significance should be attached to any genuine prospect of harm to this infant, it is felt that all possible pungent or disagreeable odors should be eliminated from all households. Offensive odors promote shallow breathing, nausea and mental irritability.

THROMBO-ANGITIS OBLITERANS

To the Editor—A man, aged 33, married in 1918, has one child 14 years old. He had the usual childhood diseases. Six months after the patient married he got wet in a rain and hail storm. Two days after the wetting he got stiff and stayed in bed for three months. In 1920 a mule bit him on the right forefinger, causing it to get sore. After enduring this condition for three months he had the finger amputated, and it took a month to get well. In 1924 the right little toe got sore and stayed that way for four or five months, after which he had the little toe amputated. The right thumb in 1929 got sore and stayed that way for three months. He had the thumb removed but healing did not occur and he had to have pieces removed five different times before the wound healed. In 1930 the left big toe had to be amputated, and now the right big toe is infected. The right big toe has been sore for a month and a half. The toe nail is off. The patient states that it just came off. All the nail bed has some necrotic tissue on it. It exudes some pus all the time. Around the necrosis the tissue is red and inflamed. The inflamed red tissue runs up into the foot a way. But it does not seem to be swollen to any degree. A thin ointment of balsam of peru in castor oil gives him the most relief. This is applied after a light treatment of x-rays and is the only treatment I have given him, thinking it might be ringworm of the nail; but it is not that. Examination of the blood is negative; the urine is negative for sugar. The blood pressure is 122 systolic, 80 diastolic. The patient has one bad tooth. He has been a little nervous for the past six months. He weighs 156 pounds (71 Kg.) and is 5 feet 10 inches (178 cm.) high. It looks like Buerger's disease, thrombo-angitis obliterans. If it is, please give me the best treatment so I shall not have to cut off his toes and fingers.

HUGH DAVIS, M.D., Seguin, Texas.

ANSWER—The successive involvement of the digits of the upper and lower extremities suggests that the diagnosis of thrombo-angitis obliterans may be correct, but the information supplied in the history is insufficient to establish the diagnosis. If pulsation is absent in the vessels of the extremities and if there is a history of the excessive use of tobacco, the diagnosis of this disease would be more certain.

Treatment for thrombo-angitis obliterans consists in intravenous injections of 5 per cent sodium chloride solution three times a week. The initial dose is 150 cc. and all subsequent injections 300 cc. Treatment is given on alternate days by the gravity method into a vein at the elbow. The solution must be prepared with freshly distilled water and immediately sterilized to avoid contamination. Additional details in regard to the treatment have been published in *THE JOURNAL*, June 5, 1926, page 1759, March 17, 1928, page 831, and May 31, 1929, page 1730.

If pain is severe, blocking of the peripheral nerves to produce anesthesia of the involved toe affords instant and complete relief. Details of this procedure can be found in the *Annals of Surgery* 98:55 (July) 1933. Complete cessation of the use of tobacco is essential. Weight bearing on the affected foot should be avoided by the use of bed rest or crutches until the ulcer is healed. A boric acid wet dressing should be applied to the toe until the infection is controlled, and then bland ointments may be used.

DIAGNOSIS OF WHOOPING COUGH

To the Editor—Is there any absolute method of diagnosing whooping cough before the cough reaches the spasmodic stage? Is the leukocyte count of more than suggestive value?

II. H. MUHLBERG, M.D., Reading, Pa.

ANSWER—The most nearly absolute method of diagnosing whooping cough before the whoop is to let the patient cough on a petri dish, containing a suitable medium, held 15 or 20 cm. from the mouth. No growth on the plate would not exclude the disease, but the development of colonies of the bacillus of whooping cough on the plate would justify a positive diagnosis. This "cough plate" method should be used more than it is in the early diagnosis of whooping cough.

Leukocytosis with a relative increase in the small lymphocytes usually appears in the early part of the convulsive stage and is regarded as a valuable diagnostic sign.

DOSAGE OF EPHEDRINE

To the Editor—A man, aged 36, has been complaining of fatigability, relieved by short periods of rest, for a long time. No organic abnormalities to account for this complaint have been discovered. I have prescribed for him ephedrine sulphate, one eighth grain (0.008 Gm.), to be taken three times daily. Is any harm to be expected from the prolonged and continued use of the drug in the dosage prescribed? Kindly omit name.

M D, Pennsylvania

ANSWER—No ill effects are likely to result from such dosage excepting that, as it is merely symptomatic therapy, if the condition is the result of excessive work this stimulation might make the final collapse still more disastrous.

PREGNANCY WITH ALBUMINURIA

To the Editor:—Kindly give me your opinion as to the advisability of a pregnancy in a woman, aged 30, who has been known to have albumin in the urine for the past ten years. During this time a number of tests have been made, at which times the renal function tests and blood chemistry have been normal. At the present time these tests are well within normal limits, the blood pressure being 124 systolic, 90 diastolic. This is apparently not a case of orthostatic albuminuria.

VERNE E. EASTMAN, M.D., Wausau, Wis.

ANSWER.—This woman may safely be advised to become pregnant, though she will have to be watched closely because not infrequently latent nephritis becomes apparent only during a pregnancy. The patient's urine should be examined both macroscopically and microscopically every two weeks during the first six months and every week thereafter. The blood pressure should likewise be checked with the same frequency and the patient's weight should be recorded at each visit. As a prophylactic measure, the patient should eliminate from her diet almost all table salt and condiments. Proteins may be eaten with impunity. Should the amount of albumin in the urine increase markedly and especially if casts or other evidence of kidney damage appear in the urine and the blood pressure rises, the pregnancy may have to be terminated.

ERUPTION OF TEETH

To the Editor:—In a child of 6, with all the deciduous teeth still firmly intact, the lower central incisors are beginning to erupt behind the deciduous. Is it necessary to extract the deciduous in order that the permanent may erupt properly? Kindly omit name.

M.D., New York City.

ANSWER.—The deciduous teeth should always be extracted immediately when the permanent teeth are detected erupting behind them.

INJECTION METHOD IN HYDROCELE

To the Editor:—In THE JOURNAL, July 28, page 281, a subscriber writes to ask if the use of sodium morrhuate is practical in the treatment of hydroceles. It is unfortunate that the inquirer was not referred to the comprehensive article by Kilbourne and Murray on the "Injection Treatment of Hydrocele" published in *California and Western Medicine* (37:3 [July] 1932). After extensive experimental investigations they employed a solution of quinine and urethane with excellent results. Kilbourne and Murray do not employ sodium morrhuate, as the solution is nonbactericidal, although Floyd and Pittman (*Georgia M. A. J.* 23:63 [Feb.] 1934; abstr. THE JOURNAL, May 12, p. 1641) have employed sodium morrhuate with the addition of a bactericidal drug with excellent results. Kilbourne and Murray found the use of quinine and urea solution, as recommended in your reply to the inquirer, impractical on account of the pain produced following the injection. For the last eighteen months, I and at my suggestion two of my colleagues, Dr. Charles R. Marquardt and Dr. James C. Sargent of Milwaukee, have employed the technic of Kilbourne and Murray in over thirty hydroceles with excellent results. It is our impression that the future will see a revival of this form of treatment of hydrocele and, with the use of the newer sclerosing solutions, we feel that the results will be entirely satisfactory. I was greatly pleased to see the fine answer given to the inquiry, as previously mentioned, in THE JOURNAL.

GEORGE H. EWELL, M.D., Madison, Wis.

CLIMATE AND SINUSITIS

To the Editor:—In an answer to a correspondent concerning residence for a case of sinusitis, I find San Diego recommended. I must disagree with this advice. Myself a sufferer for many years, I went there and found it unsatisfactory and was strongly advised by a prominent medical man not to remain. However, I do agree that Arizona is the best climate we have in this country. Tucson and the vicinity is all right. One must not get the idea that it is summer in winter in any part of this state. One thing that must be impressed on all these sufferers is that one winter or one summer will not suffice but, like tuberculosis, the disease requires a long if not permanent residence to assure or even promise a cure. I spent three winters of five months each north of Phoenix and had no severe attack, but on the way home on the last visit developed one on the train. Florida also is not a good place. I had two severe attacks there; i. e., on the Gulf Coast.

HENRY WALLACE, M.D., New York.

KALA AZAR IN TEXAS

To the Editor:—In Queries and Minor Notes in THE JOURNAL, September 8, a Texas physician inquires as to the possibility or probability of kala azar occurring in Texas. The answer made to the query is correct, but probably the correspondent should be referred to the paper by Katharine Dodd and Edna H. Tompkins on Histoplasmosis, which appeared in the *American Journal of Tropical Medicine* 14:127 (March) 1934. Histoplasmosis is apparently similar to kala azar, and sporadic cases have been observed in Minnesota by Watson and in Tennessee according to the quoted reference.

H. A. REIMANN, M.D., Minneapolis.

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral* (Group A and Group B candidates). San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written* (Group B candidates). The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 12; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science*. Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular*. Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Elective*. Little Rock, Nov. 13. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular*. Hartford, Nov. 13-14. *Endorsement*. Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homopathic*. New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MINNESOTA: Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

OREGON: *Basic Science*. Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

WEST VIRGINIA: Martinsburg, Oct. 29-31. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

Nebraska June Examination

Mrs. Clark Perkins, director, Bureau of Examining Boards, reports the written examination held in Omaha, June 8-9, 1934. The examination covered 10 subjects and included 91 questions. An average of 75 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
School of Medicine of the Division of the Biological Sciences		(1934)	1
Creighton University School of Medicine		(1933, 7), (1934, 16)	23
University of Nebraska College of Medicine		(1932), (1933, 4), (1934, 54)	59
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Michigan Medical School		(1929)	Michigan

One physician was licensed at a special examination held February 16. The following school was represented:

School	PASSED	Year Grad.
Northwestern University Medical School		(1933)

Two physicians were licensed by endorsement from February 24 to March 16. The following schools were represented.

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1933)	N. B. M. Ex.
University of Oregon Medical School		(1930)	N. B. M. Ex.

Oklahoma June Reciprocity Report

Dr. J. M. Byrum, secretary, Board of Medical Examiners, reports 5 physicians licensed by reciprocity at the meeting held in Oklahoma City, June 6-7, 1934. The following schools were represented.

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1933)	Kansas
State University of Iowa College of Medicine		(1929)	Iowa
University of Louisville School of Medicine		(1927)	Indiana
University of Nebraska College of Medicine		(1932)	Kansas
New York University, University and Bellevue Hospital Medical College		(1913)	New York

Book Notices

Applied Physiology. By Samson Wright, M.D., F.R.C.P., John Astor Professor of Physiology, University of London. Fifth edition. Cloth. Price, \$5.50. Pp. 604, with 195 illustrations. New York & London: Oxford University Press, 1934.

This textbook has received a well deserved popularity among practitioners of medicine. As Swale Vincent stated, "the day has gone by when a practitioner, however modest, can afford to declare that he has forgotten his physiology." This book is not a didactic presentation of physiology. The author's aim in preparing the original edition was to integrate physiology with clinical medicine. Special stress was laid on those functions which are commonly deranged in disease. Because of this and the skill and clarity with which it has been done, the book has been invaluable to students in medicine beyond their first two years and to those engaged in the practice of medicine. One would have great difficulty digging out facts and theories that are presented here in such a well correlated manner. The style and form of presentation make the book most engaging. It is simple and concise, yet almost every important aspect of applied physiology is discussed. In the various editions the author has made thorough revision to keep abreast of current developments in physiology and advances in clinical medicine. This edition is no exception. The most extensive revision has been in the physiology of the nervous, cardiovascular and endocrine systems. Among some of the features of the new edition that should interest practitioners are epinephrine secretion and blood pressure regulation; anatomy and physiology of the carotid sinus and body; mechanism of ischemic pain and its relation to angina pectoris; the pleural, pericardial and peritoneal sensibility after Capps and Morley; muscle tone and regulation of posture; the pituitary body, with an account of the follicle stimulating and luteinizing factors of anterior pituitary-like principle and their association with the menstrual function; dietetic and chemical control of erythropoiesis and the anemias; electrocardiographic records of direct stimulation of the human ventricle and necessity for reinterpretation of abnormal electrocardiograms in man; sympathectomy for vascular disorders in man; tissue oxidations, with concise accounts of cytochrome, Warburg's respiratory enzyme, indophenol oxidase and dehydrogenases, and many other subjects that have developed since their formal medical education. Bibliographic references enhance the value of this material and are well selected. An illustration of the author's desire to meet the needs of all classes of readers is the unique idea of printing in italics in the table of contents those parts of the subject which are wholly or mainly of clinical interest. This has been done for the student who has not had a background in clinical medicine and who might be preparing himself for an examination in didactic physiology. The feature has subtle pedagogic possibilities. The scholarly desire of the author to present facts has caused him to cull both the clinical and scientific American, French and English journals for current investigations. In spite of this new material and the addition of seventy new illustrations, the author has retained virtually the size of former editions. This has been possible only by critical editing and judicious deletions. This book should be the property of every medical student and practitioner. It was written for the specific needs of both, with a zealous desire to add to their knowledge and understanding of the physiology of disease. A book of this type is a distinct contribution to the progress of medicine.

Ocular Dioptrics and Lenses. By G. F. Alexander, M.B., C.M., Registrar, Ophthalmological Hospital of St. John, Jerusalem. Cloth. Price, \$4.75. Pp. 216, with 62 illustrations. Baltimore: William Wood & Company, 1934.

Here is a curious admixture of complex mathematical optics and sound refractive common sense. The author admits that the origin of the book lay in an endeavor to write an article on the why and wherefore of the change in the refractive strength of an ophthalmic lens on moving it forward from the eye. The elucidation of the subject led him far afield from the original object and there resulted page upon page of mathematical formulas that are beyond the comprehension of the average ophthalmologist. The phraseology employed is none

too happy, as may be exemplified in the second sentence of the book, which occupies twenty-five lines and contains forty-one commas, one colon, one semicolon, five parentheses, four i. e.'s and one final period. After ninety-six pages of formulas dealing with the laws of refraction and the optical constants of the eye, he proceeds to discuss the mechanism of accommodation. In this can be found many statements that are not universally accepted as yet; for example, "the hyaloid membrane surrounding the vitreous is highly elastic" and "the space between the zonule, the hyaloid, and the equator of the lens . . . is air tight." The ophthalmic physiologist will find many points in this chapter for the basis of delightful argumentation. From here on, the greater part of the book is devoted to various phases of clinical refraction and contains evidence of long, sound clinical experience. There is no bibliography but there is a fairly good index. The only illustrations are mathematical designs. The bookmaking, proofreading and printing are good. This is not a book for the beginner in ophthalmology but it can be read to advantage by one desiring further information in that ophthalmic essential, refraction.

Surgical Anatomy and Physiology. By Norman C. Lake, M.D., M.S., D.Sc., Senior Surgeon, Charing Cross Hospital, and C. Jennings Marshall, M.D., M.S., F.R.C.S., Surgeon, Charing Cross Hospital. Cloth. Price, 30/- Pp. 888, with 238 illustrations. London: H. K. Lewis & Co., Ltd., 1934.

The authors of this book have undertaken a tremendous task in attempting to present a treatise on surgical anatomy and physiology in one volume. However, they make no pretense at comprehensiveness on the physiologic aspect of the subjects covered but merely include an appreciable amount of physiology to round out the subject. One of the refreshing features of the book is the originality both in organization and in manner of presentation. The illustrations are adequate to clarify abstract descriptive material and the majority of them are original. The discussions are well balanced and show careful editing. In a book of this type there is always a danger of undue compression of certain descriptive detail at the expense of the uninformed reader. There is a surprising lack of it here. The application of anatomy to operative and pathologic surgery is considered under two headings, general and regional. For example, the alimentary canal is considered generally in the first section of the book with respect to development, supports, intestinal movements, radiography and bowel contents. Under the section of applied regional anatomy the various divisions of the alimentary canal are considered in detail, with ample treatment of physiology and pathology. As a concise and comprehensive treatment of surgical anatomy, this is an excellent textbook. It will be especially useful for the student and for those in their formative years of training, as an adjunct to more exhaustive textbooks.

Genealogy of Sex: Sex In Its Myriad Forms, From the One-Celled Animal to the Human Being. By Curt Thesing, M.D. Translated from the German by Eden and Cedar Paul. Introduction to the American edition by Smith Ely Jelliffe, M.D., Consulting Neurologist, Manhattan State Hospital and Kings Park State Hospital. Cloth. Price, \$5. Pp. 286, with 73 illustrations. New York: Emerson Books, Inc., 1934.

Dr. Thesing is a physician, zoologist and scientific writer of repute in Germany, author of numerous biologic works of both general and technical character. He has been director of the scientific division of the great publishing house of Teubner in Leipzig and a co-founder of the widely known periodical *Die Naturwissenschaften*. These qualifications peculiarly fit him to write the present work, which is a panorama of the development and diversifications of the reproductive function in the animal world. It is not a systematic unfolding of the successive stages of evolution traced up the ladder of life from ameba to man but rather the story of the many interesting and curious developments of sexual processes and mating behavior that have been evolved in various groups of animals from the lowest to the highest and from the simple to the complex. Some of these widely divergent and curious accomplishments of the sexual instinct serve to illumine the obscurer aspects of sexual behavior and abnormalities of sexual development in man. Among the topics discussed in the light of the broader comparative biologic consideration of sex among animals are the origin of sex, the sex cells and the sexual instincts, hermaphroditism and intersexes; the relation of environmental factors to sexual develop-

ment; the suppression of sexual development by parasitism; parasitic males in the marine worm *Bonellia*, in *Myzostoma*, a degenerate annelid living on crinoids, and in certain crustacea; the transformation of old hens into functioning cocks by glandular abnormalities; sexual dimorphism in sex cells and in adults; the phenomenon of dwarf males, structurally defective males, the diminution of the male ratio, and the ultimate extinction of the male sex, as in some rotifers in which no males have ever been found; the pairing of hermaphroditic animals such as snails; the cannibalistic behavior of the female spider, which eats the male, even before his purpose is accomplished; the influence of the sexual impulse on migration of fishes and birds; the relation of the lunar cycle to the spawning of the palolo worm of the coral reefs and of many other marine animals; the rhythms in man and woman of the ebb and flow of the sexual hormones; the strange behavior of the praying mantis, crayfishes, cuttle fishes, toads and Australian aborigines in copulation; the lures and stimuli favoring reproduction found among insects, birds, mammals, and aborigines such as color, odor, taste, tactile stimuli and fantastic behavior. The closing chapter is a review of the sexual habits of primitive peoples, largely drawn from Malinowski's researches in New Guinea.

The book is an interesting compilation of sex lore which should make even the calloused exclaim "Ain't nature wonderful."

Studien über die Permeabilität der Retina. Von Henry Key, Med. Lic. Inaugural Dissertation zur Erlangung der medizinischen Doktorwürde. Upsala. Sonderabdruck aus Acta Societatis Medicorum Suecane, Band LVIII, 1932. Paper. Pp. 82, with 29 illustrations. Stockholm: Isaac Marcus Boktryckeri-Aktiebolag, 1932.

This represents an extensive experimental work on the eyes of animals and man. The material was as fresh as possible in the human cases, as early as an hour after death. An elaborate technic was worked out for the study of the permeability of the choroid and retina as well as for the retina alone. The study was made first on the permeability of the tissues for water and for various alkaline and acid solutions as well as dyes. The permeability from within out, i. e., from retina toward sclera, as well as from without in, was estimated. The influence of various drugs was also studied. The author found that sodium iodide solution 0.04 per cent increased, atropine sulphate 1:50,000 reduced, and pilocarpine chloride and, even more, physostigmine salicylate increased the permeability of the retina for water. The significance of these experiments for the pathology of the eye may be mentioned. If in a detached retina the osmotic pressure of the subretinal fluid is greater than that of the vitreous, there may be some argument as to whether the fluid will pass from it through the retina. The fact that the retina is permeable to water in both directions will have an influence on the fluid exchange of the eyes. The new knowledge of the influence of drugs on retinal permeability may alter some ideas held about the actions of drugs in cases of glaucoma. The article contains sixty-five tables, thirteen illustrations and a comprehensive bibliography. The work is of special interest to the physiologist and the research worker in ophthalmology.

Diseases of the Eye. By Sir John Herbert Parsons, C.B.E., D.Sc., F.R.C.S., Consulting Ophthalmic Surgeon, University College Hospital, London. Seventh edition. Cloth. Price, \$5.50. Pp. 693, with 374 illustrations. New York: Macmillan Company, 1934.

The last edition of this textbook appeared in 1930 and was reprinted in 1931. A review appeared in *THE JOURNAL*, March 22, 1930, page 891. That there is a demand for the book is evidenced by the necessity of a new edition after only four years, especially during these times of depression. The new edition contains sixteen more pages than its predecessor, the increment lying in additions to the existing text. No new chapters and no new illustrations have been added. The second chapter, on physiology, has been more or less rewritten, with especial attention paid to the balance of intra-ocular pressure and to the formation of the aqueous. The work of Duke-Elder is reflected in this. The remaining additions to the text have been more in the form of slight amplifications, such as the addition of about half a paragraph on the modern surgical treatment of detachment of the retina (with mental reservations as to results). The author is seemingly not thoroughly imbued

with the etiologic import of tuberculosis in diseases of the retina and uvea, although he begrudgingly mentions the possibility. The orthoptic treatment of squint, which is now attracting so much attention, is given but brief mention, but the pharmacopeia at the end of the book has been elaborated and rewritten and now is in a most useful form. Another appendix contains all the necessary information relative to the ocular requirements for admission to the various civil and military services. The opinions expressed in the review of 1930 still hold and again it must be emphasized that here is a moderate sized textbook for students and practitioners that is eminently worth while.

That Heart of Yours. By S. Calvin Smith, M.D., Sc.D. Cloth. Price, \$2. Pp. 212, with 6 illustrations. Philadelphia & London: J. B. Lippincott Company, 1934.

The increasing number of persons dying yearly from heart disease caused the medical profession to focus its attention on prevention. In an effort to reduce the morbidity and mortality, facts concerning the necessity of rest, prevention of infection and avoidance of strain were stressed to the public. While this type of education played an important part in the reduction of active heart disease, it raised a feeling of apprehension in some individuals. The profession has appreciated this. In a recent book the English cardiologist Sir Thomas Lewis devotes a section to the manner in which the physician should speak to his cardiac patient about his illness. Truth is the first essential, but it should be accompanied by encouragement and optimism. That, in substance, is the keynote of this book. The author has attempted to amplify and supplement the information the physician usually gives his heart patient. The book is clearly written in simple, understandable language. The optimism generated in the text is a product of modern study and observation. It is convincing as well as cheerful. Persons who have heart trouble, imagined or real, will benefit greatly by this book.

Tuberculosis in the Child and the Adult: A Discussion of Pathologic Anatomy, Pathologic Physiology, Immunology, Diagnosis and Treatment. By Francis Marion Pottenger, A.M., M.D., LL.D., Clinical Professor of Medicine (Department of Chest) University of Southern California, the School of Medicine. Cloth. Price, \$8.50. Pp. 611, with 85 illustrations. St. Louis: C. V. Mosby Company, 1934.

This book is recommended to students and practitioners. In it is assembled all present information on the subject of tuberculosis as it affects the child and adult. It is intelligently written, compact and liberally illustrated with roentgenograms and instructive diagrams. Topics of unusual interest are accompanied by references to the American and foreign literature. Much stress throughout the volume is placed on the allergic manifestations of tuberculosis, and the chapters on hypersensitivity, allergy and immunity are developed in great detail. Another hobby of the author's, "The Visceral Neurology of Tuberculosis," unfolds itself at length in an illustrated discussion of the part played by the vegetative nervous system in the production of signs and symptoms commonly seen in this disease. This exposition, showing how various organs of the body are reflexly affected by the action of toxins on the sympathetic nervous system, helps one to understand the pathologic physiology of pulmonary tuberculosis. The chapters devoted to childhood tuberculosis leave little unsaid on this important subject, especially as it concerns the relationship to adult tuberculosis. The pathology of tubercle, the evaluation of symptoms, signs and laboratory tests in diagnosis, and the various methods of choice in the treatment of different stages of the disease are discussed from every phase of present-day knowledge. This new textbook, while prejudiced along certain lines, reveals the author's thorough familiarity with his subject and is a worthy addition to any medical library.

Facies dolorosa; das schmerzenseiche Antlitz. Von Dr. H. Killian. Cloth. Price, 19.60 marks. Pp. 88, with 64 illustrations. Leipzig: Georg Thieme, 1934.

This is a collection of illustrations showing the facial appearances of people with various types of diseases. In his accompanying case histories the author classifies these facial appearances according to the associated mental processes. There is also an introductory sketch indicating the significance to be attached to studies of this type.

Medicolegal

Malpractice: Solution of Formaldehyde Mistakenly Used for Procaine Hydrochloride.—Prindle, a licensed physician, undertook in the Church of St. Matthew Mills Memorial Hospital to remove a cyst from the exterior wall of the plaintiff's abdomen. He directed a nurse, employed by the hospital, to prepare a procaine hydrochloride solution for use as a local anesthetic. Because of admitted negligence the nurse prepared a solution of formaldehyde, which the physician, believing it to be procaine, injected in the plaintiff's abdomen. He immediately noticed a violent reaction on the part of the patient, discovered the mistake, injected procaine and removed by incision, as far as possible, the area affected by the solution of formaldehyde. For the resulting damage the plaintiff sued the physician, the nurse and the hospital. The jury returned a verdict in favor of the plaintiff against the hospital for \$10,000 and against the nurse and physician for "\$ No dollars." The trial judge refused to direct the jury to reframe the verdict, and later, on motion of the hospital, entered a judgment in favor of the hospital notwithstanding the verdict of the jury, on the theory that the hospital was a charitable institution, had used due care in selection of its servants and was not, therefore, liable for the torts perpetrated by its servants on recipients of its benefits. The plaintiff then appealed to the Supreme Court of California.

The Supreme Court held that the trial court was without power to enter a judgment in favor of the hospital notwithstanding the verdict of the jury, inasmuch as the hospital had failed to move for a directed verdict at the close of the evidence. But because in the opinion of the court the verdict of the jury was too incomprehensible to support a judgment in favor of any party to the action, the Supreme Court ordered a new trial of the cause.

There was not a scintilla of evidence, the Supreme Court concluded, to support a verdict in favor of the nurse. She interposed no defense and made no denial to the allegations of the complaint that she was negligent. On the witness stand she admitted that she had neglected to read the label of the bottle containing solution of formaldehyde, which she used instead of procaine. It would be an anomaly, said the court, to hold the nurse to be free of negligence and to hold the hospital, whose agent she was, guilty of negligence.

In view of the retrial of the cause, the Supreme Court refused to pass on the liability of the physician under the evidence adduced at the trial.

As noted, the case was remanded to the trial court for a retrial of the cause.—*Hallinan v. Prindle (Calif.)*, 29 P. (2d) 202.

Dental Practice Acts: Revocation of License for Self-Laudatory Advertising.—The defendant, Waller, a licensed dentist, distributed circulars in which he claimed to be the only dentist in the Panhandle of Texas "doing Professional Denture work." The district court, Potter county, Texas, revoked Waller's license under a provision of the Texas dental practice act authorizing the revocation of a license if the licensee was guilty of "any deception or misrepresentation for the purpose of soliciting or obtaining business." Waller appealed to the court of civil appeals of Texas, Amarillo.

The judgment canceling Waller's license, said the court of civil appeals, rested on an accusation, charge, and evidence that may not be made the legal basis for depriving a citizen of Texas of the right to labor and enjoy the fruits of that labor in his chosen profession, even though all that was charged and proved against him be true. It was not claimed that any act of Waller in any way affected the health, safety, morals, comfort, or general welfare of the public, or any of its members; nor that Waller was not able to do proficiently and expertly everything that he said he could do; nor that anybody was misled or deceived to his injury, or could have been, by the statements made by Waller. Those statements, continued the court, amounted to no more than a claim that he was better equipped than his professional brethren to do a certain class

of dental work and that he was doing such work better than they. Being able to do precisely the character of work he advertised, questioned the court, who could be injured by the representation that he could do it better than others, unless it was his competitors who lost business to him by reason of his statements? If only his competitors would be thus affected, no contention could be made that legislative authority existed under the police power to cancel a professional license on any such narrow and selfish ground. The Texas court found itself in accord with the views expressed by the Supreme Court of Colorado in *Chenoweth v. State Board of Medical Examiners*, 57 Colo. 74, 141 P. 132, in which the Colorado court held unconstitutional a provision of the medical practice act of Colorado authorizing the revocation of a physician's license for "causing the publication and circulation of an advertisement relative to any disease of sexual organs," on the ground that the provision had no reasonable relation to the public health and comfort, or to the safety or welfare of society and hence could not be justified under the exercise of police power.

The provision of the dental practice act under consideration, as interpreted by the lower court, said the court of civil appeals, would permit the revocation of a license because of a simple misrepresentation to obtain business, even though such misrepresentation amounted to no more than "puffing one's wares" or "big talk," and even though such representations in no way affected adversely the health, morals, safety, or welfare of the public. The right to practice a profession has been called a property right, but it is more, continued the court. To obtain a license and proficiency requires the expenditure of money and years of preparation. Such right is the capital stock of its possessor from which dividends are expected sufficient to protect him from the infirmity of old age and to provide his family with the comforts of life. To cancel a professional license is to take away the entire capital stock of its possessor and to leave him in most instances the equivalent of a bankrupt. No legislature should be allowed to prescribe the infliction of such a penalty except by a law clear and unmistakable in its terms and which respects the interests of society and its members.

Because, concluded the court, no valid legal basis existed, under the accusatory portions of the complaint, for the judgment rendered by the trial court, that judgment was reversed and the cause remanded.—*Waller v. State (Texas)*, 68 S. W. (2d) 601.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, New York, Oct. 30-31. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.
- American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. McLeney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.
- Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Nov. 1-3. Dr. Ralph A. Reis, 104 South Michigan Boulevard, Chicago, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 2-3. Dr. Lawrence D. Thompson, 3720 Washington Boulevard, St. Louis, Secretary.
- Inter-State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.
- Omaha Mid-West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.
- Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Tri-States Medical Society of Texas, Louisiana and Arkansas, Shreveport, La., October 16-17. Dr. George P. Quinn, 427 Milam Street, Shreveport, Secretary.
- Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

1: 351-424 (Aug.) 1934

- Commensal and Parasitic Endamoeba Histolytica Infestation: Parasitogenesis of Endamoeba Histolytica. L. Arnold, Chicago.—p. 351.
- Treatment of Patients with Foreign Bodies in Esophagus or Stomach. P. P. Vinson and K. Deissler, Rochester, Minn.—p. 357.
- *New Aspect of Migraine and Certain Related Conditions: Discussion of Its Therapeutic Possibilities. E. Földes, New York.—p. 359.
- Further Proof that the Gallbladder Evacuates Via the Cystic Duct. W. L. Voegtlin, H. Greengard and A. C. Ivy, Chicago.—p. 371.
- *Studies on Gastric Motility Under Low Oxygen Pressures. E. J. Van Lier, Morgantown, W. Va.—p. 373.
- Study of Absorption of Dextrose and Water from Chronic Isolated Loops of Colon. P. H. Moore and G. E. Burget, Portland, Ore.—p. 376.
- Some Observations on Food Allergy. W. T. Vaughan, Richmond, Va.—p. 384.
- Revised "Elimination Diets" for Diagnosis and Treatment of Food Allergy. A. H. Rowe, Oakland, Calif.—p. 387.
- Management of Chronic Spastic Constipation. H. G. Beck, Baltimore.—p. 393.
- Treatment of Pernicious Anemia. S. M. Goldhamer and F. H. Bethell, Ann Arbor, Mich.—p. 398.
- Uncommon Tumors of the Large Intestine. J. A. Barger and C. F. Dixon, Rochester, Minn.—p. 400.
- Some Principles in Treatment of Septic Conditions Following Abdominal Diseases. J. N. Cornish, Philadelphia.—p. 404.
- Treatment of Hemorrhoids. J. M. Lynch and V. Hurley, New York.—p. 409.
- *Perirectal Streptococcal Cellulitis: Report of Case. H. T. Hayes, Houston, Texas.—p. 413.

Migraine and Related Conditions.—Földes points out that visual disturbances and various nervous and psychic manifestations are not uncommon occurrences in attacks of migraine. Aside from migraine, however, paroxysms of headache, vomiting and visual disturbances are seen in other conditions, in particular in that form of uremia which has been variously termed the acute, convulsive or eclamptic uremia. This occurs in such forms of glomerulonephritis or nephrosis as are associated with visible retention of liquids; in other words, convulsive uremia occurs in the edematous forms of kidney disease. Therefore, the disturbances that regularly precede uremic convulsions or are manifested instead of the latter are caused by the same factors to which the convulsions are due. As to the pathogenesis of "convulsive uremia," there seems little doubt that it is the increased intracranial pressure caused by accumulation of fluids in the tissue of the brain and within the cavities of the brain which leads to convulsions. The theory of the pathogenesis of migraine presented is that attacks may occur simultaneously with changes in the weather. There is retention of liquid in the organism in the case of decreasing barometric pressure and this retention may lead to the development of a retentional type of attack; or the return of the barometric pressure to normal, following its drop, may lead to a release of previously retained liquid and consequently to a mobilizational type of migraine. The so-called common cold may be associated with attacks in sufferers from migraine, owing no doubt to the fact that almost all infectious diseases bring about retentions in the organism. The author applies his theory of the pathogenesis of migraine to its therapy; that is, the prevention of accumulations of liquid in the organism and the elimination of liquid previously accumulated. Prevention of water retention and elimination of water already accumulated should have a curative effect in the retentional type of migraine. In the mobilizational type, due to local accumulation of liquid in the brain which was previously retained in other parts of the body and then mobilized, prevention and elimination of retentions should similarly have a curative effect. The main principle on which such therapy should be constructed is that of the utilization of

food substances whose action is antiretentional and the restriction of food substances the action of which is retentional; that is, an antiretentional diet. Good results have been obtained in thirty cases of migraine with the antiretentional diet.

Gastric Motility Under Low Oxygen Pressures.—The experimental work of Van Lier on dogs emphasizes the importance of prescribing easily digestible food and food that will leave the stomach quickly in cases of disease associated with anoxemia. Animals subjected to what may be termed moderate grades of anoxemia showed a delay of several hours in the emptying time of their stomachs.

Perirectal Streptococcal Cellulitis.—Hayes reports a case of perirectal streptococcal cellulitis in which the streptococci were carried into the perirectal tissues during an operation for hemorrhoids, either by trauma or by the needle. At the suggestion of a roentgenologist, treatment with x-rays was begun. The temperature dropped 2.4 degrees F. within twelve hours after the first roentgen treatment. In less than eighteen hours there was a profuse drainage of grayish white, sero-sanguineous material from the wounds on both sides of the anus. Subjectively the patient felt much better. On the next day and the day following she was given further roentgen treatments. During this time the wound drained profusely and the areas round the rectum softened rapidly. The dosage of x-rays was spark gap, 5 inches; milliamperes, 3; no filters; distance, 10 inches; time, three minutes. On the eve of the third day the patient's temperature became normal and did not go above 99 F. after this time. Subjectively she was well; the hardness about the rectum had disappeared entirely. The sinuses gradually dried up; there was no communication with the rectum, no resultant fistulas and only one small, draining sinus when she left the hospital. A culture of the discharge from the wound, ten days after the cessation of the roentgen treatments, proved it to be entirely sterile.

American Journal of Physiology, Baltimore

109: 193-386 (Aug. 1) 1934

- Relationship of Bromide Content of the Lumbar Fluid to That of the Cisternal Fluid After the Walter Bromide Test. J. H. Masterman, Baltimore.—p. 193.
- Comparison of Actual and Theoretical Forms of the Postincisural Portion of the Aortic Pulse Wave. G. S. Eadie and F. D. McGee, Durham, N. C.—p. 197.
- Respiratory Metabolism of Atrophic Muscle. G. C. Knowlton and H. M. Hines, Iowa City.—p. 200.
- Quantitative Study of Production of Sympathin. A. Rosenbluth and R. S. Morison, Boston.—p. 209.
- Effect of Vagotomy on Gastric Emptying Time. W. J. Meek and R. C. Herrin, Madison, Wis.—p. 221.
- Effect of 2,4-Dinitrophenol on Oxygen Uptake of Kidney and Liver Tissue of the Rat. W. M. McColl, New Orleans.—p. 232.
- Normal Behavior of the Pulmonary Blood Vessels with Observations on Intermittence of the Flow of Blood in Arterioles and Capillaries. J. T. Wear, A. C. Ernestine, Cleveland; A. W. Brumer, Philadelphia; J. S. Barr, Boston; W. J. German, New Haven, Conn., and L. J. Zschischke.—p. 236.
- Role of Inferior Mesenteric Ganglions in Dirhagic Response of Colon to Sympathetic Stimuli. H. Lawson, Louisville, Ky.—p. 257.
- Fiber Constitution of Depressor Nerve of the Rabbit. J. O'Leary, P. Heinbecker and G. H. Bishop, St. Louis.—p. 274.
- Reduction of Oxygen Consumption During Cardiac Inhibition. W. E. Garrey and J. T. Boykin, Nashville, Tenn.—p. 286.
- Conduction Time in Afferent Tracts of Spinal Cord in Relation to Flexion Reflex. C. E. Lowe and L. Einarson, Boston.—p. 296.
- Glucose and Nonglucose Portions of "Blood Sugar" in Hepatic and Portal Veins of the Decapitate Cat at Different Sugar Levels. J. M. D. Olmsted and L. S. Read, Berkeley, Calif.—p. 303.
- Absence of Light and Reproductive Cycle in the Guinea-Pig. E. W. Dempsey, H. I. Myers, W. C. Young and D. B. Jennison, Providence, R. I.—p. 307.
- Creatine Content and Weight of Ventricles in Experimental Hyperthyroidism and After Thyroparathyroidectomy. D. W. Cowan, Iowa City.—p. 312.
- Effect of Iron With and Without Other Elements on Production of Polycythemia. H. H. Beard and Erlene J. Andes, New Orleans.—p. 316.
- Source of Estrin in the Pregnant Mare. G. H. Hart and H. H. Cole, Davis, Calif.—p. 323.
- Method for Explanation of Kidney. C. P. Rhoads, New York.—p. 324.
- Functional Effect of Explaning One Kidney and Removing the Other. C. P. Rhoads, A. S. Abzug, Alma Heller and D. D. Van Slyke, New York.—p. 329.
- Relationships Between Crea Excretion, Renal Blood Flow, Renal Oxygen Consumption and Diuresis: Mechanism of Urea Retained in a Renal Consumption. C. P. Rhoads, Alma Heller and A. S. Abzug, D. D. Van Slyke, C. P. Rhoads, Alma Heller and A. S. Abzug, New York.—p. 336.
- Liberation of Adrenergic and Cholinergic Substances in Submaxillary Gland. M. Cantell, H. G. Wolf and D. Clark, New York.—p. 371.

American Journal of Surgery, New York

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- Neglected Affections and Lesions of the Deep Urethra. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 201.
- *Surgical Treatment of Acute and Chronic Empyema. L. W. Frank, Louisville, Ky.—p. 211.
- Relief of Intractable Pain by (Subarachnoid) Injection of Alcohol. E. L. Stern, New York.—p. 217.
- Why the Increasing Mortality in Appendicitis? I. J. Walker, Boston.—p. 228.
- Fibroplastic Appendicitis. V. St. John, Los Angeles.—p. 243.
- Excision of Superior Hypogastric Plexus in Treatment of Intractable Interstitial Cystitis: Report of Five Cases. H. L. Douglass, Nashville, Tenn.—p. 249.
- Prolapse of Uterus. J. E. Bellas, Peoria, Ill.—p. 258.
- Cancer of Cervix. C. H. Weaver, Los Angeles.—p. 262.
- Acute Suppurative Parotitis: Its Etiology, Pathogenesis and Treatment. H. S. Talbot, East Orange, N. J.—p. 267.
- Histologic Studies of Spinal Cord Following Spinal Anesthesia. H. Koster and L. P. Kasman, Brooklyn.—p. 277.
- Scope of Minor Operations in the Dispensary. H. C. Saltzstein, Detroit.—p. 281.
- *Discussion of Some of Methods Used in Treatment of Superficial Granulating Wounds. J. E. Cannaday, Charleston, W. Va.—p. 288.
- Combined Nasal Plastic and Chin Plastic: Correction of Microgenia by Osteocartilaginous Transplant from Large Hump Nose. G. Aufricht, New York.—p. 292.
- Fractures of Upper Extremity and Clavicle. J. J. Kirschenmann, Brooklyn.—p. 297.
- Epidural and Perineural Injections in Treatment of Peripheral Pain. J. E. Allegretti, Chicago.—p. 304.
- Lumbago. A. J. Buka, Pittsburgh.—p. 307.
- Abdominal Glands. F. H. Bowman, Yonkers, N. Y.—p. 309.
- Appendical Oxyuriasis and Appendicitis. Regena C. Beck, Richmond, Va.—p. 313.
- Venodysplasia: Dangers and Contraindications. J. Tomarkin and A. Strauss, Cleveland.—p. 319.
- Essential Hypertension with Treatment by Bilateral Subtotal Adrenalectomy. C. DeCourcy and J. L. DeCourcy, Cincinnati.—p. 324.
- Control of Spastic Anal Sphincter. W. F. Preusser, Albany, N. Y.—p. 327.

Surgical Treatment of Empyema.—Frank emphasizes that operation for acute thoracic empyema is not an emergency and that aspiration or the closed operation should be employed in all cases in which the pleural fluid is not frank pus. Roentgen study of all pulmonary conditions is not an admission on the part of the practitioner of the lack of knowledge of symptoms and clinical signs but rather indicates his thoroughness in that he wants to see the existing pathology. Proper drainage regardless of the method employed will not only cure most cases of acute empyema but prevent chronic empyema. If chronic empyema does occur, plastic operation on the chest wall is followed by a lower mortality and better results than any other operation designed to obliterate the empyema cavity.

Treatment of Superficial Granulating Wounds.—Cannaday recommends for routine use a light, mouse-proof wire mesh and adhesive plaster in the treatment of wounds of a superficial nature. From this a screen or framework may be devised to be applied about the average wound so as to protect it from the traumatism incident to dressing contacts, clothing and other objects. This screen wire is cut to the size necessary to make an adequate shield over the wound. The edges are bound with strips of adhesive plaster and shaped so as to fit about the wound. Sometimes the edges of the screen or shield are elevated by placing a narrow runner of felt under each side of it. For the protection of a lacerated wound of the finger, an efficient screen may be made by encircling the finger with the wire mesh and holding it away from the tender, unhealed area by a felt support. In many instances raw areas so treated will heal in contradistinction to others that have been assiduously dressed day after day without apparent diminution in the size of the wound. The author has observed not a few instances of small unhealed areas that had resisted dressings of the conventional type over a period of six weeks or two months or longer, that did heal promptly after a short course of exposure to open air, sunlight or various electric lights advocated for this purpose. The application of heat, as by sunshine or lamp, presumably in part promotes healing by the improvement of circulation as well as by the drying of the skin. The position of the part involved often plays a large part in regard to the behavior of the case. The leg ulcer, waterlogged and edematous, makes slow, if any, gains while in the passive and dependent position. Periods of active exercise, alternating with rest in bed with the part elevated, are more likely to bring about improvement.

American Review of Tuberculosis, New York

30: 239-374 (Sept.) 1934

- Simultaneous Bilateral Spontaneous Pneumothorax: Review of Literature and Report of Recurrent Case Due to Congenital Cysts of Lung. W. R. Oechsli and S. H. Miles, Olive View, Calif.—p. 239.
- *Leukocyte Counts During Artificial Pneumothorax Treatment and Lung Expansion. J. K. Deegan, New Haven, Conn.—p. 256.
- Alternate Artificial Pneumothorax. J. Head, Naperville, Ill.—p. 277.
- Efficient Apparatus and Technic for Artificial Pneumothorax Refills. D. H. Minnis, Warrensville, Ohio.—p. 281.
- Partial Cauterization of Pleural Adhesions by Closed Iotrapleural Pneumolysis. J. H. Forsee, Denver.—p. 287.
- Atelectasis and Disappearance of Cavities. F. W. Holcomb and G. W. Weber, Kingston, N. Y.—p. 299.
- Occlusion of Trachea and Bronchi by Tuberculous Process Complicating Pulmonary Tuberculosis: Case Report with Autopsy Findings. M. McConkey, Ray Brook, N. Y.—p. 307.
- *Pulmonary Aspergillosis in Association with Bronchial Carcinoma. R. H. Kampmeier, New Orleans, and H. A. Black, Pueblo, Colo.—p. 315.
- Clinical Study of Allergy and Immunity. A. A. Karan and V. H. Danford, Wallum Lake, R. I.—p. 320.
- Further Experiences with Ma-100 Proteins. E. P. K. Fenger, E. S. Mariette, Oak Terrace, Minn.; Dorothy W. Hutchinson and A. J. Ouellette, Minneapolis.—p. 329.
- Viability of Tubercle Bacilli in Tissues and Sputum Preserved in Vitro. C. B. Vidal, Denver.—p. 344.
- Tuberculosis and Mental Disease: Tuberculin Survey in State Hospital. E. Bogen, Olive View, Calif.; Esther Bogen Tietz and F. Grace, Cincinnati.—p. 351.
- *Effect of Moderately Large Dosage of Viosterol on Tuberculous Children. H. G. Poncher and B. M. Gasul, Chicago.—p. 358.
- Dietary Treatment for Tuberculosis: I. Results in Bone and Joint Tuberculosis. H. Stempa, Hartford, Conn.—p. 365.

Leukocyte Counts During Pneumothorax Treatment.

Deegan used the interpretations of Medlar in studying the leukocyte count in fifty-two cases of far advanced pulmonary tuberculosis subjected to artificial pneumothorax treatment and other forms of collapse therapy in which the collapsed lung was allowed to expand subsequently. Twenty-five cases were classified as clinically arrested on discharge: in nine instances the initial septic type of blood picture changed to nonseptic, in two a hyperplastic type of blood picture was assumed, and in ten the blood picture showed a persistent septic type which, however, became less septic under treatment. One patient discharged as clinically arrested maintained an elevated septic type of blood count throughout the period of observation, although the clinical state was strikingly improved. In three cases which presented the septic type of blood count persistently in contrast to marked clinical and roentgenologic improvement it was felt that factors other than tuberculosis might possibly be influencing the blood picture. Six cases were discharged as clinically improved with the blood picture in agreement with their progress. Ten cases are classified as unimproved; all of them maintain a septic type of blood picture and, clinically, are stationary or retrogressing. Eleven patients died following the unsuccessful course of artificial pneumothorax therapy. In several instances in which there were chronic infections together with the tuberculosis, the blood picture was found to be septic in type, and it was thought that the intercurrent infection rather than tuberculosis was the cause of the persistent septic blood picture, as the patients were able to resume work and have remained relatively asymptomatic since discharge. The authors consider the Medlar interpretation of blood counts in cases of far advanced pulmonary tuberculosis subjected to collapse therapy a valuable guide in the clinical administration and control of these patients.

Pulmonary Aspergillosis and Bronchial Carcinoma.

Kampmeier and Black report a case of aspergillosis that occurred in the presence of a bronchial carcinoma. They made the diagnosis, tentatively at first, on the history and physical examination. However, some doubt was cast by the constant presence of the aspergillus in the sputum without tubercle bacilli. The roentgen shadow in the left lower lobe could not be satisfactorily explained on the basis of bronchogenic malignant tumor as could the hilus shadow, which was compatible with such a diagnosis. The fact that the shadow of the lower lobe cleared a great deal by the use of potassium iodide also was confusing. High voltage roentgen therapy was used over the hilus, however. Giese saw the patient in consultation and committed himself to a diagnosis of malignant tumor. Because of retention of secretion due to the neo-

plasm, the fungus probably had a good medium for growth. Whether the organism was a factor in the production of symptoms, and whether it aided in the destruction of tissue in the carcinomatous area is a matter for speculation.

Effect of Viosterol on Tuberculous Children.—Poncher and Gasul gave fifty-nine children, all contacts with tuberculosis and showing at least a definitely positive tuberculin reaction, a daily dose of 150 and 300 drops (10 and 20 cc.) of viosterol for four and three months respectively. The dosage of viosterol did not appear to have any definite effect on the course of the tuberculous process. Hypercalcemia was not produced. The authors feel that the use of relatively large therapeutic doses of viosterol administered over a long time to patients having tuberculosis is not favorable. Despite the failure to produce a definite hypercalcemia it was their impression that fluctuation in the weight curve (increase on the 150 drops of viosterol and decrease on the 300) that occurred is an undesirable effect. It may be that the administration of a larger dose for a short period will obviate this difficulty. When hypercalcemia is produced, symptoms such as anorexia and muscular weakness occur. While these symptoms disappear when viosterol is discontinued the desirability of hypercalcemia with such symptoms, even as temporary sequelae, is open to question. All patients, however, gained weight when viosterol was discontinued and this gain was much more pronounced than during the period when 150 drops of viosterol was administered.

Anatomical Record, Philadelphia

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- Effect of Elevated Temperature on Mitochondria of Guinea-Pig Pancreas. F. Meola, Rochester, N. Y.—p. 5.
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Cytologic Studies on Rat Pituitary After Injections of Pregnancy Urine Extract and Pregnancy Blood Serum. Aura E. Severinghaus, New York.—p. 43.
Studies on Physiology of Lactation: IV. Assay of Lactogenic Hormone of Anterior Hypophysis. W. O. Nelson, Columbia, Mo.—p. 69.
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Presence, Properties and Distribution of Intercellular Ground Substance of Loose Connective Tissue. Sylvia H. Bensley, Chicago.—p. 93.

Annals of Surgery, Philadelphia

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- Operability of Brain Tumors. A. W. Adson, Rochester, Minn.—p. 241.
Physiologic Considerations Related to Infusion Treatment of Shock. W. F. MacFee, New York, and R. R. Baldrige, Providence, R. I.—p. 266.
*Myositis Ossificans (Circumscripta) in Ligamentum Nuchae. J. E. M. Thomson, Lincoln, Neb.—p. 279.
Eye Complications in Exophthalmic Goiter: Cataracts and Exophthalmos. R. B. Cattell, Boston.—p. 284.
Traumatic Subdural Hemorrhage: Surgical Removal of Clot: Recovery. P. Alava and S. Stat, Wilmington, Del.—p. 304.
*Subtotal Bilateral Adrenalectomy for Hyperadrenalism (Essential Hypertension). J. L. DeCourcy, Cincinnati.—p. 310.
Liver Deaths (So Called): Rapid High Temperature Deaths. F. G. Connell, Oshkosh, Wis.—p. 319.
Malignant Tumors of Large Intestine: Pathologic Aspects of Two Hundred and Ten Cases Coming to Necropsy. L. M. Larson and M. Nordland, Minneapolis.—p. 328.
Deformities Resulting from Unilateral Surgical Trauma to the Epiphyses. C. H. Snyder, Ann Arbor, Mich.—p. 335.
*Overpull During the Treatment of Fractures. L. Blum, New York.—p. 343.
Arthroscopy of the Knee Joint: Statistical Study of Two Hundred and Fifty Cases. H. Milch and V. Raisman, New York.—p. 357.
Recurrent Subluxation of the Ankle Joint. R. C. Elmslie, London, England.—p. 364.
Subcutaneous Rupture of Tendon of Tibialis Anticus. M. S. Burman, New York.—p. 368.

Myositis Ossificans in Ligamentum Nuchae.—Thomson reports two cases of myositis ossificans circumscripta. Neither of the patients (men) gave a history of any direct injury. Both patients complained of the sensation of a lump near the base of the back of the neck, which seemed to come out, then disappeared and was not in itself painful except on pressure or manipulation, at which time it caused a "sickish feeling," slight nausea, shortness of breath and light headedness. Throwing the head backward, driving a car, going over bumps and wearing a stiff tight collar aggravated the symptoms. The

one patient who recognized the possibilities of surgical relief is now rehabilitated in his profession; the other died of other causes. No other evidence of myositis ossificans was found in either of these patients. The fact that these osteomatous bodies occurred in the collar line of the neck and the absence of a history of acute trauma would lead one to the conclusion that possibly the continuous irritation of a tight or stiff collar band or collar button might be the etiologic factor causing this condition. The author believes that, if his deduction is correct, these two cases may be classified as myositis ossificans circumscripta. A rather extensive search of the literature has not revealed any similar cases of muscular osteomas in the region of the ligamentum nuchae, except in young persons severely afflicted with the progressive type of myositis ossificans. Recalling the postmortem observations of the fatal case a year later gave the author the clue to the diagnosis of the other case cited; and the gratifying results of the operative removal of the osteomatous bodies, he believes, justifies his report. Perhaps these two cases are not sufficiently significant to warrant the suggestion that possibly roentgen examination of patients suffering similar symptoms might reveal osteomas. The author points out that the marked similarity between these bodies and those seen in hypertrophic (osteo-arthritis) arthritis cannot be overlooked, nor can it be entirely ruled out, as the calcareous deposits of the two conditions are similar. However, the lack of roentgen evidence of arthritis in the patient operated on and the lack of postmortem evidence of hypertrophic arthritis in the patient who died rather indicate that these are osteomas of myositis ossificans circumscripta.

Subtotal Bilateral Suprarenalectomy for Hypersuprarenalism.—DeCourcy recommends subtotal suprarenalectomy for the relief and cure of essential hypertension, based on the hypothesis that the cause of this condition lies in a hyperplasia of the medullary tissue of the suprarenals under constant sympathetic stimulation, resulting in the secretion of excessive amounts of epinephrine into the blood stream. The operation of subtotal suprarenalectomy, as performed by him, consists in the removal of from two thirds to three fourths of each suprarenal. It is done in two stages, with an interval of about two weeks between operations. The portion removed includes both medulla and cortex and is taken from the part of the organ remote from the entrance of the blood vessels. The approach is made from the back through a kidney incision, the kidney being held down with a special retractor. The suprarenal must be recognized and stripped clean of all fat and overlying structures. The portion to be removed is then clamped and excised, the raw surface being covered with a continuous chromic suture. Spinal anesthesia is employed and the blood pressure is watched closely throughout the entire operation. If the fall is more than anticipated, epinephrine is given promptly and intravenous saline solution with epinephrine should be ready in case of collapse. These patients, however, seem to tolerate spinal anesthesia very well. It is now about four months since the author has performed the first operation. He has operated on eight patients, doing sixteen operations. In every case the patients operated on have been improved; that is, the symptoms of hypertension have disappeared. The blood pressure has remained lowered in every case, the average drop and maintenance having been from 70 to 90 points systolic and from 40 to 50 points diastolic.

Overpull During the Treatment of Fractures.—Blum's study of twenty-three cases of overpull in fractures of the shafts of long bones reveals this condition to be a serious one by reason of an associated marked delay in healing, a higher incidence of necessary operative procedures and an increased time of hospitalization. It usually occurs in the first few hours and days following the institution of effective traction and, as a rule, is not successfully corrected by simple diminution of the tractive force. The prevention of overpull is of more efficacy in avoiding the untoward sequelae than is its treatment. This can be accomplished only by more thorough analysis of all the factors involved in each individual patient before ordering the type and amount of traction to be applied. In view of the widespread employment of the traction-suspension method in the treatment of fractures, the seriousness of this complication renders it worthy of consideration.

Arkansas Medical Society Journal, Fort Smith

31: 55-70 (Sept.) 1934

- Relationship of Allergy to Otolaryngology. J. J. Shea, Memphis, Tenn.—p. 55.
Evaluation of Swift-Ellis Therapy in Treatment of Neurosyphilis. G. E. Tarkington, Hot Springs National Park.—p. 60.

Colorado Medicine, Denver

31: 293-328 (Sept.) 1934

- Otitic Sepsis Independent of Sinus Thrombosis. T. E. Beyer, Denver.—p. 300.
Recent Progress in Eczema. J. V. Ambler and G. P. Lingenfelter, Denver.—p. 304.
*Leukocytosis in Chronic Pulmonary Tuberculosis. L. Elrick, Denver.—p. 308.
Hay Fever Flora of Pikes Peak Region. W. C. Service, Colorado Springs.—p. 311.

Leukocytosis in Chronic Pulmonary Tuberculosis.—Elrick points out that a review of the literature casts doubt on the correctness of the frequently held theory that leukocytosis in pulmonary tuberculosis is always due to a mixed infection with pyogenic organisms. The total leukocyte count, on the average, is lowest in incipient cases of tuberculosis and highest in far advanced cases. There are numerous individual cases that are exceptions to this rule, however. Leukocytosis is rare in uncomplicated minimal or moderately advanced tuberculosis, but fairly common in far advanced cases. In a study of one total leukocyte count in each of 229 unselected cases of far advanced chronic pulmonary tuberculosis without complications, the author observed a count of more than 12,000 in 24 per cent, and occasionally the count was as high as 20,000 or 25,000. The highest counts occurred in cases in which cavities had formed. That tuberculosis may cause a leukocytosis is an important fact to keep in mind when interpreting the significance of a high white blood cell count in a suspected acute surgical condition of the abdomen in a tuberculous patient.

Georgia Medical Association Journal, Atlanta

23: 287-328 (Aug.) 1934

- Hypothyroidism, with Especial Reference to Types. E. F. Wahl, Thomasville.—p. 287.
Infantile Spinal Paralysis Cured: Case Report. A. A. Barge, Newnan.—p. 319.

Iowa State Medical Society Journal, Des Moines

24: 469-506 (Sept.) 1934

- Surgical Clinics: Applicability of Certain Surgical Procedures for Recurrent Peptic Ulcer: The Common Duct in Relation to Surgical Conditions of Biliary Tract. V. C. Hunt, Los Angeles.—p. 469.
Study of Neonatal Deaths at the University Hospital. J. H. Randall, Iowa City.—p. 477.
Intracranial Hemorrhage. R. E. Crowder, Sioux City.—p. 479.
Treatment of Burns. N. M. Whitehill, Boone.—p. 481.
Clinical Significance of Hemorrhage from Bowel. W. H. Rendleman, Davenport.—p. 483.
Diagnosis and Surgical Treatment of Pyloric Obstruction in Infants. H. I. Down, Sioux City.—p. 485.

Journal of Biological Chemistry, Baltimore

106: 1-430 (Aug.) 1934. Partial Index

- Inorganic Phosphorus of Horse Serum: Effect of Age and Nutrition. P. B. Pearson, Pomona, Calif.—p. 1.
Studies of the Acid-Base Condition of Blood: III. Value of p_k in the Henderson-Hasselbalch Equation for Human and Dog Serums, Determined with the Simms Electrode. H. W. Robinson, J. W. Price and G. E. Cullen, Cincinnati.—p. 7.
Study of Tissue Respiration and Certain Reducing Substances in Chronic Fluorosis and Scurvy in the Guinea-Pig. P. H. Phillips, F. J. Stare and C. A. Elvehjem, Madison, Wis.—p. 41.
Chemistry of Lipids of Tubercle Bacilli: XXXIX. Constitution of Tuberculooleic Acid. M. A. Spielman, New Haven, Conn.—p. 87.
Influence of Sodium and Potassium Content of Diet on Sodium Concentration of Human Centrifuged Red Blood Cells. A. M. Butler and E. M. MacKay, New York.—p. 107.
Quantitative Determination of Small Amounts of Gonadotropic Material. P. A. Katzman and E. A. Doisy, St. Louis.—p. 125.
Human Milk Studies: XV. Nonprotein Nitrogen Constituents. Betty Nims Erickson, Margaret Gulick, Helen A. Hunscher and Icie G. Macy, Detroit.—p. 145.
Reinvestigation of Phenomenon of a First Acid Change in Whole Blood. E. P. Laug, Philadelphia.—p. 161.
Gasometric Microdetermination of Phosphoric Acid. E. Kirk, New York.—p. 191.
Gasometric Microdetermination of Lipids in Plasma, Blood Cells and Tissues. E. Kirk, I. H. Page and D. D. Van Slyke, New York.—p. 203.

- Studies of the Fat of Human Milk. A. W. Bosworth, Columbus, Ohio.—p. 235.
Distribution of Iron in Tissues, Particularly Liver, During Peptic Digestion and Autolysis. W. D. McFarlane, Edmonton, Alta.—p. 245.
Effect of Saturated Fatty Acid Content of Diet on Composition of Body Fat. A. D. Barbour, Toronto.—p. 281.
Peptic Hydrolysis of Insulin. A. M. Fisher and D. A. Scott, Toronto.—p. 289.
Preparation of Sodium Tungstate Free from Molybdate, Together with Simplified Process for the Preparation of Correct Uric Acid Reagent (and some Comments). O. Folin, Boston.—p. 311.
Changes of Total Lipid and Iodine Number of Blood Fat in Alimentary Lipemia. W. R. Wilson and J. P. Hanner, New Haven, Conn.—p. 323.
Role of Copper in Carbohydrate Metabolism. H. L. Keil and V. E. Nelson, Ames, Iowa.—p. 343.
Spectral Analysis of Purified Tuberculin. Mona Spiegel-Adolf and Florence B. Seibert, Philadelphia.—p. 373.
Ergot Alkaloids: III. Lysergic Acid. W. A. Jacobs and L. C. Craig, New York.—p. 393.
Antitrypsin of Egg White. A. K. Balls and T. L. Swenson, Washington, D. C.—p. 409.

Laryngoscope, St. Louis

44: 599-682 (Aug.) 1934

- Clinical Presentation of Improvement in Surgical Repair of Facial Nerve. A. B. Ducl, New York.—p. 599.
Acute Frontal Sinusitis and Brain Abscess. W. Cariss, Philadelphia.—p. 612.
Multiple Dentigerous Cysts Involving Both Maxillary Sinuses: Report of Case. G. W. Mackenzie, Philadelphia.—p. 621.
Diets: Discussion of Certain Metabolic Principles and Their Application to Otolaryngology. C. Striker, Cincinnati.—p. 624.
Foreign Bodies in Food and Air Passages: Plea for Early, Deliberate and Careful Extraction. J. W. Miller, New York.—p. 642.
Sphenoid Sinus. R. F. Ridpath, Philadelphia.—p. 657.
Cerebrospinal Otorrhea: Report of Two Cases (Review of Literature). M. S. Ersner and D. Myers, Philadelphia.—p. 668.

New England Journal of Medicine, Boston

211: 385-430 (Aug. 30) 1934

- Biologic Actions of Dinitrophenol and Related Compounds: Review. G. Edsall, Chestnut Hill, Mass.—p. 385.
Chronic Empyema with Bronchial Fistula Cured by Tidal Drainage: Case Report. P. G. McLellan, Hartford, Conn.—p. 390.
Management of Patient with Anginal Pain. R. L. Levy, New York.—p. 392.
Social Aspects of Diabetes: Study of Sixty Cases. Genevieve Peterson, Rochester, Minn.—p. 397.
*Carcinoma of Cervix Uteri with Eight Months' Pregnancy. J. R. Miller, Hartford, Conn.—p. 402.
Group Practice: Case. H. C. Saltzstein, Detroit.—p. 405.
Medical and Public Health Attitude Toward Smallpox Vaccination and Diphtheria Immunization. G. T. Palmer and M. Derryberry, New York.—p. 413.
Manifestations of Streptococcus Infection. Faith L. Meserve, Weston, Mass.—p. 415.

Carcinoma of Cervix Uteri and Pregnancy.—Miller reports a case of carcinoma of the cervix uteri with a pregnancy of eight months. In its treatment, classic cesarean section was followed by immediate Wertheim hysterectomy under spinal anesthesia. Before the anesthetic was given the vagina was cleansed as carefully as possible, dried and filled with 4 per cent mercurochrome gauze. It was evident that the cervix was infected not only by necrosis of the carcinoma but also because of a biopsy wound, so the author planned to remove the fetus by fundal incision and leave the placenta in the uterus during hysterectomy. It was impossible to carry out this plan, for the placenta was implanted on the anterior wall and had to be removed. However, he was enabled to remove the placenta, cutting the membranes free and leaving them in situ. When the sutured fundus was opened later in the laboratory, the internal os was found to be covered entirely by membranes. Hemolytic streptococcus and Staphylococcus aureus were found on culture taken under the membranes at the internal os. The size of the cervix made any radical parametrial dissection not only inadvisable but impossible. Once the uterosacral ligaments were cut as far back as clamps could be placed, the uterus became mobilized. Dissection of from 3 to 4 inches of ureter was necessary and not unusually difficult and the vaginal clamps could be placed with ease. The patient stood the operation well, and healing ensued without infection. During the second week she suffered from cystitis and pyelitis and has made a slow convalescence. She is to receive high voltage roentgen therapy as soon as she can be transported. The baby weighed 5 pounds 5 ounces (2,400 Gm.) at birth and has gained normally on artificial feeding.

New Orleans Medical and Surgical Journal

87: 73-144 (Aug.) 1934

- Röntgenologic Diagnosis of Bone Tumors. L. J. McViville, New Orleans.—p. 73.
Uterine Bleeding. B. C. Garrett, Shreveport, La.—p. 78.
Chronically Diseased Cervix as a Focus of Systemic Infection. P. Graffagnino, New Orleans.—p. 83.
Nephropexy and Its Indications. J. R. Stamper, Shreveport, La.—p. 86.
Suppurative Otitis Media. A. L. Peters, Monroe, La.—p. 90.
Simple Method of Prescribing Diets for Diabetics. I. I. Lemann, New Orleans.—p. 92.
High Carbohydrate Diet in Diabetes Mellitus. M. Gardberg, New Orleans.—p. 96.
Diet in Treatment of Migraine. J. S. D'Antoni, New Orleans.—p. 100.
Dietary Treatment of Avitaminosis. S. Jacobs, New Orleans.—p. 103.
Multiple Bone Cysts Associated with Hyperparathyroidism: Case. D. M. Stewart, New Orleans.—p. 106.
Report of the Pasteur Institute of the Charity Hospital of New Orleans for the Year 1933. R. D'Aunoy and J. H. Connell, New Orleans.—p. 110.

Oklahoma State Medical Assn. Journal, McAlester

27: 277-306 (Aug.) 1934

- Gleanings from a Tour of Some Foreign Surgical Clinics. J. F. Park, McAlester.—p. 277.
Nonsurgical Management of Benign Prostatic Hypertrophy. S. F. Wildman, Oklahoma City.—p. 280.
Clinical Course of Ureteral Anomalies. D. W. Branham, Oklahoma City.—p. 282.
Vesicular Eruptions of Hands and Feet. W. A. Showman, Tulsa.—p. 284.
Treatment of Urinary Tract Infections. A. L. Clark, Oklahoma City.—p. 287.
Management of Varicose Eczema and Ulcers. W. E. Eastland, Oklahoma City.—p. 290.

Philippine Islands Med. Association Journal, Manila

14: 289-328 (Aug.) 1934

- Further Studies on Vital Capacity of Filipinos. N. Cordero and J. Salcedo, Manila.—p. 289.
Activities of Bureau of Labor in Relation to Disease and Accident Prevention. J. Santillan, Manila.—p. 294.
Sympathetic Ophthalmia: Report of Case That Recovered. A. R. Ubaldo and C. D. Ayuyao, Manila.—p. 297.
Studies on Olympic Athletes: Preliminary Report. W. Pascual, J. Salcedo, P. Sapinosa, J. S. Cruz, M. Ocampo and E. Bulatao, Manila.—p. 302.
Causes of Abortion, Miscarriage, Premature Birth and Stillbirth: Preliminary Report. J. O. Quinason, Manila.—p. 304.
Should Sex Hygiene Be Taught in Our Public Schools? R. G. Padua, Manila.—p. 306.

Southern Medical Journal, Birmingham, Ala.

27: 747-824 (Sept.) 1934

- Surgical and Radiation Treatment of Gastric Cancer. G. T. Pack, New York.—p. 747.
Narcoplexy, with Especial Reference to Carotid Sinus Reflex. D. C. Wilson and R. F. Watson, University, Va.—p. 754.
Extrabulbar or Duodenal Ulcer. W. W. Robinson, Memphis, Tenn.—p. 759.
Traumatic Myositis Ossificans. E. R. Campbell, Chattanooga, Tenn.—p. 763.
Normal and Pathologic Larynx Under Suspension Laryngoscopy. F. E. LeJeune, New Orleans.—p. 770.
Cancer of Larynx: Laryngectomy. E. A. Looper, Baltimore.—p. 772.
Treatment of Cancer of Larynx: Laryngofissure Versus Laryngectomy. M. Eguen, Atlanta, Ga.—p. 776.
Rocky Mountain Spotted Fever Invades the East. J. G. Cumming, Washington, D. C.—p. 783.
Rocky Mountain Spotted Fever in North Carolina. D. F. Milam, Raleigh, N. C.—p. 788.
The Commoner Forms of Arthritis. W. H. Higgins, Richmond, Va.—p. 793.
Biologic Action of Radiant Energy: Ultraviolet. E. R. Whitmore, Washington, D. C.—p. 796.
Nephritis Complicating Impetigo. L. E. Sutton Jr., Richmond, Va.—p. 798.
Treatment of Nevus Vascularis. W. E. Eastland, Oklahoma City.—p. 802.
Gunshot Wounds of Abdomen. F. C. Wilson, Birmingham, Ala.—p. 805.
Traumatic Rupture of Kidney. J. G. Pratt, New Orleans.—p. 809.
Intravenous Use of Methylene Blue in Treatment of Cyanide and Carbon Monoxide Poisoning. J. C. Geiger and J. P. Gray, San Francisco.—p. 812.

Nephritis Complicating Impetigo.—Sutton discusses five cases of acute nephritis which suggest that impetigo may have been the etiologic agent of nephritis. Nephritis did not occur in any of these cases until the impetigo had been established, and the impetiginous symptoms were the only ones complained of at the time of the beginning of the nephritis. During the period in which these five cases were admitted to the hospital,

thirteen other cases were diagnosed as acute nephritis, in which tonsillitis or some other condition was considered the etiologic agent. Acute nephritis in children is usually attributed to infections. Whether it is due to bacteria that act directly on the kidney or their toxins carried there by the blood stream has not been determined definitely. The author's five cases of acute nephritis, accompanied by impetigo, which occurred during a period of two years, comprised 28 per cent of the nephritic cases admitted to his clinic during this period and he reports them for the purpose of stressing the fact that impetigo, or the so-called dew-boils infection, which is frequent in the South, should not be taken lightly. This disease may be followed by complications.

Southwestern Medicine, Phoenix, Ariz.

18: 253-286 (Aug.) 1934

- Temperature in Vaccine Therapy and Biologics. E. D. Strong, El Paso, Texas.—p. 256.
Collapse Therapy in Pulmonary Tuberculosis. C. A. Thomas, S. C. Davis and R. A. Wilson, Tucson, Ariz.—p. 259.

Virginia Medical Monthly, Richmond

61: 251-314 (Aug.) 1934

- Cancer of the Stomach. J. S. Horsley, Richmond.—p. 251.
Endometriosis with Reference to Intestinal Implantation. W. H. Goodwin, University.—p. 257.
Early Diagnosis of Primary Malignant Bone Tumors in Early Life. M. J. Payne, Staunton.—p. 263.
Problems in Transurethral Surgery. S. B. Cary, Roanoke.—p. 268.
Management of Unconscious Patients, with Especial Reference to Posture in the Treatment. C. C. Coleman, Richmond.—p. 270.
Roentgen-Ray Aids in Prostatic Resection. W. W. S. Butler Jr. and C. H. Peterson, Roanoke.—p. 276.
Importance of Body Build in Determining Ideal Weight. W. A. McGee, Richmond.—p. 282.
Ureterosigmoid Anastomosis. R. P. Hawkins Jr., Clifton Forge.—p. 284.
Blood Sedimentation in Pulmonary Disease. E. C. Harper and T. S. Jennings, Richmond.—p. 286.
Granulosa Cell Carcinoma of the Ovary: Case Report. R. O. Lyday, Greensboro, N. C.—p. 289.
Bromide Intoxication or Bromide Psychosis. C. P. Ryland Jr., Binghamton, N. Y.—p. 292.
Gallbladder Disease: Report of One Hundred Consecutive Cases. O. T. Amory, Newport News.—p. 296.
Cesarean Section. P. E. Thornhill, Norfolk.—p. 299.

61: 315-376 (Sept.) 1934

- Facts and Theories of Adrenal Function. S. W. Britton, University.—p. 316.
Management of Cross Eyes in Children: Illustrated with Lantern Slides. J. A. Pilcher Jr., Roanoke.—p. 320.
Abdominal Surgery in Children. J. S. Horsley Jr., Richmond.—p. 323.
Conservative Management of Pelvic Infections. L. D. Keyser, Roanoke.—p. 329.
State Medicine Problems. J. E. K. Flannagan, Salem.—p. 335.
Vitamin D and Vitamin D Milk. W. L. Harris, Norfolk.—p. 344.
Diphtheria Immunization Program in Virginia. B. B. Bagby, Richmond.—p. 348.
Obstetric Emergencies. I. M. Hardy, Kinston, N. C.—p. 353.
Neutropenic Syndrome. Regena Cook Beck, Richmond.—p. 355.

Abdominal Surgery in Children.—Horsley emphasizes the point that the treatment of surgical conditions in children is not merely an adjustment of surgical principles and technic to a small scale. The child cannot be treated as a small adult. Increased and unstable metabolism in children incidental to normal growth renders them more liable to a violent reaction from a slight cause and makes disease sudden in onset and intense in symptoms. Moreover, symptoms are not limited to any particular region as in adults. The younger the child the more apt is the disease to manifest itself in generalized constitutional expressions rather than in focal signs and symptoms. Myers states that infants require much more water per pound of body weight than adults and that the loss of 10 per cent of the fluids of the body is grave and 20 per cent usually fatal. Surgical shock is easily caused and hemorrhage poorly borne, because the proportion of blood to body weight in a child is 1:20 as compared to 1:13 in an adult. Hence, narrower margins of safety in surgery of infants and children demand special attention and preparation. Pediatric surgery must be gentle, rapid and skilful. In infants and children the abdomen is normally large in proportion to the whole body and appears more so because of the small size of the pelvis and thorax. The abdomen contains not only the organs found in the adult but also the bladder and upper end of the rectum.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anæsthesia, Manchester

11: 131-166 (July) 1934

- *Postoperative Vomiting. G. F. R. Smith.—p. 132.
Present Position of Avertin Anesthesia. K. Maddox.—p. 140.
Avertin in Obstetrics. C. Coghlan.—p. 145.
Self-Administered Analgesia for Midwifery of General Practice. R. J. Minnitt.—p. 148.
General Intravenous Anesthesia with Evipan Sodium. P. Serocca.—p. 153.

Postoperative Vomiting.—Smith observed that the use of 2 ounces (60 cc.) of dextrose orally three hours and 5 units of insulin half an hour before operation, and the repetition of the dose of insulin when the patient is returned to the ward and 4 ounces (120 cc.) of dextrose by rectum every four or five hours reduced the serious type of vomiting from 26 to 12.5 per cent in major and from 9.7 to 1.2 per cent in minor operations. His results in a series of 153 cases leave no doubt that in cases in which ether is used there is no way of controlling postoperative sickness except in a small proportion of cases, for which the cause must be looked for elsewhere than in pancreatic dysfunction. Provided that a good brand of ether is used, the particular make has little or no effect on postanesthetic vomiting. It is unjustifiable to use other than some form of purified ether. Morphine and atropine given in the usual way cannot be improved on. In insulin there is a real advance in prevention and treatment of postanesthetic toxemia and one that deserves wider recognition than it has at present.

Journal of Tropical Medicine and Hygiene, London

37: 225-240 (Aug. 1) 1934

- Intimate Relationship Between Pellagra and Pemphigus. I. Sabry.—p. 225.
Pellagra in the Sudan. N. L. Corkill.—p. 231.

Lancet, London

2: 343-394 (Aug. 18) 1934

- Problems of Gallstones. E. R. Flint.—p. 343.
Toxemias of Pregnancy: II. Significance of Symptoms and Their Treatment. Louise McIlroy.—p. 345.
*Association Between Neurosyphilis and Cardiovascular Syphilis. F. II. Healey.—p. 350.
*Pentnucleotide Treatment of Agranulocytic Angina. J. F. Wilkinson and M. C. G. Israëls.—p. 353.
Agranulocytosis Complicating Typhoid Fever. W. K. Blackie.—p. 355.
Fate of Follicular Hormone in Living Body. B. Zondek.—p. 356.
Thoracoscopy by Single Puncture. F. G. Chandler.—p. 357.
Lysis of Pneumococci by Sodium Desoxycholate: Effect of Varying Concentrations of Sodium Chloride. A. B. Anderson and P. D. Hart.—p. 359.
Dermatitis Due to Linseed. R. Aitken.—p. 360.

Association Between Neurosyphilis and Cardiovascular Syphilis.—Healey points out that the figures obtained in a series of cases examined at a mental hospital show a much higher proportion of cardiovascular syphilis in cases of neurosyphilis than any yet reported. Cases of dementia paralytica sent to a mental hospital are advanced and therefore such a close correlation between neurosyphilis and cardiosyphilis is to be expected. The general conclusion to be drawn is that syphilis affects the whole body more commonly than is supposed; it supports the contention of Warthin that spirochetes will be found in every organ of the body in a syphilitic patient. It also supports the view that dementia paralytica is an active syphilitic infection and not a parasymphilitic process. The incidence of cardiovascular syphilis in association with neurosyphilis and mental disease is of immense importance from the point of view of treatment by induced malaria. In the early years of this treatment many patients died suddenly during or just after their pyrexial course, no clinical evidence of aortic disease having been found. It was taught that the clinical diagnosis of the nervous lesions was predominantly in the fourth decade and that of the cardiac lesions in the fifth decade, but in mental hospital work the two kinds of disease occur together in the fourth and fifth decades. Which lesion will be noted first depends partly on the severity of the separate lesions and also on the relative sensitivity of the two systems in the patient. Thus the make-up of the patient from both the physi-

cal and mental angles determines this issue. Ernest Jones has demonstrated that certain people have undue sensitivity of their internal organs, and, if this state is well marked, hypochondriac symptoms will result. These psychasthenic people, when infected with syphilis, complain of the lesions according to the more sensitive system, and thus the diagnosis is determined to a cardiac or a nervous state. In general one would expect an earlier outcry on the part of the nervous system, as it shows a more sensitive reaction to disease. In his series the author has found cases of fulminating dementia paralytica with pronounced cardiovascular changes within a decade of the initial infection. It is certain that patients who had short courses of arsphenamine treatment relapsed sooner than those treated with long courses of mercury. The latent period averages about ten years with arsphenamine treatment and twenty years with mercurial treatment. The author believes that it is likely that the spirochetal infection lies latent in the main lymph nodes and that at the end of the incubation period for the cardiac and nervous lesions, for some reason at present unknown, the infection flares up again and attacks the vital organs. It is known that the posterior cervical glands are affected markedly in secondary syphilis, and the author suggests that the spirochetes, lying latent in these glands, ascend into the spinal canal and cranial cavity and so cause syphilis of the spinal cord and brain.

Pentnucleotide Treatment of Agranulocytic Angina.—Wilkinson and Israëls report a case presenting the typical features of agranulocytic angina: rapid onset, lesions of the mouth, low pathogenicity of organisms isolated from these lesions and a myelocytic response following pentnucleotide therapy. In such cases the question arises as to whether recovery is due to the therapeutic agent employed or whether it is a spontaneous recovery. Before nuclein therapy, agranulocytic angina seems nearly always to have ended fatally. Jackson and his associates and Reznikoff have reported a considerable proportion of successes with nuclein therapy. There therefore seems to be definite ground for attributing the recovery of most of these cases to the nuclein preparation employed. The evidence of regeneration of the myelopoietic tissues as shown by the myelocytic response favors the view that agranulocytic angina is primarily a marrow dyscrasia and that the symptoms of the mouth are secondary in nature. Agranulocytosis may, however, also occur as an event in a long illness, as in the case of Fairley and Scott. In these cases the prognosis is of necessity less favorable. Madison and Squier have recently reported cases of agranulocytosis which they attribute to poisoning with amidopyrine, either alone or in combination with a barbiturate. Their observations provide further support for the hypothesis that the condition of the marrow is primary. In the case presented, neither of these drugs had been given. This patient was menstruating at the time of onset of the agranulocytosis. Thompson noticed that the onset of agranulocytosis in the majority of the women patients under his care corresponded with the commencement of their menstrual periods; whether this is purely coincidental or has a definite etiologic meaning is not at present known.

Journal of Oriental Medicine, South Manchuria

21: 1-12 (July) 1934

- Cow's Milk in Manchuria and Mongolia: Part III. Phosphorus Content of Cow's Milk and Its Distribution. M. Sugiura.—p. 1.
Components of Hemolytic Complement: Part IV. Difference Between Hemolytic and Bacteriolytic Complements. B. Mitsuse.—p. 2.
Id.: Part V. Nature of "Fifth Component" and Difference Between This Component and "Toshima's Cold, Noncomplementary Hemotoxin," Toxin Capable of Hemolysis. B. Mitsuse.—p. 3.
Experimental Study on Freud's Early Poison. K. Kashiwabara.—p. 4.
Study on History of Bacteria Artificially Introduced into Body and Factors of Infection: Report I. Ability of Various Bacteria to Pass Through the Kidneys of Healthy Rabbits. N. Nishikawa.—p. 5.
Gas Plegmon: Three Cases. Fuh-Yuan-Hsüan and S. Nakai.—p. 6.
Serous Meningitis Following Chickenpox: Case. Y. Kimura.—p. 7.
Refining Toxin of Absorption Method of Aluminum Hydroxide: Part III. Toxin of Gonococcus. M. Yato.—p. 8.
Bacteriologic and Pathologic Observation of "Noma." M. Murayama.—p. 9.
Biochemical Study of Nitril Compound: Part III. Behavior of Endorinous Medicine on Decomposition of Nitril. C. Tsuru.—p. 10.
Id.: Part V. Mutation of Nitril in Living Body. C. Tsuru.—p. 11.
Kala-Azar Found in Native Child Born in Niu-Chuang, Manchoukuo. T. Buto and Y. Yamamoto.—p. 12.

Paris Médical

2: 89-112 (Aug. 4) 1934

- Disease of Naked Sponge Fishers. S. G. Zervos.—p. 89.
Empirical Climatology of Pulmonary Tuberculosis. C. Colbert and H. Mollard.—p. 97.
Particular Form of Craniofacial Malformation. A. Kreindler and M. Schachter.—p. 102.
Treatment of Periodic Asthenia. R. Benon.—p. 106.
Action of Viosterol Especially from the Point of View of Dentition. Pierron.—p. 107.
*Attempted Treatment of Epilepsy by Hypertonic Solutions. G. Villey-Desmeserets and J. F. Buvat.—p. 109.

Treatment of Epilepsy by Hypertonic Solutions.—Villey-Desmeserets and Buvat report on the treatment of three epileptic patients by intravenous injections of 2 Gm. of sodium chloride in 20 cc. of distilled water alternating with 7 Gm. of sodium bromide and 1 Gm. of sodium chloride in 20 cc. of distilled water. Usually three injections were given each week for a considerable period. Sometimes 15 Gm. of magnesium sulphate in 150 cc. of boiled water was instilled rectally, drop by drop. The results were favorable, especially in one case in which the number of epileptiform attacks decreased from about 130 a month to four or five a month.

Presse Médicale, Paris

42: 1257-1272 (Aug. 8) 1934

- *Abdominal Tympany in Subperitoneal Hemorrhages. C. Lenormant and G. Cordier.—p. 1257.
*Clinical Value of Gastric Chromoscopy. S. Zibalis.—p. 1260.

Tympany in Subperitoneal Hemorrhages.—Lenormant and Cordier report two cases of diffuse abdominal tympany following injury accompanied by subperitoneal hemorrhage. In its extreme form this can show the true picture of paralytic ileus. In the first case there was a history of renal contusion with massive hemorrhage but not necessitating surgical intervention. Generalized tympany and meteorism followed for about six days, with arrest of fecal material and gas for three. In the second case the abdominal symptoms followed bilateral fractures of the anterior lateral quadrant of the pelvis. The abdominal syndrome of ileus appeared, with diffuse abdominal tympany and without organic peritoneal or pelvic lesion, but due solely to irritation of the region by abundant hematoma of the space of Retzius. They recognize that the theory of the explanation which they advance is as yet insufficiently demonstrated. Thus a violent contusion affecting a sensitive zone of the anterior peritoneum produces a contraction. These are the contractions observed in intraperitoneal hemorrhages of the splenic ruptures. If the irritation caused by the blood is on a less excitable zone such as the posterior, the preperitoneal or the pelvic peritoneum, the result is as if the excitation remained below the threshold necessary to produce a medullary reflex. The sympathetic alone responds with intestinal distention and its clinical sign of tympany. If the hemorrhage ceases, the excitation stops and the meteorism disappears. If it persists or especially if an added irritative factor such as a blood clot occurs, the picture of an ileus or a parietal defense response appears.

Value of Gastric Chromoscopy.—In an attempt to determine whether gastric chromoscopy can replace the usual gastric test meal analysis, Zibalis examined a number of patients by both methods. His technic is as follows: After the patient has fasted for twelve hours, Einhorn's sound is introduced into the stomach; then, after the extraction of a sufficient quantity of fluid to titrate the fasting acidity, 5 cc. of a 1:100 solution of neutral red is injected in the buttocks. After the injection a small amount of gastric secretion is removed each minute and the time noted between the injection and the appearance of the first rose drops of gastric fluid. That is the chromoscopic time. Then the patient is given the alcohol test meal by sound (300 cc. of a 5 per cent solution of alcohol). Every thirty minutes some fluid is removed and titrated in the usual way. In this manner the results of the two examinations are obtained at the same sitting. The cases examined were divided into four groups according to the degree of gastric acidity: normal, hyperacidity, hypo-acidity, and anacidity. In five of the six with normal acidity the results of chromoscopy and gastric acidity concurred. If, however, the results of Held are admitted that a chromoscopic time of twenty-four minutes is

still normal, the six cases agreed. In the five examined cases of hypo-acidity, concordant results were obtained three times. In the ten cases of hyperacidity there was agreement in only three. Of the four cases of anacidity examined, none eliminated the dye in the stomach. The author believes that the discrepancy is due to secretion of mucus, which delays the elimination of the dye. He concludes that gastric chromoscopy cannot replace the examination of the gastric chemistry. Neutral red, however, remains a useful auxiliary in the functional examination of the stomach, especially in cases of anacidity.

Clinica Chirurgica, Milan

37: 635-830 (July-Aug.) 1934. Partial Index.

- *Renal Decapsulation and Periarterial Sympathectomy in Suppurative Nephritis. L. Moriconi.—p. 637.
Fractures of Upper Extremity and Diaphysis of Humerus in Infancy. E. Santi.—p. 648.
Clinical Observations, Histologic and Macroscopic Lesions of Appendicitis in Disease Associations with Cholecystitis and Gastric and Duodenal Ulcer. G. G. D'Antona.—p. 677.

Renal Decapsulation and Periarterial Sympathectomy in Suppurative Nephritis.—Moriconi studied the effect of bilateral decapsulation of the kidney and of bilateral sympathectomy of the renal artery on the appearance and evolution of suppurative nephritis. The disease was artificially produced in dogs through intravenous injections of a culture of a strain of *Staphylococcus tropicus* in the kidney. The author observed a marked increase in the elimination of urine by the tenth day after operation, with concomitant hyperemia of the organ itself. The increased flow of urine and the accompanying hyperemia are of no value in the prevention of the experimentally produced bilateral suppurative nephritis. The advantages of mononephrectomy do not lie in the greater facility for elimination of micro-organisms through the increased excretion of urine or in accompanying hyperemia but in the increase of the local defense power. This increase likewise improves functional activity.

Policlinico, Rome

41: 393-452 (Aug. 15) 1934. Surgical Section

- *Nephrotomy Without Suture. C. M. Le Roy.—p. 393.
Cystic Intestinal Pneumatosis: Case. R. Memmi.—p. 408.
*Accessory Pancreas and Its Surgical Importance. L. Ugelli.—p. 424.

Nephrotomy Without Suture.—Le Roy made a full longitudinal incision on the convex side of the kidney of dogs and rabbits and opened up the whole renal pelvis. To obtain perfect hemostasis, he tied the two renal vessels together for from three to five minutes without applying any suture. In twelve animals subjected to bilateral nephrotomy without suture, cure was attained with only temporary hematuria in the first days following operation and without production of infarct so as to constitute a limited loss of substance with only temporary danger of functional impairment of the organ. The author states that nephrotomy without suture, as successfully carried out by Papin, is worthy of the greatest interest. It merits a wider application, since the points of suture of the kidney represent a frequent cause of late hemorrhages. In a dog with only one kidney after nephrectomy of a month's standing, nephrotomy without suture had to be abandoned because of persisting hemorrhages due to the abundant distribution of the blood vessels accompanying the compensatory hypertrophy of the organ.

Accessory Pancreas and Its Surgical Importance.—Ugelli presents the following observations based on 106 cases from the literature on accessory pancreas and on five cases personally observed. He states that the accessory pancreas is generally found in the thickness of the walls of the gastroenteric tube, from the cardia to the ileocecal valve. The stomach, the duodenum and the first loop of the jejunum were the most frequent sites of the accessory pancreas in the literature and in the author's observations. Accessory pancreas sometimes occurs in the intestinal diverticula. Seldom more than one accessory pancreas is found in a single patient. It may occur at any period of life. It is found equally well in men and in women. It is always congenital and may be associated with other congenital malformations. The nodule of the accessory pancreas is small and hard. Its histologic structure is similar to normal pancreatic tissue but may have only

glandular acini, or typical centro-acinous cells, or islets of Langerhans and excretory conduits. It is generally agreed that the accessory pancreas has both internal and external secretion. Little functional value is attributed to this secretion. The accessory pancreas may be the seat of disease processes involving the principal gland, such as acute necrosis, abscess, chronic inflammation, cystic degeneration, and tumors benign and malignant. In most cases the accessory pancreas is latent and is discovered only at operation or necropsy. Other cases present epigastric pains with frequent radiations to the right hypochondrium, symptoms of biliary calculosis and loss of weight. The only method of treatment is surgical intervention. The author concludes that this anomaly is not as rare as is generally believed and that it constitutes a frequent disorder capable of determining various disease symptoms and grave complications.

Prensa Médica Argentina, Buenos Aires

21: 1513-1564 (Aug. 15) 1934

Constitutional and Hereditary Factors in Ulcers of Stomach and Duodenum. C. Bonorino Udaondo.—p. 1513.

*Normal Phenolemia. M. R. Castex and A. F. Arnaudo.—p. 1524.
Glomerulonephrosis in Pregnancy. C. P. Waldorp and C. A. Bordo.—p. 1537.

Tuberculous Granuloma with Buccopharyngolaryngeal Predominance: Case. C. A. Videla and J. Peroncini.—p. 1546.

Normal Phenolemia.—Castex and Arnaudo conclude that the normal concentration of phenols in the blood either is constant or shows but small variations. Normal persons receiving an atoxic diet show, as a rule, lower figures of phenolemia than those of normal persons who receive meat in their diet. The figures of phenols in the blood of normal persons frequently, although not constantly, run parallel to those of urea in the blood. Under normal conditions the elimination of large amounts of phenols does not modify the figures of phenolemia. The values of phenoluria cannot be determined by those of phenolemia in normal persons. Conjugated phenols in small amounts are constantly in the normal blood. At certain times they cannot be found in the blood, although they exist in large amounts in the urine. By using the Theis and Benedict method for the determination of phenols in the arterial and venous blood, no variations between the arterial and the venous phenolemia can be observed. While reporting the figures of phenolemia, it is indispensable to specify both the method used in its determination and the diet received by the patient during the determinations. The following are admitted by the authors as normal values of phenolemia in normal man and by using the Theis and Benedict method: free phenols, from 1 to 1.3 mg., total phenols from 1.1 to 1.4 mg., and conjugated phenols from 0 to 0.3 mg. per hundred cubic centimeters of blood. The variations originating in the differences of alimentation are included within these limits.

Monatsschrift für Kinderheilkunde, Berlin

60: 241-320 (July 7) 1934

Goat's Milk Anemia in Animal Experiment. Grete Haase.—p. 241.

*Catalytic Property of Blood of Children. G. Török and L. Neufeld.—p. 254.

Studies on Diphtheria Cases in Family. Luise Hüll.—p. 264.

Agnesia of Caudal Portion of Vertebral Column. K. Goldhamer.—p. 269.

Tissue Reactions in Pneumonia. E. Barla-Szabó.—p. 282.

*Practical Evaluation of Ninni's Experimental Tuberculosis in Children. V. Mikulowski.—p. 293.

Catalytic Property of Blood of Children.—Török and Neufeld review former studies on the catalytic property of the blood of adults and children, pointing out that the condition of the liver, the endocrine system, nervous influences and the vitamins exert an influence on the catalytic properties of the blood. They show that attempts were made to use the catalase determination for clinical purposes. However, tests on children and nurslings revealed such great fluctuation under normal conditions that it seemed useless to determine the catalase content in pathologic conditions. In recent experiments, efforts were made to employ methods that avoid as much as possible all sources of error, but even in these the results were not entirely satisfactory. Consequently the authors decided to exclude also all external influences known to influence the catalytic properties of the blood. The tests were made only

on children who had been under their observation for some time and who were in bed the greatest part of the day, which largely eliminated the light factor and the influence of muscular exertion. The children received the same diet, and the withdrawal of blood was always done at the same room temperature and at the same time of the day (evening). The withdrawal was nearly always preceded by a fast of three hours, and only in a few control cases was the blood withdrawn half an hour after the meal. The tests were carried out during February and March, in a dark room and in weak illumination. The method employed was Bach-Levinger's titration procedure, in which the quantity of catalase is determined from the course of the reaction speed or from the velocity constant. In tests on adults this method had been employed by several investigators, but so far it had not been used on children. The authors, in comparing the results they obtained in children with those that had been observed in adults, find that the fluctuation is much greater in children than in adults. In healthy adults the velocity constant varied between 0.0184 and 0.0268, while in children the marginal values were 0.01600 and 0.04491. When the tests were repeated, more or less the same results were obtained, the greatest difference being 20 per cent. The authors conclude that their results are sufficiently exact to make their method available for experimental purposes.

Practical Evaluation of Ninni's Experimental Tuberculosis in Children.—Mikulowski points out that while the subcutaneous or the intraperitoneal inoculation of guinea-pigs with material of suspected tuberculous infection reveals the presence of tubercle bacilli only after five or six weeks, Ninni's method, the injection into the cervical glands, provides the same information in from ten to twenty days. He determined the reliability of Ninni's method on thirty specimens of cerebrospinal fluid, ten exudates, five homogenized sputums and five specimens of pus. The specimens were centrifugated and 0.1 cc. was injected into the surgically exposed cervical glands of both sides of the animals. Then the wounds were sutured. From ten to twenty days later, the glands were taken out, crushed and examined for the presence of tubercle bacilli. The glands commence to become palpable two weeks after injection, and thereby they also reveal the presence of tubercle bacilli.

Münchener medizinische Wochenschrift, Munich

81: 1225-1260 (Aug. 10) 1934. Partial Index

*Electrocardiographic Control of Apparent Death and of Resuscitation Possibilities. O. Bruns.—p. 1225.

*Specificity of Extract of Spirochetes in Serologic Diagnosis of Syphilitic Changes in Cerebrospinal Fluid. F. Marquardt.—p. 1229.

Efficacy of Ramstedt's Operation in Pyloric Stenosis of Nurslings. P. Bode.—p. 1234.

*Treatment of Scurvy by Parenteral Administration of Vitamin C. E. E. Bauke.—p. 1240.

The Electrocardiograph and Resuscitation Possibilities.—Bruns observed in asphyxiated animals that the electrocardiograph still registered cardiac activity thirty minutes after pulsation and cardiac sounds had disappeared, and he thinks that the same is probably true in human subjects. Thus it is proved by electrocardiographic studies that resuscitation efforts should not cease when respiration and heart beats fail but should be continued until rigor mortis and death spots appear. The author shows that electrocardiography is of great value in estimating the efficacy of the various resuscitation methods, particularly the different forms of artificial respiration, the stimulants applied to the skin and the mucous membranes, and the various forms of medicinal and mechanical cardiac stimulants. He emphasizes that an artificial respiration which does not at the same time stimulate the cardiac activity is of no value. In experiments with a pulmotor the electrocardiogram revealed that the mere entrance and exit of the air mixture exerted no influence on the heart. Consequently the apparatus was changed so as to prolong the interval during which the air is withdrawn and to afford an opportunity to percuss, concuss and press the thorax without necessitating a reversing of the apparatus. The electrocardiogram revealed that every percussion or massage pressure on the heart produced electrical currents in the heart. The author concludes from this that every artificial respiration, even the one carried out with a pulmotor, must be supplemented by energetic heart massage.

The mechanical and chemical irritants applied to the skin and the mucous membrane of the apparently dead reach the respiratory, cardiac and vascular centers and stimulate their activity. However, some of these sensory stimulants, particularly when applied to the chest, back and arms, reach the sympathetic innervation of the heart by way of the sensory cutaneous nerves and by way of the communicating branches. To make this possible, it is of course necessary that these nerve channels are still functioning. This can be detected in the electrocardiogram. If the electrocardiogram reveals electric currents in response to mechanical or chemical irritants, the autonomic nervous system can still function. The author observed in the course of electrocardiographic studies that only in unconscious persons, in whom the corneal reflexes are still demonstrable and in whom there is still a slight respiratory and cardiac activity, the cutaneous and mucous membrane irritants are capable of reaching the vital centers in the medulla oblongata and in the heart itself. After the corneal reflexes have been abolished and after respiration and cardiac action have ceased, the function of the sympathetic and of the vagus has already ceased and the irritants applied to the skin or to the mucous membrane no longer have any effect.

Specificity of Spirochetal Extract in Syphilitic Changes in Cerebrospinal Fluid.—Marquardt mentions a previous report in which he could prove that the pallida antigen is more sensitive in the Wassermann test of the blood than are extracts of syphilitic liver, beef heart or cholesterol. He found also that the spirochetal extract is particularly sensitive in tests on the cerebrospinal fluid. However, it was not determined at the time whether the greater sensitivity was not perhaps at the expense of the specificity. Using a larger material, he has made comparative studies on 486 specimens of cerebrospinal fluid. He finds that the positive outcome of the Wassermann reaction, which is made with the spirochetal extract, indicates syphilis with great certainty. If increase in protein and in cell elements is lacking, and if the colloidal gold, mastic and Meinicke clarification reactions are negative, the Wassermann reaction with the spirochetal extract is negative just like the one made with the extract of syphilitic liver. In cases of syphilis with changes in the cerebrospinal fluid, the Wassermann reaction with the spirochetal extract surpasses in sensitivity the Wassermann reaction employing extract of syphilitic liver, as well as the protein and colloidal reactions, and it is at least as reliable as the clarification reaction of Meinicke.

Treatment of Scurvy by Parenteral Administration of Vitamin C.—Bank describes a severe case of dietary scurvy with ulcerative gingivitis, severe anemia, suffusions, constant increase in the temperature and psychic disturbances. Daily intravenous injections of 100 mg of l-ascorbic acid promptly improved the condition. The increase in temperature disappeared on the second day of this treatment. Comparison with other reports revealed that the parenteral administration of l-ascorbic acid greatly reduces the period of recovery. The author thinks that this parenteral method is advisable particularly in the severe cases, but also in patients in whom scurvy or prescurvy is accompanied by gastro-intestinal disturbances, such as subacid or anacid gastritis, in order to prevent chemical changes that might reduce the efficacy of ascorbic acid.

Wiener Archiv für innere Medizin, Vienna

25:1160 (June 20) 1934

- *Demonstration of Insulin in Blood by Means of Blood Transfusion Studies on Persons With and Without Diabetes R. Boller, K. Uiberrak and W. Falta—p. 1
Humoral Nature of Insulin Resistance R. Boller, K. Uiberrak and W. Falta—p. 25
Cytologic Blood Picture of Persons Who Feed Lice A. Finkel—p. 49
Doubling of Frequency in Paroxysmal Tachycardias and in Auricular Flutter P. D. Camp and D. Scherf—p. 67
Incidence of Late Syphilis P. Tortunoff and A. Maller—p. 77
Testing of Tonus of Sympathetic Nervous System G. Bergmann and O. H. Buekspan—p. 115
Aleukemic Leukopenic Chloromyelosis U. Strasser—p. 133
Allergic Diseases E. Löwenstein—p. 145

Demonstration of Insulin in Blood.—Boller and his associates succeeded in demonstrating by means of blood transfusions that the blood of persons without metabolic distur-

bances contains minimal amounts of insulin when the person is fasting, but larger amounts after a meal with a high carbohydrate content. Control experiments, in which insulin was administered intravenously, revealed that the quantities of insulin that appear in the blood of normal persons are comparatively small (at the most from 1 to 2 units in 100 cc of blood). The blood transfusion experiments revealed further that the blood of diabetic patients, who are susceptible to insulin, contains no insulin following a carbohydrate meal. Moreover, in severe diabetes, in which there exists a resistance to insulin, the blood has no or only slight amounts of insulin following a carbohydrate meal, and in some instances the blood from these persons even increases the blood sugar of the recipient.

Zeitschrift f. Geburtshilfe u. Gynakologie, Stuttgart

109:1124 (July 27) 1934

- *Nature, Diagnosis and Treatment of Preeclampsia T. Heynemann—p. 1.
*Prognostic Significance of Pressure of Cutaneous Vessels in Patients with Preeclampsia D. Raisz and L. Hazay—p. 21.
Relations Between Connective Tissue and Muscles in Wall of Pregnant Uterus H. Frobose—p. 31.
Pharmacologic Conduction of Birth F. A. Wahl—p. 48.
Cause and Type of Anemization During Pregnancy A. Pohl and W. Bergmann—p. 63.
Vaginal Flora of Human Subjects and of Mammals and Its Significance for Pathogenesis Epidemiology and Lemology of Diphtheria J. von Khreninger Guggenberger—p. 82.

Nature, Diagnosis and Treatment of Preeclampsia.—Heynemann maintains that eclampsia and preeclampsia do not differ in their essential nature but are the same, the differentiating sign being a single clinical symptom, the convulsions. The clinical difference is generally only one of degree. Formerly the diagnosis was based mainly on subjective symptoms, such as headache, visual disturbances, nausea vomiting dyspnea, asthma, accelerated breathing and increased depth of respiration. He thinks that headache is the most frequent and occasionally the only symptom and advises that headache occurring without fever, should be considered a preeclamptic symptom, unless some other cause can be found. He shows that disintegration of the blood (hemoglobinuria and hematuria) and development of hepatic disturbances (icterus and increased bilirubin content of the blood) indicate preeclampsia particularly in case of edema and renal changes. However the majority of cases of preeclampsia lack these symptoms. Changes in the fundus of the eye (form and size of vessels) are present in some patients. The results of vascular spasms are observable also in the capillaries of the nail groove but their utilization for the diagnosis of preeclampsia is possible only with certain limitations. The epinephrine probe test of Muck is nearly always positive, but, since it is frequently present in patients without eclampsia and preeclampsia its diagnostic significance in eclampsia is limited. Greater importance may be attached to the facial edema, for it is present in nearly all women with eclampsia and preeclampsia. Axious restlessness of parturient women is often the most prominent preeclamptic sign. The increase in the depth of respiration is likewise typical for preeclampsia. Then there is the reduced galvanic irritability of the median nerve. The increase in blood pressure is one of the most important signs because it is generally the earliest indication of a preeclamptic state. A decrease in the quantity of urine and a considerable increase in the protein content are also signs of a beginning eclampsia. In some instances a sudden impairment of the general condition is the only indication of preeclampsia. If this symptom appears, the possibility of vascular collapse, cardiac weakness, rupture of the uterus, internal hemorrhage or preeclampsia should be considered. Premature detachment of the placenta, in case of a normal site of attachment, is not always a sign of preeclampsia. The author points out that in cases with indefinite signs the diagnosis may be difficult, but he emphasizes that a too frequent diagnosis is less dangerous than the failure to recognize eclampsia. At the first appearance of preeclamptic symptoms, venesection should be done. The first withdrawal should not be less than from 300 to 500 cc. If after this the preeclamptic symptoms do not disappear, the venesection should be repeated, or delivery by cesarean section

should be done at once, provided forceps delivery or version is not feasible. If icterus, greatly increased bilirubin content of the blood, changes in the fundus of the eye and stupor indicate a serious condition, cesarean operation should be done at once. Hypertension as such does not necessitate abdominal delivery, but, if it persists in spite of treatment, prompt delivery is advisable. The author evaluates a number of medicinal preparations that have been recommended by different investigators. He shows that the use of most of them is not sufficiently well founded.

Pressure of Cutaneous Vessels in Patients with Preeclampsia.—Raisz and Hazay conducted their studies with the aid of Herzog's apparatus, which measures not the pressure in the capillaries but rather the resistance opposed by the cutaneous vessels to the blood entering from the arteries. They found that the pressure of the cutaneous vessels of healthy pregnant women does not differ from that of healthy nonpregnant women. In pregnant women with edema, it was found that the pressure of the cutaneous vessels is much lower than in healthy persons. Studies on women with preeclampsia and eclampsia, however, revealed a greatly increased pressure in the cutaneous vessels, and the authors show that the pressure in the cutaneous vessels is a more reliable indicator of an impending eclampsia than is arterial pressure, protein content of urine, extension of edema or the various subjective symptoms.

Zentralblatt für Gynäkologie, Leipzig

58: 1873-1920 (Aug. 11) 1934

Genital Hemorrhages in Thrombopenia: Two Cases. E. Junghans.—p. 1874.

Development of Carcinoma in Deformed Uterus (Double Uterus and Divided Vagina). C. Renner.—p. 1880.

*Irradiation of Cancer of Uterine Cervix During Pregnancy. II. Hofmann.—p. 1886.

Primary Syphilitic Lesion of Vaginal Portion of Uterine Cervix with Aspects of Carcinoma. W. Nissen.—p. 1894.

*Influence of Ovarian Hormone on Blood Pressure. S. Liebhart.—p. 1896.

Irradiation of Cancer of Uterine Cervix During Pregnancy.—Hofmann cites some results of the surgical treatment of cervical carcinoma during pregnancy and shows that they are satisfactory as far as the mother is concerned. The child, however, if not yet viable, must be sacrificed. In irradiation the greatest danger for the child lies in the possibility of impairment by the rays, which increases proportionately to the earliness of the pregnancy, because in the earlier stages of pregnancy the distance between the source of the rays and the embryo is still rather small, and even during the second half of pregnancy an impairment by rays cannot be entirely excluded. The danger of damage to the fetus increases with the quantity of rays and when a cervical application is made in addition to a vaginal one. The use of roentgen rays is much more dangerous than the use of radium rays. The mother is in danger because the irradiation may be followed by an abortion and this in turn by an infection. Moreover, the author cites a statistical report which proves that the permanent cures are only slightly more than half as frequent after irradiation as after surgical treatment, and he agrees with the statistician that differences in the results of the two methods are sufficiently great to conclude that irradiation is hardly ever justified. But he admits that there may be cases in which irradiation has to be tried. He describes such a case. A woman, aged 27, mother of one child, asked medical aid on account of a profuse vaginal discharge. It was found that she was pregnant in the fifth month and that an erosion on the cervix was cancerous. Since the woman rejected an operation and insisted on carrying the child to term, irradiation was decided on. Small doses of radium rays were applied in two sessions and roentgen irradiation was entirely dispensed with. The child was delivered spontaneously at the normal time and there were no puerperal complications. The child gave no indication of impairment by rays. Several months after delivery the cervix again showed an erosion, and the woman was again pregnant (second month). The author considers this new pregnancy worthy of note, because pregnancy is rare following irradiation of cervical carcinomas. The woman submitted to a vaginal amputation of the uterus. At

present, two and a half years after the radium treatment, both mother and child are doing well. That the subsequent extirpation of the uterus was justified was revealed by the histologic examination of the cervix, disclosing numerous metastases. This also proves the great danger of irradiation with insufficient doses. Moreover, the author concedes that two and a half years is not a sufficiently long period to arrive at a definite conclusion, and that, even if the favorable effect should persist, a single case would not disprove the contrary testimony of larger statistics.

Influence of Ovarian Hormone on Blood Pressure.—Liebhart made tests with various forms of ovarian hormone on more than 300 persons; men, girls of the prepuberal age, mature normal women, castrated women and women of the menopausal age. All forms of application were tried and the doses varied between 100 and 5,000 mouse units. The blood pressure values were determined with the Riva-Rocci apparatus. It was found that the follicular hormone reduces the blood pressure slowly. Tests were made also to compare the blood pressure reducing action of the follicular hormone with that of histamine, of eholine and of extracts of striated muscles and other organs. It was observed not only that the action mechanism of the ovarian hormone differs from that of other substances but that it is of a specific hormone nature. In further tests, the author studied the reaction of the sympathetic nervous system to the influence of the ovarian hormone. He reaches the conclusion that the blood pressure action of the follicular hormone, as well as of the other substances investigated, depends on a number of other factors that are determined by hormonal, nervous and constitutional influences. The author summarizes the results he obtained on the various groups of persons. He observed that the follicular hormone extract influenced the blood pressure of men and of boys, but that the change was considerably less than in women. The pressure changes in girls of the prepuberal age resemble those in men and boys. Tests on women revealed that the reduction in blood pressure, following administration of follicular hormone, is greatest in women entering the menopause. Most of these women had hypertension and the extent of the reduction was correspondingly more pronounced. The author gained the impression that after the administration of follicular hormone the blood pressure decreases proportionately to the deficiency in the ovarian function.

Ugeskrift for Læger, Copenhagen

96: 865-888 (Aug. 9) 1934

Blood Transfusion with Especial Reference to Its Technic and Its Surgical Indications. P. Morville.—p. 865.

Thrombosis of Coronary Artery of Heart: II. Some Common Variants of Picture. J. E. Holst.—p. 871.

*Epigastric Hernia Simulating Heart Disease. H. Kjærgaard.—p. 875.

Weil's Disease: Case. J. Nordentoft.—p. 876.

Epigastric Hernia Simulating Heart Disease.—The epigastric hernia in Kjærgaard's patient, a man aged 33, is thought to have slowly developed in the last eight years. During this time hard labor was followed by attacks of poignant pain, always retrosternal, although the hernia was located 8 cm. below the xiphoid process. The symptoms disappeared after herniotomy.

96: 889-912 (Aug. 16) 1934

Modern Treatment at Health Resorts. E. Rud.—p. 889.

*Bilirubin Tolerance Test as Liver Function Test. K. Brøchner-Mortensen.—p. 892.

New Table for Anesthesia. O. Povlsen.—p. 899.

Weil's Disease. T. Madsen.—p. 900.

Bilirubin Tolerance Test.—From his results and comparison with the results of other liver function tests, Brøchner-Mortensen concludes that in its limited field of application the bilirubin tolerance test is a sensitive test of the liver function. While inapplicable in hepatic disorders with bilirubinuria, it is useful in the diagnosis of cirrhosis and in evaluation of the condition of the liver in chronic hepatitis and cholangitis and in examination of possible injury of the liver in infectious diseases and different disorders, such as diabetes, exophthalmic goiter and certain skin and brain disturbances. It may prove to be especially suitable for the investigation of possible lasting functional disorders of the liver following acute hepatitis.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 16

CHICAGO, ILLINOIS

OCTOBER 20, 1934

THE FUNCTIONS OF THE FULL TIME PATHOLOGIST IN HOSPITALS

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The functions of the pathologist are but vaguely defined and understood. Since Virchow's first pathologic publications, about seventy-five years ago, the progress of medicine in general has been rapid. With this the functions of the pathologist have increased in scope and importance.

After the fundamental work of the great German pathologists Virchow and Cohnheim, pathologic anatomy was separated as a distinct branch of medical science. At first the pathologist, as "prosector," had a narrower field, confined mainly to the study of autopsy material. The rapidly progressing surgery, however, opened a new field of surgical pathology, thereby aiding the study of disease in vivo. The general advances of medicine at the same time made the pathologist an important adjunct in all lines of diagnostic work. This practical standpoint of diagnosis is responsible for increasing the importance of the laboratories beyond the scope of morphology. All branches of so-called clinical pathology (biochemistry, bacteriology, serology, hematology, animal experimentation) made rapid progress in developing diagnostic methods and have increased the usefulness of the pathologist as a diagnostician.

Such considerations are mainly responsible for the fact that the laboratories and the pathologist play an important rôle in the standardization of hospitals. Briefly expressed, the hospitals have the following functions: (1) to take care of patients, (2) to promote medical progress and (3) to elevate the educational standards of the medical profession. To comply with such requirements, the laboratories and the pathologist have a great responsibility. The important rôle of the pathologist is best defined by discussion of the following four functions: (1) as laboratory consultant, (2) as research consultant, (3) as scientific administrator and (4) as educational director.

LABORATORY CONSULTANT

The size and organization of the laboratories depends on the type and size of the hospital and on many other factors. The various branches of histopathology and clinical pathology require more or less technical personnel. These in turn need supervision and direction. This must be supplied by at least one physician-pathol-

ogist. This pathologist is the laboratory director and as such is necessarily the link between clinical and laboratory medicine. While even routine work, to constitute worth while relationship to clinical diagnosis, requires the special training of the biochemist and bacteriologist, the really proper field of the pathologist is tissue pathology.

In the first place the pathologist is responsible for the autopsy work. Only too often there are two indications for autopsy work in the hospitals: (1) the requirement of autopsies in not less than 15 per cent of deaths, for intern training; (2) to check the clinical diagnosis and determine the immediate cause of death. As a matter of fact, autopsy material offers a veritable treasure mine of medical knowledge. There will be a natural increase in the percentage of autopsies obtained if the value and use of the autopsies are demonstrated to the attending and resident staffs.

Remarks such as "What's the use of the autopsy, we know the patient had pneumonia" are quite common. The patient may have died of pneumonia but there may be, besides the various scientific aspects of this condition, a great many striking abnormalities in the other organs which are most instructive, demonstrating various phases of pathogenesis of many other diseases (coronary sclerosis and so on). Frequently autopsies are mistakenly limited to confirmation of the clinical diagnosis. Common remarks by clinicians or residents are also "We are interested only in the gall-bladder and liver" or "We do not care about the heart or brain." As a matter of fact the real results of the autopsies can be seen only after the coordination of all the gross and microscopic observations. Besides the vast pathologic aspect, the autopsies offer opportunity for normal anatomic, bacteriologic and surgical studies.

At this point emphasis has to be laid also on the technic and plan of autopsy work, not only for the success of scientific studies but to avoid justified antagonism on the part of the lay public and undertakers. Often utilization of autopsy work is limited to gross observations instead of extending it to various degrees of histologic studies. Various phases of this work have to be recorded by means of photomicrography, drawings and lantern slides. Such records are important not only as part of the hospital work but also from the standpoint of educational research and legal medicine. Gross and microscopic materials have great value as teaching material when used for meetings, demonstrations and permanent museum work. If properly studied and worked up, such material also suggests further experimental work. Surgical pathology is often also appreciated only so far as surgical diagnosis goes. The fact, however, is that surgical pathology affords opportunity to study various phases of the pathogenesis and course of diseases in vivo rather than the terminal

stages of autopsy observations. It offers the most stimulating teaching material not only for the education of the staff but also for the pathologist himself. It is granted, however, in regard to surgical pathology, that diagnostic work is of prime importance from the standpoint of the patient so far as prognosis and further treatment is concerned.

The judicious use of the frozen section method is helpful, but rapidity of diagnosis should not be emphasized at the expense of accuracy. Medicolegal questions not only necessitate accurate pathologic records but often require toxicologic examinations. Study of diseases naturally embraces pathology, bacteriology,

TABLE 1.—*Laboratory Consultant*

- I. Acquaintance of standard laboratory methods:
 1. Gross morphology (autopsy, surgical pathology, embryology)
 2. Histologic technic (special tissue stains)
 3. Bacteriologic methods
 4. Serologic and immunologic methods
 5. Biochemical methods
 6. Hematologic methods
 7. Medicolegal, toxicologic methods
 8. Biologic methods (Aschheim-Zondek test, other animal inoculations)
- II. Interpretation of laboratory methods by pathologist as diagnostician; initiation of methods as consultant
- III. Adaptation, modification, of new methods

serology, immunology and hematology in the closest coordination. For many routine examinations along these lines, technicians are relied on entirely. It is obvious that the methods of the technicians should be supervised by superior knowledge, which requires special training of the highest quality. This is best exemplified in relation to biochemistry. Many of the methods in blood chemistry (for example, urea determination by the Marshall method) are so simplified and standardized that technicians are capable of doing them, but no matter how simple any of them are the sources of error are innumerable. The greatest attention has to be paid to standards, which deteriorate in shorter or longer time and, even if new, require careful checking. Standardization and calibration need competent supervision. Most of the methods, moreover, require judicious adaptation. No technician would be expected to decide, for example, what kidney or liver function tests are generally reliable or most suited for certain clinical cases.

Finally, the pathologist will be called on to make interpretation of the results of laboratory examinations. His services are particularly helpful when consulted as to the choice of laboratory methods needed to build up the diagnosis. The necessity of adaptation and modification of new methods will be usually judged by the pathologist but often requires the highest skill, training and experience in the special lines (biochemistry, bacteriology and the like).

RESEARCH CONSULTANT

The pathologist is expected to be broadly trained in his knowledge of diseases; his knowledge must supplement that of the clinician; he must be able to correlate pathology and clinical medicine; he must know theories of pathogenesis and facts of prognosis; he must know the limits of certainty and the needs of future research. If all these things are true of him, he becomes thereby the most valuable of clinical and research consultants. For such scholarly attainment he has mainly two sources: (1) the practical study of material offered in the laboratory not only for diagnosis but also for self education; (2) literary studies. A reference library

is indispensable not only for the pathologist himself but also for the entire staff, and his advice is often sought. To follow foreign literature, knowledge of languages is of great importance in literary research.

As the pathologist has to be engaged in continuous studies of the current literature, it is essential that the library should be kept up to date. He needs and obtains much stimulation by personal contact with various scientific societies. In this way he brings to his associates knowledge gained from sources and views not ordinarily within reach of the clinicians. He is not only expected to follow the progress of new medical developments but to be capable of contributing to these developments himself by utilizing his own observations. Original observations may be based on morphologic studies or may be clinical, in which case the pathologist may serve as adviser or consultant. Clinicians and pathologists may also join as collaborators in such original work as involves laboratory and clinical methods.

In experimental work with animals the pathologist has to possess a great deal of special information concerning the type of animals, their anatomy, pathology and so on. The value of such animal experiments will depend on the knowledge, experience and judgment of the pathologist in regard to methods, results and their interpretations.

Following all the work of the various branches of the laboratories, the pathologist gains knowledge of practically the entire scientific material of the hospital. He is thereby in the best position to suggest problems to be worked up or subjects to be published. Of course, it is granted that the scientific material is available only if it has been systematically collected and arranged (museum, index of diseases, collection of lantern slides, photographs, drawings).

The pathologist is a useful consultant and critic in preparation of papers of the staff and offering material for even larger publications, as books.

TABLE 2.—*Research Consultant*

- I. Literary information past and current (library, journals, languages)
- II. Membership in and attendance at special societies.
- III. Experimental pathology (anatomy and pathology of animals)
- IV. Original research:
 - (a) Literary (case, statistical studies)
 - (b) Experimental
- V. Scientific or research consultant of staff:
 - (a) Initiating
 - (b) Collaborating
- VI. Editor of publications (illustrations)

SCIENTIFIC ADMINISTRATOR

As the chief full time scientist of the hospital, the pathologist is first of all a scientific consultant for the medical director or superintendent in scientific questions. His advice will be sought for in such scientific matters as records, mortality and hospital hygiene.

Hospital records, when completed, are great assets in a hospital. Records have to be built up as completely as possible not only with all the laboratory information but also with photographic illustrations and charts. Such records can afford a wealth of material for research work at a much later date. This may also acquire great importance from a legal standpoint and with systematic indexing can be the basis of accurate statistical studies.

The problems of hospital hygiene are too many to enumerate. The pathologist is obviously responsible for all questions in connection with the morgue. The periodic health examinations of the entire hospital

personnel should include laboratory work, throat cultures and stool cultures. Hospital planning and construction require special consideration from the standpoint of asepsis (operating room, operating material, nursery).

The question of epidemics is to be thought of from the standpoint of prevention as well as actual occurrence. Cases of contagious infections are often discovered in the laboratory.

The food supply requires the systematic supervision of the laboratory.

TABLE 3.—*Scientific Administrator*

- I. Relation of pathologist to medical director or superintendent:
 1. Records (statistics, photographs)
 2. Hospital hygiene:
 - (a) Morgue
 - (b) Personnel:
 - Nurses
 - Employees
 - (c) Asepsis:
 - Operating room
 - Operating material
 - Nursery
 - (d) Epidemics
 - (e) Food supply (e. g., milk)
- II. Relation of pathologist to attending staff:
 1. Liaison officer between clinical and laboratory medicine
 2. Research and diagnostic consultant for patients
 3. Collaborator of papers of staff for publications and meetings
- III. Relation of pathologist to resident staff (supervising interns, curriculum besides laboratory training, and so on)

In the hospital organization the pathologist is in intimate contact with the attending and resident staff. He is the liaison officer between all branches of clinical and laboratory medicine. His various contacts are mentioned in other places of this paper, but emphasis has to be laid on his work in the operating room and on rounds, and also to his collaboration with the attending staff in all the research and diagnostic work and preparation of papers of the staff for publications and meetings. His relation to the resident staff is an intricate one. Besides the laboratory training during their curriculum, the resident staff is in continuous touch with the laboratory and under direct and indirect supervision of the pathologist. It would be a great loss to the efficiency of a hospital if the pathologist should be considered only as a "laboratory" man in charge of routine laboratory work. With all the work enumerated, the scientific advice of the pathologist has to have the weight of authority but should not be confused with executive authority of the head of the hospital.

EDUCATIONAL DIRECTOR

The laboratory has a share in the diagnosis of every hospital case. The laboratory material, whether it is purely morphologic (autopsies and surgical pathology) or from the other various branches of clinical pathology, lends itself for educational purposes. There is nothing more stimulating to medical thought than a well prepared clinical-pathologic presentation with definite laboratory data, including gross and microscopic material, roentgenograms and other clinical information. It provides a firm basis for discussion of diagnosis and treatment.

All this laboratory material, if properly worked up and collected, is available not merely for one occasion but permanently for demonstrations and systematic lectures. Gross pathologic material (from autopsies or surgery) is best preserved in a permanent museum. The microscopic work can be demonstrated by micro-projections or with lantern slides and photomicrographs. When photography is not suitable for

reproduction, drawings may be necessary. All this material, when properly collected and classified, may become useful for illustration of publications at a later date. The same applies to the material derived from the various branches of clinical pathology (gross and microscopic material, charts). Such work, first of all, adds to the education of the pathologist himself, continuously increasing his experience and improving his judgment. It serves similarly as a stimulus for the entire staff collectively and individually. Comparative studies of pathologic material and roentgenograms, of clinical, morphologic and chemical studies of various diseases (such as nephritis) are examples of the cooperation between the individual departments of the hospital and the laboratory.

For the practical education of interns and the resident staff, well organized laboratory work forms an indispensable and firm basis as a part of their hospital curriculum, and appreciation of the various uses of the laboratory should develop to the very end of their hospital service. The interns and resident staff play a major rôle in securing permission for autopsies. Enthusiastic cooperation can be obtained only by rewarding their troubles with demonstration of the value and use of the autopsies. The direct and indirect links between the interns and the laboratory are too many to enumerate.

The pathologist contributes in numerous capacities to the training of nurses. Both undergraduate and graduate nurses should know enough of the purpose and methods involved in common clinicolaboratory procedures to cooperate in handling patients properly to obtain the best results.

Although the hospital constitutes an educational center for its own medical staff, the profession of its vicinity has also a legitimate claim on it. It is again the pathologist, with his well arranged collections from all branches of laboratory material, who can be called

TABLE 4.—*Educational Director*

- I. Collection of gross and microscopic specimens as well as material of the various branches of clinical pathology:
 1. Museum preparation of gross pathologic specimens
 2. Permanent collection of microscopic slides
 3. Collection of lantern slides:
 - (a) Gross specimens
 - (b) Microscopic material
 - (c) Charts
 4. Drawings
- II. Education of attending staff by preparing material for clinical-pathologic meetings
- III. Education of resident staff:
 1. Laboratory part of curriculum
 2. General courses and demonstrations
- IV. Teaching of nurses
- V. Postgraduate teaching
 1. Special postgraduate courses
 2. Regular pathologic demonstrations
- VI. Education of public (lectures, demonstrations)

on to arrange or participate in shorter or longer post-graduate instruction courses.

As in large institutions there is a continuous flow of gross pathologic material (from autopsies and surgery), systematic pathologic demonstrations can be arranged by the pathologist for the hospital staff as well as for the outside profession all the year round.

Some problems of preventive medicine and public health (cancer, tuberculosis and other infectious diseases) can be coped with successfully only if every medical institution, with its pathologist and pathologic material, will be a permanent source of public enlightenment through lectures and demonstrations.

SUMMARY

All these may seem as a formidable array of functions. Still the possibilities for the pathologist are not nearly exhausted if he applies himself with wholehearted devotion to the service of the institution. Every phase of the hospital work is directly or indirectly and intimately connected with his work. Therefore, essential requirement of the pathologist is a tactful personality, as the harmonious cooperation of the entire hospital personnel is of prime importance for the success of the institution.

On the other hand, if the hospital wants to secure the benefit of the best services of the pathologist, it is under numerous obligations to him. First of all the pathologist has to have the authority and respect as the chief scientist of the institution. He is not only a man of special training but one engaged in continuous scientific pursuit of the various branches of exact sciences in relation to medicine. All the functions of the pathologist are not only too numerous but also time consuming.

In order that his work may be successful, he has to devote his undivided attention to the institution on a full time basis. To do his best the pathologist has to be freed from too many cumbersome outside interests, which he is sometimes forced to undertake to eke out his existence.

The hospital will be amply rewarded not only with high scientific standards, which is the pride of an institution, but by being able to offer the best possible care of the patients who come to it for diagnosis and treatment.

410 Fairmount Avenue.

ABSTRACT OF DISCUSSION

DR. WILLIAM CARPENTER MACCARTY, Rochester, Minn.: To live up to Dr. Alter's ideals, a pathologist would of necessity be a superman. He would have to be a tissue pathologist, bacteriologist, serologist, immunologist, protozoologist, chemist, somewhat of a clinician, super laboratory technician, toxicologist, hygienist, medicolegal expert, experimentalist, and in some hospitals a roentgenologist. Above all he would of necessity be an executive of no mean ability. When I first became a pathologist I was expected to do all of these things except roentgenology. I soon realized that no one man could master all these fields. I therefore suggested a division of responsibility, each division being placed in the hands of an expert. In a large institution is the only way the function of pathology can be carried out efficiently. The smaller hospitals for economic reasons will quite naturally have to be satisfied with lesser degrees of general expertness. Realization of this necessity has been responsible for the development of commercial or special independent laboratories, which serve a whole community. In laboratories that serve a greater number of physicians than can a small hospital, the financial returns permit greater division of function among technical experts who are supervised by an executive familiar with the various phases of this great field, which now has so many divisions. In our institution there are many independent subdivisions, each larger than the original department twenty-five years ago, and the members of one division are not and probably could not be trained to do the work of any other division. The directors of each subdivision would not consider themselves capable of assuming responsibility of any of the other subdivisions. I believe the term pathologist will eventually disappear as a designation for a specialist in medicine and will assume a broad significance, such as has the term philosopher. It probably will have no greater specificity and at the same time apply to individuals who deal with all abnormal states or phases of life, even including sociological abnormality. Dr. Alter's paper will serve, I hope, to impress on the general profession the great

changes that have occurred in scientific medicine in the last twenty-five years.

DR. NICHOLAS M. ALTER, Jersey City, N. J.: I agree with Dr. MacCarty that the pathologist is almost a superman. It is difficult to define pathology. The best definition is that it is a study of diseases. The study of diseases has progressed and widened enormously, and the pathologist as a full time scientist of the hospital is expected to know a great deal. The reason I brought this question up is that higher standards are wanted for those scientists who are called pathologists and more respect than most hospitals now give. Today hospitals are apt to employ pathologists who have very rudimentary experience. Higher standards will benefit both the pathologist and the hospital.

THE CAUSE OF DEATH IN
PNEUMONIA

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My purpose in this study was to investigate the immediate cause of death in pneumonia, both from a clinical and from an anatomic standpoint. The material consists of 200 consecutive cases of pneumonia, which were studied clinically and which finally came to autopsy in the Fourth Medical Service at Bellevue Hospital.

The autopsies were performed by various members of the pathologic staff under the chief pathologist, who has permitted me to utilize the material in this manner. The clinical studies were based on the usual records of the cases under the regular attending physicians and their associates of the division, with additional notes when possible of the immediate manner of death.

During the war as chief of medical service at the Camp Upton Base Hospital, as senior consultant in medicine to the Second Army, A. E. F., 1918-1919, and finally after the armistice attached to the army laboratory at Dijon, France, for this purpose, I made a study of this subject augmented by an analysis of the postmortem records of 5,000 fatal cases of war pneumonia in the American Expeditionary Forces. The summary of this study indicated that most of the patients dying from pneumonia in the American Expeditionary Forces during 1917-1919 did so with a terminal cardiac failure and a final dilatation of the right heart. I felt, however, that the prevalent type of pneumonia occurring in the army during this period was a special form and that conclusions deduced from this material do not fully pertain to the types of pneumonia usual in New York City and its environs. These data, therefore, are not considered in the present study, although observations then made on this enormous material cannot but influence one's point of view to some extent.

In the present series of 200 consecutive fatal cases, no differentiation has been attempted to segregate the various anatomic types of pneumonia, since the histologic process is essentially identical in all. The requirement has been that all should have had as their apparent etiologic factor one of the various forms of pneumococci. Nearly all these cases were typed, either from the blood or sputum ante or post mortem, but since so many forms of pneumococci are now recognized, though sometimes with difficulty, and since the bacterial type furnishes no apparent relationship to the

From the Fourth Medical Service, Bellevue Hospital.
Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

manner of death or to the pathologic changes studied post mortem, no subclassification has been attempted.

The group comprised 174 males and 26 females. One patient was within the first decade, three were within the second decade, thirty-two were in the third decade, thirty-two were of the fourth decade, thirty-six were of the fifth, fifty-one were of the sixth, thirty-three were of the seventh, eleven were of the eighth, and one was of the ninth decade.

Clinical study of the manner of death from ward observation and from the histories and charts, with particular reference to the type of exitus, indicated the death to be due apparently to cardiac failure in seventy-seven instances. It is significant to note that at autopsy 116 cases showed definite chronic cardiac disease which clearly existed before the onset of the pneumonia. This high percentage may bear some possible relationship to predisposition to pneumonia or may indicate the decreased outlook which the subjects of chronic cardiac disease present against fatal termination in pneumonia. Seventy-three cases showed acute cardiac lesions which developed clearly during the disease and which played a very certain rôle in the termination by death. The heart was mentioned as normal, or entirely ignored among the factors concerned in death in but twenty-nine instances. Fourteen cases showed acute valvular endocarditis.

These data, I believe, substantiate the impression of most experienced clinicians that patients with pre-existing cardiac disease are particularly bad risks in pneumonia and that both clinical and pathologic observation confirms the commonly accepted conclusion that death occurs with greatest frequency with the clinical picture and the pathologic changes of heart failure.

No clinician of experience, however, can be blind to the fact that cardiac failure alone is not the sole factor in death in pneumonia from circulatory failure. Death from circulatory failure is often preceded by days, hours or moments of dilatation and congestion of the capillaries and veins, while the heart action itself is still apparently fairly maintained. There can be no question whatever that vasomotor paralysis of the superficial and deep capillary beds is a most important factor in the picture of circulatory collapse. One hundred and nine instances, inclusive of the seventy-seven cardiac cases cited, showed this type of circulatory failure. Definite and reasonably efficient methods exist for the support and maintenance of cardiac action, but there are all too few efficient means for the treatment of peripheral circulatory collapse. If these symptoms and signs are improved as by the action of solution of pituitary or epinephrine, with a resumption of relatively normal blood pressure and relief of capillary congestion, improvement in the status of the case follows in some instances. No amount of oxygen administration in any form appears either to obviate or to improve these conditions when they appear in failing cases of pneumonia.

It is universally recognized by practitioners that a positive blood culture in any bacterial type of pneumonia is one of the most serious, if not the most grave, prognostic signs that may appear in an early stage of pneumonia. This study fully confirms the general clinical impression that septicemia is in all probability the one most constant serious clinical sign of grave import.

In this series of 200 fatal cases, either positive blood cultures or definite pathologic signs of septicemia found at postmortem were shown in seventy-five cases. Clinical study of the charts confirms this conclusion fully.

Thus, fourteen cases showed active acute endocarditis, thirteen cases acute meningitis, twenty cases empyema, and six lung abscess. In many cases a septic type of temperature with profound toxemia even in the absence of confirmatory blood cultures appears to have precisely the same sinister prognostic weight as positive cultures.

I am of the opinion that the degree of sepsis present is the most significant factor in prognosis in the disease and that its presence is the most frequent basic cause of death. It was clinically or bacteriologically diagnosed as present in ninety of the 200 fatal cases. In septic cases, death may occur from terminal cardiac failure, from pulmonary changes or otherwise; the first mentioned manner of death, however, appears to preponderate in this series.

Meningitis has been found to be a frequent immediate cause of death in this group. Whenever it has appeared, it has been an index of sepsis. Its occurrence bears no relationship to the extent or location of the lung invasion, or apparently to the type of pneumococcus present. It was present as the dominant cause of death in thirteen instances in this series. It had been correctly diagnosed ante mortem in all cases. It has been the custom of many clinicians, myself among them, occasionally to recognize a clinical picture known as meningismus, a condition with sterile spinal fluid but with the clinical indications of cortical irritation. As a result of these studies I am convinced that there is no such condition as meningismus in pneumonia but that all instances so diagnosed are in reality cases of meningitis or of encephalitis. I believe however that in certain mild cases of these, recovery may occasionally, though rarely, occur. This statement will be disputed by some excellent and experienced authorities beyond doubt.

The degree in which anoxemia plays a dominant rôle in the immediate cause of death in pneumonia is exceedingly difficult to ascertain with any satisfactory degree of certainty. Accurate studies of this nature would as yet imply methods of such character as more or less seriously to hazard the welfare of the human patient. The mere chemical study of the blood furnishes very insufficient data for this purpose, and one probably can do little more in the ordinary clinical case than to study and attempt to estimate the value of oxygen administration to apparently moribund patients, just as one attempts to evaluate similar clinical methods for the relief of circulatory failure.

So far as my observations go, the extent of lung involvement is of but minor value as a prognostic factor in death in pneumonia. Thus, of the present group, fifty cases showed involvement of but a single lobe, in forty-two two lobes were invaded, in nineteen three, and in eighteen four or five lobes were cited as involved. In seventy-one instances the extent of lung involvement was not adequately defined in the histories or protocols.

Obviously the adequate use of oxygen by the newer methods of administration should afford strikingly valuable evidence as to the importance of anoxemia in the determination of death in pneumonia. Naturally, at the present time, a very wide difference of opinion exists in regard to this method of therapeutics; the matter is still in active dispute. That oxygen tremendously increases comfort in many cases and that it often prolongs life, seem to be facts beyond dispute, but in my observation it has little if any permanent effect in septic cases or in those in which grave circulatory defects have developed. I do not feel that it manifestly modifies prognosis materially, in cases showing grave

pathologic changes, such for example as in massive collapse, atelectasis or embolism.

Of the cases in which pulmonary changes seemed to play the important rôle in the cause of death, I must cite twenty cases of empyema, in which lung compression had been considerable, but in all of which a basic septicemia was present; atelectasis due to plugging of a bronchus with tenacious exudate was present in nine instances, and massive collapse in four. In none of these last mentioned lesions had the precise nature of the pathologic condition been recognized clinically, and subsequent observation has convinced me that these lesions are much more frequent and very much more important than I, at least, have previously recognized. In the four instances of massive collapse this lesion was in all probability the immediate cause of death, and in at least some of the nine cases of atelectasis it too had been an important immediate lethal factor. Pulmonary embolism, which I previously esteemed to be a not infrequent immediate cause of death in pneumonia, occurred but once and the lesion in this case was very small and probably relatively unimportant. I suspect that massive collapse and atelectasis from various causes have generally been mistaken for pulmonary embolism. Emboli other than in the lung occurred in but two instances, in neither of which did it seriously contribute to the fatal outcome. Pulmonary gangrene was a prominent lethal factor in two instances.

Most textbooks stress the importance of tuberculosis in connection with death in pneumonia. Chronic healed pulmonary tuberculous lesions were found in but eighteen cases of the series. In none of these did they play a rôle in the cause of death. In two cases, however, there had developed an activation of an old lymphatic tuberculosis with generalized tuberculosis and death as a result. It is very probable that most physicians have overestimated the rôle of tuberculosis as a fatal factor in the termination of pneumonia.

Many physicians, including myself, have much emphasized the rôle which alcoholism plays in the fatalities from pneumonia. In this series but five instances of this nature appeared. It is then quite possible that we have been overestimating this factor in pneumonia fatalities, but I cannot refrain from stating that I nonetheless feel that chronic alcoholism, with its attendant exposure and other concurrent factors, at least looms large as an important factor in susceptibility to the disease. Ten instances of this probable relationship, including the five cases already cited, seem to bear out this assumption.

Wonder has often been expressed because so few cases of pneumonia terminate from serious renal defects, for renal irritation and congestion are usually a prominent sign at onset. Only three instances in which active nephritis was present were observed in this series. In none of them had it assumed clinical importance, nor was it cited as a contributory factor in the cause of death.

Very numerous other and exceedingly interesting facts have discovered themselves in this brief study. The limitation of this paper, however, permits discussion of only the most important and striking observations. Grounds for many studies both in the clinic and in the deadhouse have, however, been suggested, and though the subject may seem to some to be threadbare and reduced to mere osteology by the overwhelming literature concerning the bacteriology and serology of pneumonia that has appeared in recent years, it is

apparent to the student of clinical medicine that much time may still be profitably spent in the study of the clinical features and pathology of pneumonia.

CONCLUSIONS

I feel that the facts cited justify the following conclusions:

The most serious basic factor in the cause of death in pneumonia is sepsis.

Patients with pneumonia most frequently die immediately from circulatory failure. In this term must be included both essential cardiac failure and peripheral vasomotor paralysis.

Anoxemia is not a frequent immediate cause of death in pneumonia.

Atelectasis and massive collapse are probably more frequent as terminal factors than is generally supposed.

Embolism and thrombosis are probably rare as terminal causes in pneumonia.

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ABSTRACT OF DISCUSSION

DR. J. H. MEANS, Boston: Some eighteen years ago I had the privilege of working with Dr. L. H. Newburgh on this problem. That work, I think, is largely out of date, but I will mention it briefly. Dr. Newburgh tried, both in the clinic and experimentally, to answer this very question Dr. Brooks has been attacking. Do the patients die of a vasomotor collapse or is the vasomotor center exhausted? The methods used seemed to give a negative answer to that; the vasomotor center carried on effectively. An attempt was made to answer in experiment whether death is due primarily to myocardial failure. The study was carried out in dogs, the Friedländer bacillus being used. I have to admit that it is quite remote from human pneumococcal pneumonia. These experiments seemed to show that the heart muscle carried on fairly well and that the blood was poisonous to it. Then the respiratory center was studied in dogs with Friedländer pneumonia, and some evidence seemed to indicate failure. This again was far removed from human lobar pneumonia. Since then other things have come up for consideration. At one time I thought that acidosis played an important rôle in pneumonia—carbon dioxide acidosis. I doubt this now. I don't believe it plays any rôle at all. I don't believe that the rôle of anoxemia in death from pneumonia is known. I do think oxygen therapy should be used. If I had pneumonia and was cyanotic, I should want oxygen given. It is impossible to determine with any degree of statistical accuracy whether a given method of treatment reduces mortality or not. I use oxygen therapy for any patient with pneumonia who is unduly cyanotic or shows undue respiratory stress. Likewise, when the circulatory symptoms loom big, oxygen therapy should be used and used reasonably early before the patient is actually moribund. These patients have a chloride deficiency, and my colleagues Dr. A. V. Bock and John Talbott have some evidence to show that it is desirable to give the patient with pneumonia a large salt intake to offset the chloride loss, because deprivation of chlorides leads to untoward symptoms. Intoxication, sepsis and infection play an important rôle.

DR. L. J. MOORMAN, Oklahoma City: Present knowledge of the ultimate phenomena of life and death is inadequate. No doubt every thoughtful clinician will acquiesce in the belief of Dr. Brooks that, in the great majority of cases, the ultimate cause of death in pneumonia is circulatory failure. Those who have entertained this belief welcome the corroborative evidence revealed by his investigations. However, for the benefit of those who may be content with the present understanding of the cause of death in pneumonia, attention is called to certain principles expressed by Aretaeus seventeen centuries ago. In the translation by Francis Adams is the following introduction to the chapter on pneumonia: "Animals live by two principal things—food and breath. Of these by far the more important is respiration. In the midst of the lungs is seated a hot organ, the heart, which is the organ of

life and respiration. If, therefore, the heart suffers primarily, death is not far off." With a liberal interpretation of this statement, it must be admitted that Arctaeus, seventeen hundred years ago, was observing and recording the same phenomenon observed and recorded by Dr. Brooks. It has been said that life has but two legs on which to stand, the heart and the lungs. Bichat taught that death may have its origin in the heart, in the lungs or in the head. Since the nerve centers hold the secret of life and death, Bichat's teachings must be accepted. However, it should not be forgotten that the vital centers cease to function the moment circulation becomes inadequate. Though death may seem to be due to respiratory failure or to interrupted function of the vital centers, in the last analysis it is, in all probability, circulatory in origin. Limited knowledge with reference to the cause of death constitutes a serious indictment of the medical profession and suggests a fascinating field for future investigation. May I suggest that well organized hospitals consider the advisability of team work in the study of the cause of death; the coordinated efforts of the experienced clinician, the skilled physiologist, the biochemist and the pathologist should ultimately lead to definite advances in knowledge regarding this difficult problem.

DR. MAXWELL FINLAND, Boston: Dr. Brooks has rightly emphasized the importance of bacteremia and the consequent focal infections as the most serious factor in the cause of death from pneumonia. Bacteremia may be considered a manifestation of the failure of the immunologic defense. Our experience with serum treatment at the Boston City Hospital has led us to feel that the administration of type-specific antibody helps to overcome this difficulty. This is evidenced by the rapid and permanent clearing of the bacteremia or by preventing its appearance, and also by the prevention of the spread of the pulmonary lesion. To attain such an effect the antibody must be type specific for the invading organism, and it must be given in adequate amounts and early enough in the disease. When the infection has progressed to a stage at which the fixed and circulating phagocytes have been sufficiently injured, or when purulent foci have become established, we feel that such antibody is of little avail. In considering circulatory failure, which Dr. Brooks has noted as the important immediate cause of death, one must take into account the degenerative changes related to age. The well established fact that the death rate from pneumonia increases steadily with advancing age depends largely on this factor. Among our type I patients, 56 per cent were under 40 years of age and only 23 per cent were over 50. In spite of this well known predominance of type I pneumonia in the younger age groups, only 28 per cent of patients with this type coming to autopsy were under 40, and 58 per cent were over 50. Among the latter, chronic cardiovascular lesions, either gross or microscopic, were the rule. Among nineteen patients under 50 years of age, however, the only cardiac abnormalities noted were two instances of right-sided dilatation, one case showing acute vegetations grafted on a healed rheumatic endocarditis, and one case of fibrinous pericarditis. Our incidence of endocarditis is considerably lower than occurred in the series of Dr. Brooks. I am interested in the frequency of so-called acute cardiac lesions in the cases of Dr. Brooks. It is not clear to me what conditions are included among such lesions. In the cases of pneumococcal pneumonia which Dr. Sutliff and I studied, instances of acute necrosis of the myocardium, either infectious or toxic, were not encountered. Dr. Parker, director of the Mallory Institute of Pathology, who examines microscopically the sections from our cases, believes that such changes are extremely rare in pneumococcal pneumonia. He has encountered such necrosis, however, in cases of hemolytic streptococcus sepsis. Since most of the cases in the army were in young adults, I should like to ask Dr. Brooks whether the high incidence of cardiac dilatation noted in the camps might not have been related to the frequency of hemolytic streptococcus invasions complicating the pneumonias at that time, particularly those related to epidemics of influenza and measles. We have not encountered any instance of meningismus in which lumbar puncture revealed normal spinal fluid and in which evidence of an inflammatory lesion of the brain or meninges was discovered at autopsy. I should like to ask

whether Dr. Brooks' opinion in regard to meningismus is based on such observations.

DR. ROBERT G. TORREY, Philadelphia: Dr. Brooks called attention to the importance of circulatory function in pneumonias and minimized the toxic effect of pneumococcal infections. There is no chance for denial of the importance of the toxic factor with profound and prolonged sepsis, but most of our cases do not show that picture. Most of these patients die of circulatory failure. Dr. Brooks dwelt less on the failure of the pulmonary than of the peripheral circulation, but I believe observation will indicate that the sudden change evident in the patient with the onset of pneumonia and the stress is due to failure in the pulmonary circulation. It is a sudden failure which causes the distress characteristic of pneumonia, and its prolongation causes a vascular strain, which is reflected in peripheral failure. All physicians are interested in the treatment of pneumonia, and that consists in combating these complications. Pulmonary congestion, with its respiratory difficulties, and pulmonary edema, or wet lung, have to be met by heroic measures. It seems reasonable not to wait to meet this circulatory strain when it occurs but to forestall it if possible. In the past two years I have treated patients at the Philadelphia General Hospital and at the Woman's College Hospital with measures aimed at this end as a routine, and I have been more than satisfied with the apparent results. That is, in cases showing respiratory distress seen early, very drastic dehydration is attempted by eliminating fluid intake to 24 ounces in twenty-four hours, limited to orange juice or milk with no added water, and no other food. The patients complain much less than would be imagined, and the relief seems to be gratifying. We combat coughing and distress with sedatives, preferably powder of ipecac and opium, in small doses at frequent intervals in the beginning. This probably also encourages sweating, thus aiding dehydration. It seems more reasonable to reduce the work of the heart and the circulation early than to try to combat the failure after serious damage has been done. Simple and very drastic and severe dehydration seems to have a reasonable effect in reducing what used to be called toxemia but which is now believed in many cases to be pulmonary circulatory distress.

DR. A. L. BARACH, New York: One has to view lobar pneumonia not only as a disease characterized by pneumococcal toxemia or by terminal circulatory failure but also by a variable disturbance in the oxygen absorbing function of the lung. In a series of 285 cases at the Presbyterian Hospital in the past eight years I have observed twelve cases in which oxygen treatment was withdrawn before the disease process in the lungs had cleared. The resultant collapse was evidence of the sustaining effect of oxygen, as was also the fact that most of them returned to their former state when oxygen was again provided. Before it was known that anoxemia was a factor in the mortality of pneumonia, two patients were taken out of an oxygen room prematurely. The circulatory and respiratory failures were so severe as ultimately to cause death. The second function of the lungs, the elimination of carbon dioxide, presents no difficulty to the pneumonia patient. However, in those cases in which marked pulmonary involvement is present, the inhalation of 50 per cent oxygen frequently sustains life until the patient is able to develop immunologic resistance to his disease. When circulatory failure is spoken of, one ought to bear in mind that oxygen want is itself a noted cause of circulatory failure. Myocarditis has been produced by exposure to a lowered content of oxygen in the inspired air in animals. The degree of arterial anoxia required to accomplish this may not infrequently occur in the pneumonia patient. Granted that sepsis is a frequent cause of death, one must also grant, as Dr. Finland pointed out, that the death of many pneumonia patients is associated with the maximal lung involvement. I think it is fair to state, therefore, that one must bear in mind the function of the damaged lung in the treatment of pneumonia as well as the toxemia caused by the pneumococcus organism.

DR. HARLOW BROOKS, New York: I worked at this subject during the war and have been working at it ever since. Every alternate patient who has come to my service during these years has received some specific method of treatment.

I wish I were as enthusiastic about the use of serum as I was ten years ago. We have a corps of workers especially trained to conduct this work with my full cooperation. Their faith is beginning to waiver as they see more cases. So I have said nothing about specific serum. My object is to find out how they died; then perhaps I may find out why they died, and then some other generation may find out how to keep them from dying. That I feel no one is prepared to speak on with much authority as yet. The war streptococcus cases are probably not similar to those on which these data of today are based. It was the type of the exudate and the embarrassment of the pulmonary circulation, which Dr. Torrey mentioned, which would probably distinguish this type of pneumonia, the A. E. F. type, from that with which we are dealing at present. The question of peripheral circulatory failure is an exceedingly interesting problem. We have been working on the chemical and bacteriologic sides of this subject also but I, dating back to my original training, have taken the pathologic side of the question. Until we know how they die, I do not think we shall be able to change the mortality rate.

NEUROLOGIC MANIFESTATIONS OF HYPERINSULINISM AND OTHER HYPOGLYCEMIC STATES

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AND

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The neurologist so frequently is confronted with diagnostic problems involving bizarre nervous symptoms that he should acquaint himself with syndromes which may have as a predominating symptom some nervous manifestation, although the underlying disease may be outside his special field. Hyperinsulinism and hypoglycemia are conditions of this type, and, although not primarily of neurologic importance, the presenting symptoms may be of a distinctly nervous character.

Symptoms from both overactivity and underactivity of the endocrine glands generally have been recognized. Thus both exophthalmic goiter and myxedema have been attributed to the thyroid gland for many years. For some unknown reason, however, the recognition of symptoms resulting from the overactivity of certain glands has lagged behind the recognition of the symptoms of underactivity. Diabetes, parathyroid tetany and hypoadrenalism (Addison's disease) were described long before hyperinsulinism, hyperparathyroidism and hypersuprarenalism.

We are limiting this paper to conditions that are the antithesis of diabetes, in which symptoms are produced by an insufficiency of sugar in contrast to an excess. Further, we are going to focus our attention more on symptoms than on pathologic conditions or on treatment, and special attention is to be called to the preponderance of neurologic symptoms in these conditions. No effort is made to review in detail the rapidly accumulating literature on the subject; such a review may be obtained from any thorough article.¹

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Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Gammon, G. D., and Tenery, W. C.: Hypoglycemia: Clinical Syndrome, Etiology and Treatment; Report of Case. *Arch. Int. Med.* 47: 829-854 (June) 1931. Ha. Narcolepsy Associated with Hyperinsulinism; of Epilepsy and of One Case of Narcolepsy Cured Clinically by Partial Resection of Body and Tail of Pancreas, *J. A. M. A.* 100: 321-328 (Feb. 4) 1933. Sigwald, Jean: Les hypoglycémies spontanées, *Paris méd.* 85: 321-332 (Oct. 22) 1932. Wauchope, G. M.: Hypoglycemia: Critical Review, *Quart. J. Med.* 2: 117-156 (Jan.) 1933. Wilder, R. M.: Hyperinsulinism, *Internat. Clin.* 2: 1-18 (June) 1933.

Many efforts have been made to classify the possible causes of hypoglycemia, and a very good classification is the one given by Wauchope,¹ as follows:

1. Excess of insulin. This may be the result of therapeutic injections of insulin, of tumors and hyperplasia of the pancreas, or of functional hyperinsulinism (idiopathic hypoglycemia).

2. Lack of opposing secretions. This condition may result from disease of the suprarenal glands, from tumors of the anterior or posterior lobe of the pituitary body, or from myxedema.

3. Lack of glycogen. This lack may result from destruction of reservoirs, from disease of the liver or wasting of muscles, from abnormal secretion of sugar, from renal diabetes, from lactation, from active depletion of stores, such as occurs in muscular exercise, and from failure to replenish stores as in starvation.

4. Interference with regulating center. This may result from another nervous disease which affects the pons, or from overaction of the vagus nerves.

These causes usually are complex, and they must be so because the mechanism involved in the metabolism of carbohydrate is so complicated. Many factors are involved in the metabolism of carbohydrates; among others, the amount of carbohydrate ingested and the amount absorbed, the production of glycogen and its deposition in liver, muscles and other tissues, and glycogenolysis and utilization of dextrose. Any condition that interferes with any of these steps will itself produce symptoms which further add complexity to an attempted classification of the causes of hypoglycemia. Thus many investigators who have attempted to classify these etiologic factors have as one heading "endocrine disturbances," beneath which is listed practically every endocrine gland in the body. Perhaps this is justified; perhaps every endocrine gland does affect carbohydrate metabolism. However, it is difficult to see how this clarifies the situation. Diagnosis is the most important part of the problem of hypoglycemia. Once the diagnosis has been made, the various steps in carbohydrate metabolism can then be reviewed and an attempt made to locate the precise etiologic factor responsible. Just how difficult this is can be appreciated only by one who has tried to do it.

Strangely enough, the symptoms of hypoglycemia have been known only since the discovery of insulin in 1921.² It was not until 1924 that Harris³ called attention to the possibility that hypoglycemia might develop among certain patients from an oversupply of the patient's own insulin, and it was not until 1927 that such a case was reported;⁴ namely, that of a physician who suffered and finally died from spontaneous hypoglycemia due to carcinoma of the island cells of the pancreas. Since then, numerous other cases of hypoglycemia from tumors of the island cells have been reported, and many patients have been cured by surgical removal of the adenoma. Another group of cases of hypoglycemia has been reported in which the condition resulted from primary disease of the liver.⁵

2. Bowen, B. D., and Beck, Gilbert: Insulin Hypoglycemia: Two Cases with Convulsions; One Necropsy Report, *Ann. Int. Med.* 6: 1412-1425 (May) 1933.

3. Harris, Seale: Hyperinsulinism and Dysinsulinism, *J. A. M. A.* 83: 729-733 (Sept. 6) 1924.

4. Wilder, R. M.; Allan, F. N.; Power, M. H., and Robertson, H. E.: Carcinoma of the Islands of the Pancreas: Hyperinsulinism and Hypoglycemia, *J. A. M. A.* 89: 348-355 (July 30) 1927.

5. Judd, E. S.; Kepler, E. J., and Ryneerson, E. H.: Spontaneous Hypoglycemia: Report of Two Cases Associated with Fatty Metamorphosis of the Liver, *Am. J. Surg.* 24: 345-363; 371-372 (May) 1934. Moore, Henry; O'Farrell, W. R., and Headon, M. F.: Spontaneous Hypoglycemia Associated with Hepatitis, *Brit. M. J.* 1: 225-227 (Feb. 10) 1934. Nadler, W. H., and Wolfer, J. A.: Hepatogenic Hypoglycemia Associated with Primary Liver Cell Carcinoma, *Arch. Int. Med.* 44: 700-710 (Nov.) 1929.

The pituitary gland is suspected of being of etiologic importance in other cases of hypoglycemia, and, while there is experimental evidence to bear out this relationship, there have been no proved clinical cases, although Josef Wilder⁶ suggested this diagnosis in two cases.

Cases that are clear-cut examples of uncomplicated hypoglycemia are those in which symptoms definitely are the result of hypoglycemia and in which removal of a tumor of the island cells of the pancreas causes disappearance of all symptoms. The patients in such cases may be said to suffer from hyperinsulinism, a term often loosely applied to a variety of vague symptoms among patients whose pancreas never is examined. They complain of the same symptoms as does the diabetic patient who has received an excessive amount of insulin, and every physician is familiar with such symptoms. These patients are perfectly normal after the ingestion of carbohydrate food. Such a history, together with a low reading for blood sugar, is all that is necessary for the diagnosis of spontaneous hypoglycemia. The advisability of surgical exploration to establish the presence or absence of adenoma of the island cells of the pancreas will be considered later.

There is no doubt that hundreds of persons are suffering from undiagnosed spontaneous hypoglycemia. This paper is being presented for the consideration of neurologists and psychiatrists because we believe that they have the best opportunity of making this diagnosis, since by the very nature of the symptoms these patients present what appears to be a neurologic problem; this was pointed out by Harris,¹ by Wolf and his associates⁷ and by others.

In preparation for this paper we reviewed all cases of spontaneous hypoglycemia that had been reported, to see how many patients presented neurologic symptoms. The answer was quickly obtained: they all had neurologic symptoms of one type or another. The striking feature was the fewness of symptoms that were not neurologic,⁸ evident in Tedstrom's report, as follows: Weakness or prostration occurred in thirty-seven cases, and its allied condition of fatigue in ten cases; that is, forty-seven cases, the two symptoms taken together. Stupor occurred in seven cases and coma in thirty-nine; that is, forty-six cases, the two symptoms taken together. Muscular twitching occurred in eight cases and convulsions in twenty-six cases; that is, thirty-four cases, the two symptoms taken together. Loss of memory occurred in twenty cases, sweating in nineteen and change in general behavior in eighteen. Disturbance of speech was encountered in eighteen cases, as follows: Speech was unintelligible in eight cases; motor aphasia was present in five cases, and the speech was slow in three cases, monotonous in one case and slurring in one case. Nervousness was a characteristic in fifteen cases. Restlessness occurred in eight cases, and its allied condition, mania, in seven cases; that is, fifteen cases, the two symptoms taken together. Fourteen patients were mentally confused, and the same number had epileptiform seizures. In twelve cases hunger was excessive. Ocular symptoms were present in twelve cases, as follows: diplopia in five cases, dim-

ness of vision in three cases, dilated pupils in two cases, blurred vision in one case and unequal and miotic pupils in one case. Ten patients were troubled with vertigo, and an equal number with dulness and listlessness. Nausea was present in three cases and vomiting in seven; that is, ten cases, the two symptoms taken together. Headache was present in nine cases and drowsiness in nine. Each of the following symptoms was found in a respective group of eight cases: fainting, tremors, epigastric pain and a positive Babinski sign. Vague paresthesia was encountered in six cases. Loss of sphincteric control, irritability and emotional instability were characteristic, each in a respective group of five cases. Four patients foamed at the mouth, and four were pallid. Three patients had fear of death.

Attacks of unconsciousness and even convulsive seizures often are prominent symptoms and, not uncommonly, a diagnosis of epilepsy is made in these cases. This naturally calls attention to the need for considering hypoglycemia as a possible etiologic factor in every case in which the patient presents himself with a history of having had convulsions. Because of the behavior disturbance and other associated symptoms a diagnosis of acute alcoholism occasionally is made. One of our patients carried a slip of paper on which was written "I am not drunk, I am sick. Make me drink orange juice if you can; if you can't, call Dr. ———." We have seen cases in which a diagnosis of tumor of the brain, and even of insanity, had been made when patients were suffering from hypoglycemia, and in which, following administration of carbohydrates, the patient made a miraculous although temporary recovery. Attention also is called to the frequent presence of a positive Babinski sign, which disappears when the blood sugar is raised to normal levels. It should be mentioned that the severity of symptoms varies with different individuals and with different levels of blood sugar. Some patients have severe symptoms when the concentration of sugar is 60 mg. per hundred cubic centimeters of blood; others have few symptoms when the blood sugar is 40 mg. One of us (Ryneerson) during the course of an experiment was found to give a reading for sugar of 30 mg. per hundred cubic centimeters without appreciable symptoms.

It is an interesting commentary that, frequently, in cases in which spontaneous hypoglycemic attacks occurred, the patient or some member of his family had discovered that a relationship existed between the attacks and the ingestion of food. The following case exemplifies this:

CASE 1.—A laborer, aged 45, had enjoyed good health until four years prior to his admission to the clinic. At that time he had begun to have symptoms resembling those of drunkenness. These had occurred between meals, had been much more likely to occur if he had worked hard, and had been relieved by taking food. On one occasion he had had a characteristic epileptiform seizure, followed by unconsciousness, which had lasted sixteen hours. When he awoke, he had been mentally confused until he had drunk some milk, when he rapidly had become normal. About this time he and his friends had realized the value of food in relieving these symptoms, so that on another occasion, when he had been unconscious for twenty-six hours, a friend had revived him by forcing him to drink milk. He had complained of a severe headache, in conjunction with these symptoms, which had persisted in varying forms during the entire four years.

The clinical diagnosis of spontaneous hypoglycemia was confirmed by a reading for blood sugar of 30 mg. per hundred cubic centimeters. At operation, a tumor of the island cells of

6. Wilder, Josef: Ein neues hypophysäres Krankheitsbild: Die hypophysäre Spontanhypoglykämie, *Deutsche Ztschr. f. Nervenhe.* **112**: 192-250 (March) 1930.

7. Wolf, A.; Hare, C. C., and Riggs, H. W.: Neurological Manifestations in Two Patients with Spontaneous Hypoglycemia with Necropsy Report of Case of Pancreatic Island Adenoma, *Bull. Neurol. Inst. New York* **3**: 232-251 (June) 1933.

8. Tedstrom, M. K.: Hypoglycemia and Hyperinsulinism, *Ann. Int. Med.* **7**: 1013-1025 (Feb.) 1934.

the pancreas was discovered, which was diagnosed carcinoma. Immediately following the operation the level of sugar in the blood returned to normal and hypoglycemia never occurred again. The patient has been in excellent health since the operation and has not had symptoms of any sort.

In this history there are several important features: the patient's symptoms were present only when he was hungry, they often were produced by exercise, they were essentially of neurologic character, they were relieved by the ingestion of carbohydrate, and they disappeared entirely following surgical removal of an adenoma of the island cells of the pancreas.

Medical treatment of hyperinsulinism has uniformly been unsuccessful. It is true that certain patients with symptoms of hypoglycemia of unknown etiology may obtain relief from such medical measures as frequent feedings, but in these cases a diagnosis of hyperinsulinism should not be made; a diagnosis of hyperinsulinism should be reserved for cases proved at operation or at necropsy.

Regarding the character of the tumor, Bensley⁹ recently has written: "I wish very much that I could say something which would stop the clinical people from calling these tumors associated with hypoglycemia 'beta cell tumors.' The one thing that is conspicuous in all that I have examined so far is that they are actually neoplastic cells with some resemblances to island cells, probably producing insulin or some related substance." Certainly this opinion has strong clinical support. It is discouraging to operate on a patient who has had hyperinsulinism for years and find that, because of delay in diagnosis or in surgical intervention, the adenoma has become inoperable as a result of extensive metastasis. So many carcinomas give no warning signs of their presence; yet here is one type that shrieks for attention. It would seem advisable to subject all patients with this syndrome to abdominal exploration, since there is no method at present of diagnosing a tumor preoperatively. The exploration itself is attended with little risk; no deaths have been reported as a result of it. If a tumor of the island cells of the pancreas is not found, treatment must, in view of present inadequate knowledge, remain palliative.

The mechanism involved in the production, by hypoglycemia, of neurologic and psychic symptoms is not definitely known. Olmsted and Logan¹⁰ expressed the belief that insulin convulsions are caused by the action of insulin on the bulbar centers. They found that decapitated cats do not have convulsions, despite a low concentration of sugar in the blood, whereas convulsions are marked in decerebrate cats. They also presented evidence to support the hypothesis of the antagonism of solution of pituitary to insulin. Rudy¹¹ expressed the opinion that convulsions are the result of hypoglycemia itself, whereas Drabkin and Ravdin¹² felt that convulsions are related to water balance, since they had observed that water-starved dogs did not have convulsions despite pronounced hypoglycemia. Although the exact mechanism of the production of hypoglycemia is still unknown, it is definitely established that all tissues require sugar for normal function.

Patients suffering from convulsions or from temporary psychic disturbances should be investigated as to the possible presence of spontaneous hypoglycemia. Studies of the blood sugar in clear-cut cases of epilepsy have indicated relatively normal levels,¹³ although immediately following a seizure the amount of sugar in the blood may be low, owing to the tremendous exertion.

Among patients suffering from personality disorders, Henry and Mangam¹⁴ found relatively normal sugar tolerance curves. The presence of marked hypoglycemia, therefore, should be very suggestive, and further investigation should be carried out to determine its importance as an etiologic factor in the production of such neurologic or psychic symptoms.

SUMMARY AND CONCLUSIONS

This paper is presented to emphasize the universal occurrence of neurologic and psychic symptoms in severe hypoglycemia. It is hoped that through the cooperation of neurologists and psychiatrists many hitherto undiagnosed cases of hypoglycemia may be discovered. In the light of present inadequate knowledge, medical treatment is unsatisfactory, and it is only by early surgical exploration in these cases of hypoglycemia that adenomas of the island cells of the pancreas may be found and successfully removed. It is to be hoped that the time is not far off when it will be possible accurately to separate the various types of hypoglycemia and to treat each type better.

ABSTRACT OF DISCUSSION

DR. I. S. WECHSLER, New York: The paper of Drs. Ryneerson and Moersch calls attention to a problem that is occasionally confusing. I don't think it is quite as common as one might get the impression, although I have seen at least half a dozen different reactions to hypoglycemia and hyperinsulinism. I am glad the authors make proper distinction between the two conditions, as it is important clinically and pathologically to distinguish between them. I have seen a case of hemiplegia in which all the signs disappeared promptly with the administration of dextrose. This patient had received an excessive dose of insulin. The occurrence of a Babinski sign in hyperinsulinism without hemiplegia is rather well known. I saw a patient who had convulsions and died of adenoma of the pancreas. The patient used to slump, have convulsions, thrash about, become unconscious for a long time, and spontaneously come out of the stupor. I have also seen one case of epilepsy following hypoglycemia. Recently I have seen patients with all sorts of psychiatric manifestations, abnormal involuntary movements such as chorea and dystonia, and bizarre hysteroid manifestations. There is no doubt that many so-called psychoneurotic symptoms occur in the course of hyperinsulinism and hypoglycemia. It is well therefore to make blood sugar determinations in all obscure cases and treat them if necessary. As to subjecting every patient to an operation, that is not so simple. I will take the authors' word for it that the operation is not serious. To me it would rather seem a heroic thing to do; but there may be isolated instances in which one could justifiably do an exploratory laparotomy.

DR. GEORGE W. HALL, Chicago: I have not had much experience with convulsions in these cases. However, I have seen a few cases in which definite neurologic symptoms have appeared. It is interesting to note how few marathon racers have had difficulty after the race. One important point that

9. Bensley, R. R.: Personal communication to the author.

10. Olmsted, J. M. D., and Logan, H. D.: The Effect of Insulin on the Central Nervous System and its Relation to the Pituitary Body, *Am. J. Physiol.* **66**: 437-444 (Oct.) 1923.

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the authors brought out is that hyperinsulinism may be mistaken for drunkenness. The patient may become neglectful of his work and stagger about as though he were drunk. He feels weak before eating his breakfast and staggers around a great deal. After breakfast he goes along fairly well until lunch time, when he notices that he is weak again. One may be inclined to think he is drinking, but as has been reported in some cases it has been found that the patient does not use liquor in any form. Tests of the blood sugar show that it is much below normal. The symptoms in these cases are necessarily individual. Some will respond in a very different way from others, as the authors have noted.

DR. HARLOW BROOKS, New York: I see a good many minor manifestations of these symptoms among women who are dieting to reduce weight and who cut down their sugar, starch and carbohydrate intake in general. The first case that I saw was one in which a young woman had chosen to reduce her weight and at the same time carry on an active athletic life. The result was a blood sugar of 10, which appeared every morning at 2 o'clock. These conditions are quite frequent, and I am sure that the authors would feel as I do that it would not be wise to do an exploratory laparotomy until the diet had been carefully considered. The low sugar diet, in association with exercise, will frequently cause the whole picture described by the authors. The first case that I saw was under the care of a famous psychiatrist and had been diagnosed as a case of hysteria. It was a case of starvation diet.

DR. TOM B. THROCKMORTON, Des Moines, Iowa: My contact with this rather new entity was thrust on me unexpectedly last summer when a young woman was referred to me from the northern part of the state, suffering from narcolepsy. In association with the narcolepsy a psychasthenic condition had developed in which fear played the predominant rôle. The maternal instinct of the patient was such that she had a great fear something would happen to her baby during one of these attacks of involuntary sleepiness. The general physical and neurologic examination failed to reveal anything, and I so wrote the referring physician. Fortunately, a coincidence happened. In the mail of that day came reprints from Dr. Seale Harris on this subject of narcolepsy associated with hyperinsulinism and the hypoglycemic state. After reading them I immediately wrote the physician that perhaps it might be well if a chemical examination of the blood be made, particularly in regard to the lowering of the sugar content. This was done and he wrote me that a very low blood sugar was found. Following my suggestion that the patient be placed on a high carbohydrate intake, he later stated that she had practically been relieved of her attacks of narcolepsy and that the psychasthenic state of fear had been largely removed.

DR. EDWARD H. RYNEARSON, Rochester, Minn.: Reference has been made to the occurrence of low values for sugar in the blood of marathon runners. In a study of those who finished the 26 mile marathon race in Boston, it was found that there was great variation in the values for blood sugar, depending to a great extent on the runner's physical condition; those who lost usually had low values for blood sugar. Unquestionably, the blood sugar was affected by the amount of carbohydrate consumed during the race. Dr. Brooks referred to a patient whose symptoms improved following her return to a normal dietary regimen. Certainly, in such a case operation should not be performed. However, this case illustrates a point that we have tried to make; namely, the importance of distinguishing the mild and usually vague symptoms of hypoglycemia from the severe symptoms resulting from the marked lowering of the blood sugar resulting from possible hyperinsulinism. We do not advise surgical exploration of the abdomen of a nervous girl the fasting value of whose blood sugar is 60 mg. per hundred cubic centimeters, but we do advise an exploratory operation for a patient the fasting value of whose blood sugar is 20 mg. per hundred cubic centimeters and who is likely to become unconscious if he does not partake largely of foods high in carbohydrate every three hours, both day and night. This has been referred to as a rare condition. Although, unquestionably, it is not of frequent occurrence, I am of the opinion that the condition in many cases is not diagnosed.

THE KRUKENBERG TUMOR

REPORT OF A CASE WITH RECTAL INVOLVEMENT,
PRODUCING STRICTURE

F. G. RUNYEON, M.D.
READING, PA.

In 1896 Friedrich Krukenberg described a tumor of the ovary which he called fibrosarcoma mucocellulare carcinomatodes. He considered this tumor to be a fibrosarcoma containing large epithelioid cells enclosing mucin, which induced him to add the name mucocellulare carcinomatodes.

Krukenberg maintained that the tumor was primary in the ovary, a view that has been much discussed and opposed. At the present time most observers consider it to be secondary to carcinoma in some portion of the gastro-intestinal tract.

In 1918 Major¹ in a classic paper collected fifty-five cases from the literature and discussed in a complete manner the opinions expressed by various authors as to the conflicting views concerning its origin, mode of transmission and pathologic appearance.

In 1929 Fallas² collected twenty-three more cases, and Enzer³ collected six cases and reported one in 1930.

TABLE 1.—Record of Cases Studied

Reference	Contribution	Cases	Year
Major ¹	Collected	55	1918
Pribram, E. E.: Arch. f. Gynäk. 116:343	Reported	1	1921
1921	Collected	23	1923
Fallas ²	Collected	6	1929
Enzer ³	Reported	1	1930
Enzer ³	Reported	1	1930
Tyner, J. D.: " " " " " "	Reported	1	1930
Babcock, W.	Reported	1	1930
10:271, 1930	Reported	2	1932
Stephens, H. W.: Ann. Surg. 96:1075, 1932	Reported	1	1934
Runyeon	Reported	1	1934
			Cases
Presenting only ovarian involvement			23
Presenting involvement of organs in addition to the ovary.			68
Total number of cases studied.....			91

These and the other cases reviewed in this article are shown in table 1. Of the twenty-three cases in which only ovarian involvement was reported, only two presented conclusive evidence by autopsy and microscopic study that other organs were not involved.

In the study of Krukenberg tumor there are two pathologic questions that attract attention: First, is this tumor primary in the ovary or is it secondary to some gastro-intestinal carcinoma? Second, how can one explain the combination of malignant connective tissue and epithelial areas?

Fallas² says that the primary growth is usually in the stomach but sometimes in the small intestine, the gall-bladder and the breast. He says that it is considered primary carcinoma and not sarcoma.

From the Proctologic Department of the Reading Hospital.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

I am indebted to Dr. Frederick Light and Dr. Erwin D. Funk of the Pathological Department of the Reading Hospital for their cooperation in the postmortem reports and the preparation of slides, to Dr. J. C. Bloodgood of Baltimore and Dr. J. I. Fanz of Philadelphia for verification of the pathologic diagnoses and to Dr. Horace Long for his help in the collection of data and reports of previously collected cases.

1. Major, R. H.: A Study of the Krukenberg Tumor, Surg., Gynec. & Obst. 27:195 (Aug.) 1918.

2. Fallas, Roy: Krukenberg Tumor of the Ovary, with Report of Two Cases, Surg., Gynec. & Obst. 49:638 (Nov.) 1929.

3. Enzer, Norbert: Krukenberg Tumors of the Ovary, Ann. Surg. 92:140 (July) 1930.

Wagner⁴ decides that "the picture of so-called Krukenberg ovarian tumor is due to the mucoid degeneration of epithelial cells in a scirrhous carcinoma of the ovary (whether primary or secondary to a carcinoma of the stomach)."

Matters⁵ says that Erdheim and Schiller have shown the Krukenberg tumor to be a pure carcinoma and always secondary to carcinoma of the gastro-intestinal tract or of the gallbladder. The cancer cells from these parts are said to fall on the ovary and to become implanted there but, being secreting cells, they continue to produce secretion and become distended, as there is no gland lumen into which to pour their secretion. The cells invade the ovary in small groups or in a diffuse manner. The cell, distended by its own secretion, pushes the nucleus to one side, flattening it against the side wall and producing the well known signet ring described by Krukenberg. The presence of these distended cells markedly irritates the connective tissue of the ovary and so stimulates it as to produce the appearance of a fibrosarcoma.

In the discussion of Miller's⁶ report of a case, J. F. Browne of Edinburgh suggested "the possibility of three types of tumors producing the microscopic appear-

theory that it is usually secondary to a carcinoma of the gastro-intestinal tract."

Miner⁸ reported a case that looked like one of primary unilateral Krukenberg tumor one year after operation in a woman, aged 19. The report that was made, Nov. 23, 1933, shows that this woman is alive and well and has become the mother of three healthy children since the operation. Dr. Miner submitted the slides obtained from this case to a number of pathologists for opinions. Some diagnosed it a Krukenberg tumor, some claimed it to be a follicular carcinoma and some a sarcoma. It is likely that it was not a Krukenberg tumor.

Greenhill⁹ reported an operation on a patient in October 1930 in which all tests to determine a primary lesion in the gastro-intestinal tract have been fruitless. The patient died two months after operation without autopsy.

Why is it necessary that the ovarian picture must always be a secondary one? Cannot a carcinoma of the same type originate in the ovary primarily in some certain cases and by its presence stimulate the connective tissue cells of the ovary to the same growth that is produced by a carcinoma originating in the stomach and secondarily involving the ovary?

This surely can be possible and would readily explain the cases in which no carcinoma has been found in other abdominal organs. True, gastro-intestinal carcinoma has been found in most of the cases that have come to autopsy, but there are a few remaining in which there is reasonable certainty that only the ovary was involved. Wagner⁴ concurs in this view.

It is very evident from table 2 that, in the cases reported in which the data have been sufficiently accurate and definite to determine the location of lesions, most of the cases have presented an involvement of the gastro-intestinal tract. Some cases showed lesions in a number of organs.

Many of the recorded cases did not come to autopsy and therefore did not reveal a list of the organs involved. The sixty-eight cases (table 2) selected out of the ninety-one studied did give records sufficiently complete to plan the diagram. These observations make this tumor as important to the gastro-enterologist as to the gynecologist.

The case that I report invites the attention of the proctologist to this tumor, making it a differential diagnostic problem in strictures of the rectum.

REPORT OF CASE

Mrs. H. S., aged 64, white, had had attacks of pain in the epigastrium and right hypochondrium for several years, associated with nausea, vomiting, anorexia and weakness. At the examination, April 22, 1931, the examiner noted a sensation of a mass in the epigastrium which was firm and somewhat tender. He diagnosed carcinoma of the stomach or gallbladder disease.

Four months later, in August, at which time she first came under my observation, she had frequent attacks of diarrhea with some incontinence. At times she could control the sphincter and at others she had no control.

She was admitted to the hospital and a marked constriction of the rectum was found, starting about 3 inches above the anus, through which the finger could not be passed. The wall was fairly smooth and superficially ulcerated with some small nodular swellings at the lower end of the stricture. One of the nodules was removed for examination; a report was made that there was inflammatory mucous membrane but no malignancy.

4. Wagner, G. A.: The Histogenesis of the So Called Krukenberg Ovarian Tumors, *Wien klin Wchnschr.* 15: 519, 1902

5. Matters, R. F.: Ovarian Malignancy, with Special Reference to Krukenberg Tumors, *M. J. Australia* 1: 181 (Feb. 13) 1926

6. Miller, Douglas: Report of Two Cases of Krukenberg Tumor of the Ovary, *Edinburgh M. J.* 32: 46 (March) 1925

7. Jarcho, Julius: Krukenberg Tumors and Their Practical Problems, *Am. J. Obst. & Gynec.* 13: 288-307 (March) 1927

8. Miner, Donald: Primary Krukenberg Carcinoma of the Ovary, *S. Clin. North America* 6: 1645, 1926

9. Greenhill, J. P.: Krukenberg Tumor, *Am. J. Obst. & Gynec.* 22: 445 (Sept.) 1931

TABLE 2.—Organs Involved in the Sixty-Eight Cases That Show Lesions Other Than in the Ovary

Organs	Frequency of Involvement
Stomach	71 cases
Small intestine ..	5 cases
Appendix	2 cases
Sigmoid	4 cases
Rectum	2 cases
Remainder of colon	3 cases
Gallbladder	1 case
Liver	2 cases
Spleen	1 case
Omentum	2 cases
Uterus	4 cases
Ureter	1 case
Breast	2 cases
Lungs	1 case
Bone	1 case
Dura	1 case

ance found in Krukenberg tumor. In one they may be entirely sarcoma, the signet ring cells being derived either from spindle cells or from round cells. In the second possibility they could be entirely carcinomatous, the signet ring cells arising from mucinous degeneration of the cancer cells. In the third possibility both carcinoma and sarcoma may be present, the carcinoma being secondary to a tumor outside the pelvis. It has been shown that a carcinoma transplanted in rats can produce a sarcomatous change in the connective tissue of the host. One can conceive of no more favorable location for the stimulation of such a growth than in the ovary, where the stroma has such a peculiarly embryonic character and therefore might be supposed to be especially liable to such malignant properties."

Jarcho⁷ believes that he "has been able to follow the course of travel of cancer cells through the lymphatics to the ovary."

In March 1925 Miller⁶ stated that "no papers have yet been published that would dogmatically state the explanation of the peculiar structures of the Krukenberg tumor. The majority of cases would point to the

nant condition. A vaginal examination was not made. The blood Wassermann reaction was negative. Examination of the blood showed secondary anemia. The stricture was gently dilated and a blood transfusion was given, after which the patient improved in weight and strength and the diarrhea lessened. There were no gastric or pelvic symptoms during this period, no abdominal distention and no palpable mass in the epigastrium. The patient was discharged from the hospital in November. Rectal bougies were passed regularly to maintain a fair degree of comfort.

In July 1932 she came to the hospital again with more constriction of the rectum and an increasing anemia. Transfusions improved the blood picture and a Jelks operation for relief of the stricture was done, after which she had greater comfort, leaving the hospital again, August 29.

November 17, severe paroxysmal abdominal pains, distention and prostration suddenly developed. She was brought to the hospital and the abdomen was opened five hours after the pain started. There was some fluid in the abdomen; a rupture was found in the upper part of the sigmoid, the edge of the hole being necrotic. This rent was sutured. At this time numerous hardened whitish plaques were noted in various places on the small bowel, and in the ileum there was a markedly constricted area about 1 to 2 inches long with great dilatation above and below it, making it resemble an hour glass. The appendix

and submucosa was seen to be the result of the presence of large numbers of peculiar cells. These were large oval cells with an abundant acidophilic cytoplasm. The nucleus in some was oval and lay centrally. In others the nucleus was crescent shaped and was pressed against the rim of the cell. In these signet ring cells, the cytoplasm tended to be clearer and the cell margin became circular. Between these two extreme kinds of cells, all degrees of variation could be demonstrated. These tumor cells had no pattern of any sort but were scattered about at random, in the manner of an infiltration. A good many lymphocytes were also present. The tumor cells were limited

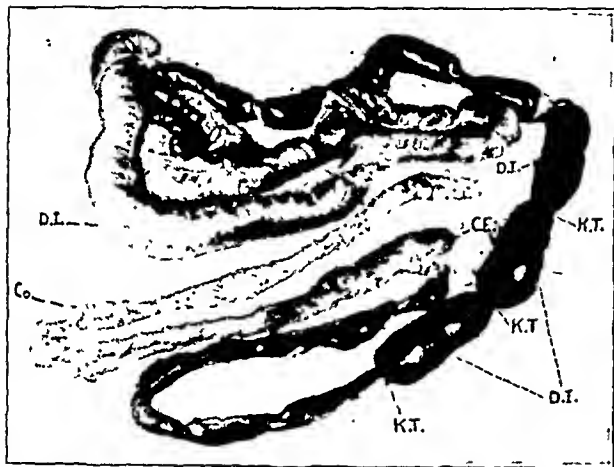


Fig. 1.—Krukenberg tumor, showing the ileum and colon involvement: K. T. shows successive points of constriction of the ileum due to tumor infiltration about 50 cm. above the cecum. D. I., dilated ileum, Co., colon; CE, cecum.

was seen to be involved in a definite hardening process. The walls were extremely thick and firm, making it look like a frankfurter. This induration extended slightly into the cecum. The appendix was removed for diagnostic purposes. Both ovaries were found enlarged but were not removed. There was a myoma on the uterus. The remainder of the abdomen was not explored, for obvious reasons.

The patient died on the sixth day after operation.

POSTMORTEM EXAMINATION

Postmortem examination, performed by Dr. Frederick Light of the Pathological Department of the Reading Hospital, showed in part the following:

Stomach.—The stomach was rather small and measured 21 by 7.5 cm. when opened. The pylorus was much thickened for a distance of 7 cm. and the wall in this area was 1.5 cm. in thickness. It was quite tough and cut with greatly increased resistance. In the fundus there were elevated patches in the mucosa which averaged 1 to 2 cm. in diameter. The remainder of the gastric wall varied from 0.5 to 1 cm. in thickness.

Section from the pylorus showed the usual thick circular layer of muscularis. The submucosa and the mucosa were greatly thickened. The mucosal glands, instead of lying closely side by side with only a little intervening stroma, were widely separated one from another, the tunica propria being much heavier than normal. The extensive thickening of the mucosa

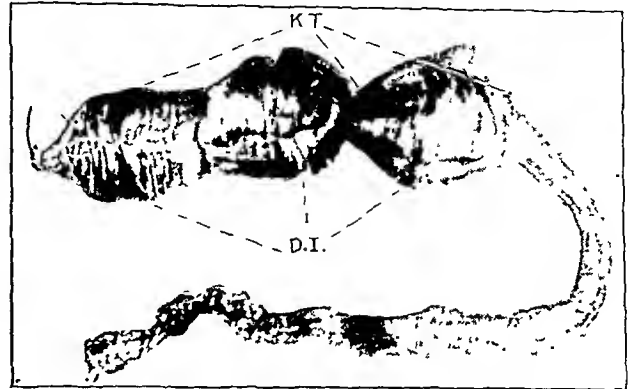


Fig. 2.—Krukenberg tumor with bowel opened, showing points of constriction by the tumor, K. T., and of the dilated ileum, D. I.

almost entirely to the mucosa and submucosa, only a few being found in the muscularis. A few, however, could be found even in the outer muscular layer.

Ileum.—Approximately 50 cm. above the cecum was a tubular constriction of the ileum which extended for a distance of 16 cm. At this point the wall of the intestine was greatly thickened. It was above this point that the intestine was distended and bluish. Below this point the intestine was small, practically empty and grayish.

In the middle of the thickened segment the microscopic appearance was similar to that described in the stomach. The



Fig. 3.—Section of stomach under low power, showing the mucosa and a portion of the infiltrating tumor.

submucosa and mucosa were heavily infiltrated with tumor cells, most of which were of the signet ring variety. The glands were widely separated from one another by the thickened tunica propria. At the border of the thickened segment the mucosa retained its usual configuration, although there was some hemorrhage into the tunica propria, also; however, there was some infiltration of tumor cells into the subserosa.

Appendix.—The specimen weighed 6.5 Gm., measured 5 cm. in length, and averaged 1.2 cm. in diameter. The serosa

appeared smooth and glistening, with no gross evidence of a deposit of any exudate. The surface vessels were markedly injected over the entire surface, giving the specimen a fairly even red color externally. A fatty meso-appendix was attached throughout the entire length of the specimen. The organ was tough, firm and not at all pliable. When the specimen was sectioned, the cut surface bulged beyond the serosa. There was no differentiation between muscularis and mucosa on cross section, and the lumen was entirely obliterated to the most

very tough and measured 1.5 cm. in thickness, and its mucosa was edematous and rugosed.

Sections of the sigmoid were from near the site of the perforation. The microscopic picture was similar to that of the stomach. The submucosa and mucosa were densely infiltrated with lymphocytes and tumor cells and there was some invasion of the muscularis. Scattered typical colonic glands were found, with abundant goblet cells.

Uterus.—This measured 8 by 4.5 by 4 cm. and its wall was 2 cm. thick. There was a subserous fibroid at the fundus which measured 4.5 by 3.5 by 3.5 cm. It was well encapsulated and, on section, it was gray and showed whorls of tissue.

The small tumor mass in the uterus was composed of interlacing bundles of smooth muscle and fibrous tissue. No tumor cells such as those present in the stomach and ovaries were present here.

Ovaries.—The tubes were slightly thickened and adherent to the enlarged ovaries. The ovaries were replaced by tumor masses. There were two masses in the right ovary which were adherent to one another. The one measured 8 by 5 by 3 cm. and the other 6.5 by 3 by 2 cm. The smaller mass had a central cyst 1.2 cm. in diameter and contained clear fluid. The tumor mass in the left ovary measured 7.5 by 4 by 3 cm. All these masses were adherent to the pelvic wall, and all presented the same general appearance. All of them had a



Fig. 4.—Section of stomach under low power, showing the submucosa and a portion of the muscular layer infiltrated with tumor cells.

distal part of the organ. Just within the serosa was a ring of white tissue 2.5 cm. in thickness. This was distinguishable from a central core of yellowish tissue, which probably occupied the area of the former lumen. This central core measured 5.5 cm. in diameter.

This organ was removed at operation ante mortem and presented as a biopsy specimen. The subserosal tissues were edematous and bore a round cell infiltration. The muscularis was of normal thickness. The lumen and mucosal epithelium

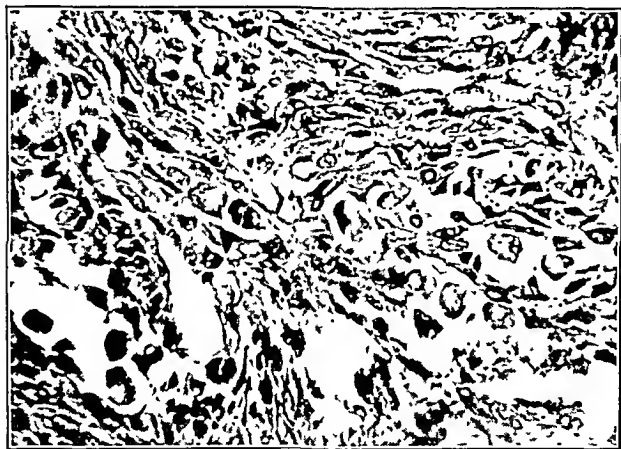


Fig. 5.—Section of stomach under high power, showing the characteristic "signet ring" cells with compressed nuclei on the edge of the protoplasm.

were absent, a few small lymphoid follicles marking the site of the former lumen. The submucosa was tremendously thickened, accounting for about half the cross sectional area. Here again, in addition to the deposition of fibrous tissue, there was an infiltration of tumor cells, a few of which were of a typical "signet ring" type.

Sigmoid and Rectum.—The rectum was adherent to the uterine masses posteriorly. Its lumen was much constricted, measuring only 3 cm. in circumference. The rectal wall was



Fig. 6.—Section of the ovarian tumor under low power, showing many groups of the carcinomatous cells.

smooth external surface. The cut surface was smooth and grayish white and had a lobulated appearance along the periphery that measured 2 cm. in width, and a central core that was gray and much firmer.

In the thickened peripheral parts of the ovaries the sections showed the stroma to be very heavily and diffusely infiltrated with tumor cells. They occurred in small groups separated from one another by a few stromal cells. The signet ring cells predominated here, producing the typical picture of a Krukenberg tumor. The microscopic appearance was quite uniform throughout both ovaries.

The diagnosis was Krukenberg tumor involving the stomach, ileum, appendix, sigmoid, rectum and ovaries.

This case apparently started with symptoms of stomach dysfunction as early as April 1931, at which time the physician suspected carcinoma. The x-rays at this time showed no evidence of a malignant growth, although even this early the stomach was undoubtedly involved in the process that was later found at autopsy.

The next picture was one of rectal stricture with ulceration, found when an attempt was made to determine the cause of frequent bowel movements with incontinence. This stricture resembled the lesion found in lymphopathia venereum or in gonorrheal infection. There were no symptoms at this time suggesting ovarian

involvement, or they were completely overshadowed by the rectal distress. The rupture of the sigmoid furnished the opportunity to see the pathologic condition of the intestine and ovary, which suggested the probable diagnosis.

This case strongly suggests that the primary lesion was in the stomach, with metastases to the small intestine, appendix, sigmoid, rectum and ovaries.

The distribution of lesions in this case would suggest its having been spread by the cancer cells falling from the stomach focus into the organs of the abdomen and becoming implanted there as suggested by Erdheim and Schiller.¹⁰ The abdomen looked as if it might have been subjected to a spray of metastatic cells.

It somewhat resembled one case reported by Major in that numerous small, hard, elevated whitish plaques were noted on the wall of the stomach and intestine. Like his, my case was noted for the great amount of fibrous tissue found in many of the lesions of the stomach and intestine.

Krukenberg tumors with rectal involvement have been very rare and only a few have been found in the



Fig. 7.—Section of the ovary under high power, showing clearly the large polyhedral and rounded cells with mucoid contents pushing the nuclei to one side, giving the "signet ring" appearance.

literature. Jarcho reported a case in which there was a mass of tumor tissue in the pelvis involving the left ureter, ileum, uterus and rectum. This rectal involvement was apparently only a part of a late tumor growth into it from other pelvic organs and not a separate rectal infiltration. Hundley¹¹ cites a report of Frankl's in which the occurrence of three ovarian tumors of the Krukenberg type were noted, one originating in the rectum and two in the lower part of the sigmoid. This one case of Frankl's seems to be a definite rectal involvement of a Krukenberg tumor.

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ABSTRACT OF DISCUSSION

DR. JOSEPH COLT BLOODGOOD, Baltimore: More papers of this kind are needed. This paper brings to the reader practically all existing knowledge of this remarkable intra-abdominal malignant disease. It illustrates the value of frozen sections in the operating room so that the operator can be informed at any moment and at frequent intervals as to the exact condition with which he is dealing. It also shows that when a surgeon removes a tumor of an ovary he should know its nature at

once. When there is no possibility of a frozen section, the stomach should be at least palpated from the pelvic laparotomy wound. Trained pathologists in the operating room during operations are just as important as trained anesthetists. This paper brings the subject of Krukenberg tumors down to date.

DR. HARRY E. BACON, Philadelphia: In two cases of Krukenberg tumor, one of which is from a series of four collected by Dr. Gault of Temple University, the initial symptoms were referable to the sigmoid and rectum. A woman, aged



Fig. 8.—Section of the sigmoid under low power, showing the tumor infiltrating the various coats.

25, was admitted to the University Hospital in November 1930 because of nausea and vomiting. Four days later she was discharged. In June 1931 she returned complaining of pain in the rectum and frequent stools. A diagnosis was made of rectal stricture, and a colostomy was performed. In December the patient was admitted to the Philadelphia General Hospital, at which time rectal examination elicited an irregular constricting mass about 4 inches above the anal margin. The patient succumbed three months later. The necropsy showed the intestine bound together and adherent

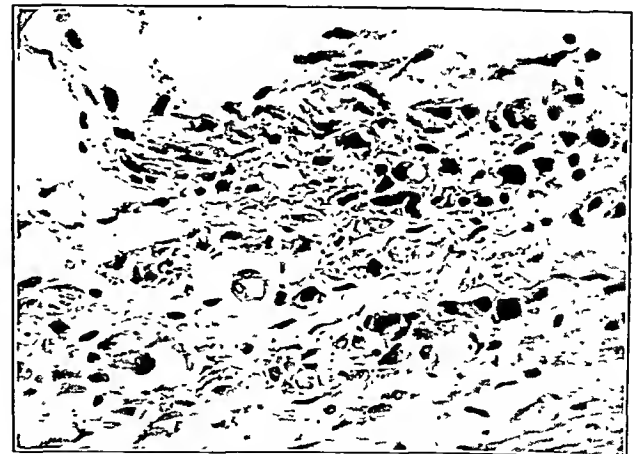


Fig. 9.—Section of the sigmoid under high power, showing a portion of the submucosa infiltrated with tumor cells and lymphocytes.

to the pelvic organs. The left ovary was enlarged, firm and nodular. In the constriction of the sigmoid there seemed to be a generalized thickening of the serous coat. Lymph nodes of the mesentery and some of the retroperitoneal glands were enlarged but were soft and grayish pink. On the left side of the pelvic peritoneum were hundreds of small areas from 1 to 2 mm. in diameter in the subserosa. In the stomach was a diffuse infiltrating growth involving the subserosa, muscular and submucous coats, with great increase in the thickness of the wall, which resembled grossly a diffuse scirrhus car-

10. Cited by Matters.⁵

11. Hundley, J. M. Jr.: Krukenberg Tumors and Other Secondary Ovarian Carcinomas, *South. M. J.* 24: 579 (July) 1931.

cinoma (linitis plastica). The other case was that of a Negro woman, aged 41, who was referred to the proctologic clinic. She had an abscess three months before, which was lanced by her family physician and after which a discharge of pus was noted intermittently. On examination, an anorectal fistula was present. Digital examination elicited two small papillae and a circumscribed area one-half inch above the anorectal line and slightly to the left of the anterior rectal wall. The tract was excised after the internal opening had been located. The area that was thought to be inflammatory now appeared as a nodule the size of a small cherry, beneath the mucous membrane and located in the rectovaginal septum about three-fourths inch above the anorectal line. The nodule was smooth and firm. The histopathologic picture was that of a Krukenberg tumor. In checking the history, it was found that in December 1932 the appendix, right tube and ovary, had been removed. The latter was cystic. In April of the same year the patient had been operated on and a small growth found on the greater curvature of the stomach close to the pylorus. The laboratory reported carcinoma. This case is unusual. The diagnosis was initially made from the rectum. It is interesting that this patient appears healthy and free from any complaint.

DR. JULIUS FRIEDENWALD, Baltimore: In the study of cases of leather-bottle stomach or sclerosing carcinoma, the so-called linitis plastica, the histologic examination presents numerous small cells containing irregular nuclei of varying size observed especially in the submucosa in addition to nucleated connective tissue cells. These cells may occur singly or in groups and resemble epithelial cells. The cytoplasm of these cells is usually clear, with no distinct membrane and frequently large vacuoli. The vacuolated elements frequently have their nucleus pushed to the periphery, presenting the appearance of a signet ring. The cells are found in the submucosa, in the connective tissue of the muscularis especially in the areas surrounding the blood vessels. The nature of these cells has not as yet been definitely determined, but attention has been directed to them as suggestive of the epithelial cells found in the Krukenberg carcinoma. While it has been established that the linitis plastica or sclerosing carcinoma is commonly observed in males and the Krukenberg tumor only in females, the microscopic appearance of the two growths is usually quite similar, and the question arises as to whether the two are related. A number of pathologists who were consulted regarding this question were unable to give any definite decision in this respect. I am anxious to learn whether Dr. Runyon has been able to collect any data regarding the question of relationship. The histologic similarity would seem to point in this direction and Dr. Bacon's first case rather confirms this.

DR. F. G. RUNYON, Reading, Pa.: In answer to Dr. Friedenwald's question, I have not thought of the relation between these two conditions, but the stomach in my case was really a typical leather-bottle stomach. The pathologist noted it and felt it was exactly that type of stomach and resembled the one reported by Dr. Miller. I presented this paper particularly to report another case of Krukenberg tumor a little unusual in its distribution and to draw the attention of the gastroenterologist and proctologist to it on account of the possibility of their running into this type of case and probably not thinking, because it is so unusual in the literature, that it might be a Krukenberg tumor.

Case Histories and Emotional Factors.—When we consider, too, what a large and increasing proportion of our patients is suffering from purely functional disorders, the scarcity, in most histories, of information regarding possible emotional factors is often surprising. This is not entirely the interne's fault in many cases; the trouble is more deep-seated than that. The curricula of our medical schools are still mainly arranged to cover the study of the physical aspects of disease, and in our hospitals and dispensaries, where our future internes are trained, the mental factors, which may be the dominant ones in the production of the clinical picture, often receive scant notice.—Blumer, George: Some Discursive Remarks on Bedside Diagnosis, *Yale J. Biol. & Med.* 6:571 (July) 1934.

THE PROBLEM OF RADIOSENSITIVITY

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CHICAGO

The introduction and development of radium and x-rays as therapeutic agents in cancer has raised pertinent questions concerning the radiosensitivity of normal and neoplastic cells, which have assumed both a theoretical interest and practical importance. These problems concern the pathologist, surgeon and radiologist alike, for each is called on to render important decisions on the treatment of cancer, which involve an intimate knowledge of the established principles of radiosensitivity.

It is my purpose in this communication to present a critical summary of some of the biologic, pathologic and clinical knowledge of radiosensitivity so far as it applies to the practical problems of the treatment of cancer.

An immense literature has accumulated on this subject and much of the evidence presented is both confusing and conflicting. Some of the reasons for the state of confusion are at once obvious. Perhaps the most important is the fact that the science of radiation is relatively new. Following the discovery of x-rays and radium only about thirty-five years ago, the problem passed through a preliminary experimental period



Fig. 1.—Squamous carcinoma of the mucous membrane of the cheek, before treatment.

of physical and biologic studies that were essential to establish the fundamental basis of radiotherapy; and although the clinical application of radium and x-rays began about thirty years ago, physicians are today only beginning to approach an understanding of some of the principles of radiotherapy and their clinical application to the treatment of cancer. And so it is no simple task to elicit from the mass of data that exist in the literature that small portion which has stood the test of time from the vast amount of data that in the light of present knowledge must be discarded.

No more striking example of the rapidly changing conceptions can be presented than the question of the radiosensitivity of squamous carcinoma. With the

Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

exception of the French school, most workers have recorded that squamous carcinoma is a radioresistant tumor. The discrepancy was soon discovered to be entirely a matter of technic and dosage. Squamous carcinoma was designated as a radioresistant tumor at a time when a short, intense and inadequate exposure to x-rays or radium failed to sterilize it until Regaud¹ and his collaborators in Paris and Pfahler² in America established that, by protracting the treatment over a

period of days, the normal tissues can withstand much greater doses, and this change in technic has resulted in making it possible to sterilize squamous carcinoma. With present methods, squamous carcinoma fulfils all the criteria of the definition of a radiosensitive tumor, but this fact is not known to many pathologists and clinicians. I have witnessed repeated instances in which thoroughly competent pathologists designate squamous carcinoma as radio-



Fig. 2.—Same case as in figure 1 after treatment, illustrating principle of selective irradiation (sterilization of the lesion without necrosis).

resistant and equally excellent surgeons decide on the basis of such reports to perform surgical removal of a lesion that is amenable to radiation and in which present knowledge indicates radiotherapy to be the method of choice. It cannot be overemphasized that the pathologist who undertakes to express an opinion on the radiosensitivity of a tumor is assuming a grave responsibility, because the surgeon who may not be completely familiar with these matters frequently bases important decisions of treatment on such information. It is the duty of the pathologist, therefore, before passing judgment on radiosensitivity, to become thoroughly familiar not only with the established principles of radiosensitivity but also with the modern advances on this subject. That the microscopic structure of a tumor is only one of a group of factors which indicate the property and degree of radiosensitivity is now fully established. An estimate of radiosensitivity in relation to treatment can therefore be made only in consultation between the pathologist and the radiotherapist if erroneous and misleading deductions are to be avoided.

Important as are the advances that have been made in the past in the physics of x-rays and radium and in the technic of application of these agents, an even more important field of investigation has developed which deals with the physiologic and biologic effects produced in normal and neoplastic tissues that are exposed to these agents. This field of study deals with radiophysiologic principles and attempts to explain the method by which irradiation effects the disappearance

of tumor cells and at the same time preserves the normal structures.

For a period of years, studies have been made of gross and microscopic specimens of tumors removed after various forms of radiation with a special view of correlating morphologic structure with radiosensitivity and also to estimate the changes produced in tissues following their exposure to different technics and various doses of x-rays and radium. The observations of many workers along these lines constitute a source of basic information on the problem of radiosensitivity. However, it is quite evident that the response of tumors to irradiation is governed by a group of factors including physical, histologic, physiologic, pathologic and clinical, which in combination with one another determine the ultimate result. The failure to recognize the relative importance of all the principles that influence the ultimate result may lead to errors in interpretation of radiophysiologic phenomena.

In passing from purely laboratory investigations to clinical observation of lesions under the influence of radiation therapy, it soon becomes obvious that a complete understanding of the problem of radiosensitivity is quite impossible without thorough familiarity with tumors before, during and after their exposure to these agents and that the ultimate criterion and only absolute test of the radiosensitivity of a tumor is its clinical behavior. Thus, clinical observation records numerous examples of marked radioresistance in tumors which, according to microscopic study, should prove to be highly radiosensitive, and with equal frequency, a high degree of radiosensitivity may be observed when all the histologic factors indicate the presence of a radioresistant lesion. These observations emphasize the inadequacy of microscopic studies alone to predict the response of tumors to radiation therapy. The explana-



Fig. 3.—Squamous carcinoma of the mucous membrane of the cheek following incorrect interstitial irradiation, illustrating the principle of caustic irradiation with the production of radionecrosis.

tion for these apparent exceptions is in the present state of knowledge not forthcoming. There is considerable evidence that physiologic phenomena as, for example, the function of secretion, affect these results and no doubt radiosensitivity is influenced by biologic factors that give no microscopic evidence of their presence.

A decision on the choice between operation and irradiation in the treatment of a given tumor is at times

1. Regaud, C.: Radiophys. et radiothérapie 1: 443, 1930; Acta radiol 11: 455, 1930

2. Pfahler, G. E.: Surg., Gynec. & Obst. 41: 443 (Oct.) 1925.

exceedingly difficult. In many examples this decision must be based on two factors: operability and radiosensitivity. Unfortunately, the clinical signs of operability are attended by gross inaccuracies and the arbitrary division of neoplasms into operable and inoperable groups is subject to numerous fallacies. The inability



Fig. 4.—Squamous carcinoma of the penis before treatment.

to judge the extent of disease by clinical examination constitutes perhaps the most important single source of fallacy in the statistical studies of cancer.

As to the results that may be expected from radiation, adequate clinical experience, pathologic data and experimental investigations are available to indicate on the one hand the value of radiation

therapy and on the other hand the limitations of these agents in the treatment of neoplastic disease. Of the several factors that determine the success or failure in the radiotherapy of a given tumor, the factor of radiosensitivity is the most important.

A radiosensitive tumor may be defined as one that can be completely destroyed by a correct irradiation without permanent damage to the surrounding normal structures.

The complete sterilization of a tumor by radiation can be accomplished in two ways: (1) selective radiation and (2) caustic radiation.



Fig. 5.—Section of lesion shown in figure 4, showing adult squamous carcinoma.

Selective radiation—the ideal form of radiotherapy—sterilizes cancer cells without causing serious damage to the surrounding normal structures. As Regaud has pointed out, this result is possible only when some difference exists between the radiosensitivity of the cancer cells and that of the surrounding normal cells. Those tumors which possess this property are called radio-

sensitive. Most tumors fail to qualify under this principle and must be classed as radioresistant. The selectivity of radiation in the treatment of radiosensitive tumors is the underlying principle of radiotherapy and it is this factor that differentiates radium and x-rays from such methods as electrocoagulation, in which no specific or selective effect on tumor cells can be demonstrated.

Caustic radiation differs from selective radiation in that it not only destroys the tumor but seriously injures the surrounding normal tissues. This form of radiotherapy has a limited field of usefulness and is specially applicable to the treatment of the more radioresistant tumors that are not too extensive. Nonselective or caustic irradiation of radioresistant tumors when the lesion is extensive usually results in radionecrosis with sloughing, secondary infection and local recurrence. The constant aim in radiotherapy is to devise methods by which complete sterilization of a neoplasm may be effected without radionecrosis.

There are no reasons for assuming that a given tumor is equally resistant to radiation throughout its life history. On the contrary there is considerable evidence to indicate that tumors pass through alternating periods of radioresistance and radiosensitivity. Undoubtedly changes in metabolism influence response to radiation; thus Crabtree and Cramer³ have discovered recently that exposure of tumor tissues to low temperatures greatly increases the susceptibility to radium, whereas anaerobiosis results in greatly increased resistance. The results of these investigations also indicate that the biologic effect of radiation is not produced through an action on the glycolytic mechanism. These results are at variance with Packard's⁴ experiments with *Diosiphila* eggs, which indicated that lowering the metabolic rate by lowering the temperature diminished the susceptibility to radiation. Ewing⁵ is of the opinion that the intrinsic property of the cells of origin more than any other factor determines the property of radiosensitivity, and there is much evidence to support this contention. Regaud has observed that the property of secretion is antagonistic to the property of radiosensitivity and believes that the radioresistance of adenocarcinomas is possibly to be explained on this basis.

From time to time efforts have been made to influence the property of radiosensitivity. In 1909 Schwartz⁶ used compression and cooling of the tissues and in 1924 Jolly⁷ noted increased radioresistance following temporary ligation of the blood supply to certain organs exposed to radiation: Heating the tissues



Fig. 6.—Squamous carcinoma of the penis after surface irradiation, illustrating radiosensitivity of squamous carcinoma by retracted and adequate surface irradiation.

3. Crabtree and Cramer: *Proc. Roy. Soc. London sec. B* **113**: 238, 1933.

4. Packard, Charles: *J. Cancer Research* **11**: 282 (Oct.) 1927.

5. Ewing, J.: *Radiology* **13**: 313 (Oct.) 1929.

6. Schwartz, G.: *Munchen med. Wehnschr.* **56**: 1217, 1909.

7. Jolly, J.: *Compt. rend. Soc. de biol.* **91**: 532 (July 25) 1924.

appeared to increase radiosensitivity. The introduction of some of the heavy metals such as colloidal lead has been suspected of increasing radiosensitivity of tissues, but in none of these observations has a specific effect on the neoplastic cells been demonstrated and clinical results have been equally unsatisfactory.

ESTIMATE OF RADIOSENSITIVITY

The degree of radiosensitivity of a tumor may be estimated after a consideration of certain clinical and pathologic factors. It is now fully established that the



Fig. 7—Squamous carcinoma of the right vocal cord before treatment. See figure 8

carcinomas arising from the epidermoid structures of the skin and the mucous membrane comply with the criteria of radiosensitivity. Thus epidermoid carcinoma of the skin, lip, oral cavity, including the tongue, tonsil, sinuses, pharynx and larynx, also epidermoid carcinoma of the vagina and cervix are classed as radiosensitive. The marked radiosensitivity of lymphosarcoma and the cellular forms of Hodgkin's disease and embryonal carcinomas are well known. In contradistinction to these lesions, outstanding examples of radioresistant tumors are adenocarcinoma, melanoma, fibrosarcoma and osteogenic sarcoma. Carcinoma of the breast possesses an intermediate degree of radiosensitivity.

Within the group of epidermoid carcinomas there exist notable variations in radiosensitivity. Thus the more adult, hornifying squamous form with pearl formation is more radioresistant than the nonsquamous or transitional cell type. Lympho-epithelioma, the precise histogenesis of which is not known with certainty, is highly radiosensitive. Not infrequently mixed histologic types are encountered with one or another type of cell predominating. This fact must be considered in attempting to estimate radiosensitivity from a study of small biopsy specimens.

It should be emphasized that radiosensitivity does not necessarily indicate curability, nor should radioresistance be taken to imply incurability. Thus, for example, a localized radioresistant but papillary adenocarcinoma may be caused to disappear without radionecrosis under intensive irradiation approaching a caustic dose and the patient may remain cured of the disease. Such a result is exceptional, but enough examples of this kind are available to prove the point. On the contrary, a highly radiosensitive tumor as, for example, lympho-epithelioma of the tonsil, may disappear with dramatic rapidity when the course of radiation

has been only partly administered, and the patient may die promptly of distant metastases.

Notable exceptions to the radioresistance of glandular carcinomas are encountered in malignant tumors of the thyroid, which not infrequently exhibit favorable response to radiation therapy in spite of the fact that the histologic structure indicates radioresistance according to the usual microscopic criteria.

In estimating radiosensitivity, one may consider a tumor radiosensitive when a correct maximum surface irradiation can accomplish a complete sterilization of the local lesion without permanent serious damage to the tumor bed; i. e., without radionecrosis. The complication of metastasis should not be considered in this connection, as that event is dependent on other factors entirely unrelated to the problem of local radiosensitivity.

I have been impressed repeatedly by the radiosensitivity of lesions that are papillary although the histologic structure may indicate a state of radioresistance. I have observed several examples in which papillary adenoma malignum of the rectum has disappeared under intense external radium therapy and early papillary adenocarcinoma of the rectum has undergone complete regression (no recurrence after three years) under surface radium therapy and massive external radiation, yet I have never observed the complete disappearance of lesions of a similar histologic structure when they have infiltrated deeply the underlying structures. I am strongly of the opinion, therefore, that the gross character of the lesion, more particularly its papillary or infiltrating character, may be under certain circumstances a more important guide to radiosensitivity than the microscopic appearance of the growth. The ability to eradicate superficial papillary

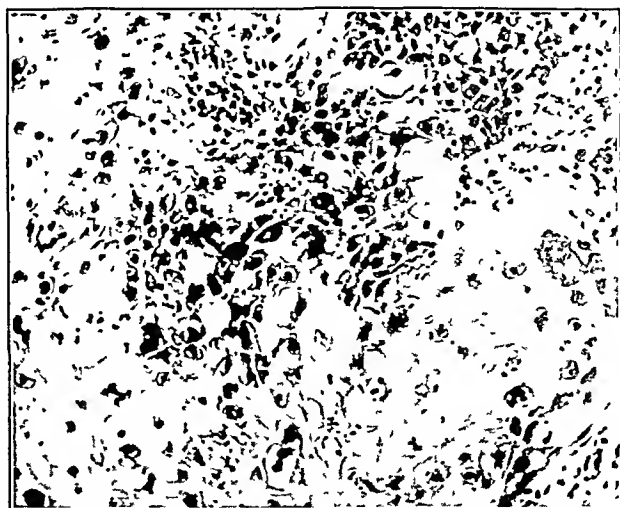


Fig. 8—Section showing squamous carcinoma of the larynx shown in figure 7. Sterilization of the lesion was accomplished by external irradiation, illustrating radiosensitivity of adult squamous carcinoma by protracted irradiation. The patient received 100,000 milligram hours to each side of the neck with the 4 Gm. radium pack, two treatments were given daily and consecutively for forty one days, at 15 cm. distance. The patient has been well for two years

adenoma or low grade adenoma malignum of the body of the uterus by intra-uterine and external radium therapy is another example of the radiosensitivity of papillary lesions. In a recent review of this subject, Stewart⁸ has recorded similar observations.

8 Stewart, F. W. Radiosensitivity of Tumors, Arch Surg 27: 979 (Dec) 1933.

The response of a tumor to radiation—the therapeutic test—remains the most accurate and certain clue to its radiosensitivity and constitutes an important guide in treatment. Thus an estimate of the radiosensitivity of a tumor may be made after a careful consideration of clinical, gross pathologic, microscopic and radiophysiologic factors.

RADIOSENSITIVE TUMORS

With the exception of the embryonal carcinomas, Hodgkin's disease and lymphosarcoma, the strictly radiosensitive tumors have been limited to epidermoid carcinomas of the skin and mucous membranes. Thus, the outstanding successes in radiation therapy have been accomplished in carcinoma of the skin, lip, tongue, oral mucous membrane, tonsil, pharynx, larynx and cervix. It has been noted that it is precisely in these locations that irradiation has largely replaced surgical procedures.

Success in the treatment of these lesions depends on numerous factors aside from their radiosensitivity. The most important of these factors are the extent of the disease and the correctness of radiation. As regards the latter factor, it is important to point out that the responsibility of the radiotherapist is far greater today than it has been in the past. As long as the radiotherapy of cancer was limited to the treatment of advanced and usually hopeless cancer, inadequate training and incomplete equipment could result only in a lesser palliation. Today the radiotherapist is confronted with the radiation treatment of certain forms of early cancer that are amenable to radiation but are also curable by surgery. When one fails to cure an early operable carcinoma by radiation, one must be prepared to defend one's position. Responsibility is far greater than it was in the treatment of palliative, hopeless cases. Several questions immediately arise: Was the case properly selected and suitable for irradiation? Was the treatment administered according to the most modern technic and by means of the most effective equipment? Was the failure due to an incorrect irradiation or was it due to the extent of the



Fig. 9—"Radio epidermite" following radium pack therapy. A total of 200,000 milligram hours with the 4 Gm. radium pack was administered over a period of fifty days.

disease or possibly to an unusually high degree of malignancy of the tumor? The treatment of early cancer by radium and x-rays, therefore, involves comprehensive knowledge of clinical behavior, pathologic varieties and radiophysiologic phenomena related to tumors in order to evaluate correctly and interpret properly the successes and failures of these methods.

RADIORESISTANT TUMORS

A radioresistant tumor is one that cannot be completely sterilized without serious and permanent damage to the surrounding normal tissues. Thus it is evident that radioresistance is not necessarily synonymous with incurability by irradiation. A small, localized radioresistant lesion can be cured by an intense, caustic irradiation, but such treatment causes not only a destruction of the growth but also a radionecrosis of the tumor bed. This type of irradiation is to be avoided, because in most instances the eradication of such a neoplasm is best accomplished by surgical methods. There exist, however, a group of tumors possessing an intermediate degree of radiosensitivity in which eradication of the lesion can be accomplished by a caustic interstitial irradiation without radionecrosis. The more radioresistant forms of carcinoma of the breast are excellent examples of this type.

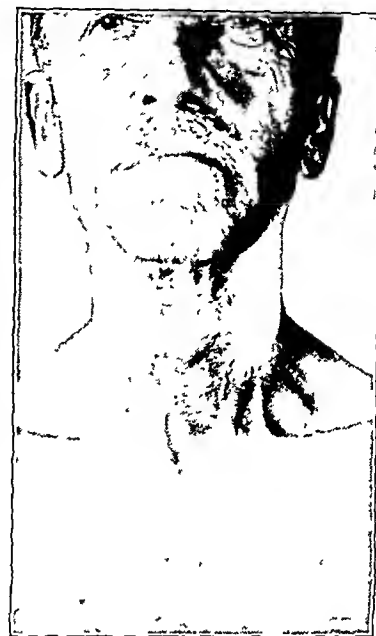


Fig. 10—Skin healed sixty days after height of reaction.

Adenocarcinoma, melanoma, osteogenic sarcoma, fibrosarcoma and neurogenic sarcoma represent the radioresistant lesions and constitute the group that thus far has failed to respond satisfactorily to radiation therapy, but it should be pointed out that even among this group one encounters exceptions in which the relation between histologic structure and radiosensitivity fails to be maintained. Especially is this likely to occur when portions of the lesion have become anaplastic.

RECENT OBSERVATIONS IN RADIOSENSITIVITY

Regaud and Nogier⁹ and also Delbet in 1918 observed that when radiation is administered by repeated exposures over a prolonged interval the tumor cells become more resistant and develop a radioimmunity, whereas the normal cells become more radiosensitive and more subject to radionecrosis. These observations have been amply confirmed by subsequent clinical observation. Regaud in 1922, Schinz and Slotopolsky in 1926 and Regaud and Ferroux¹⁰ in 1927 demonstrated that it was impossible to cause the complete sterilization of the rabbit's testis by a single irradiation without causing serious lesions of the skin. The threshold dose for the production of radionecrosis was from 4,000 to 4,400 roentgens (Solomon) when administered in one dose and 6,200 roentgens (Solomon) when administered over a period of two weeks. At the same time the threshold of sterilization of the seminal epithelium did not increase in a parallel

⁹ Regaud and Nogier *Compt. rend. Acad. d. sc.* 158: 1711, 1914.
¹⁰ Regaud, C., and Ferroux, R. *Paris méd.* 1: 382 (April 26) 1930.

manner but remained in the neighborhood of 5,000 roentgens (Solomon) when the dose was administered in equal parts over a period of from four to nine days. Thus it was shown experimentally that by prolonging the time of treatment the threshold of cutaneous necrosis is increased by 50 per cent while at the same time the threshold of sterilization is maintained at its original level.

The saturation method of Pfahler in America resembles to some extent the technic of Coutard, although the underlying radiophysiologic principles differ somewhat in the two methods.

The experimental studies of Regaud, Lacassagne,¹¹ Nogier and Ferroux, and the clinical observations of Coutard,¹² Monod,¹³ Schintz, Pfahler, Berven¹⁴ and others have swung the pendulum from single massive doses to that of protracted and more or less continuous irradiation. The clinical results of the protracted technic in the treatment of carcinoma of the tonsil, pharynx and larynx by means of roentgen therapy recently reported by Coutard and Berven's results in carcinoma of the tonsil by telerradium therapy mark most important advances in the radiation treatment of neoplastic diseases.

According to Coutard's method the lesion is exposed to x-rays twice daily with 4 milliamperes, 200 kilovolts, 2 mm. of copper filtration, and at distances varying from 50 to 90 cm. The criterion of dosage is biologic rather than physical. Treatment is continued until there develops in the normal tissues around the lesion a condition that has been called "epithelitis."

Pursuing these general principles, I have adopted a technic of telerradium therapy that differs from the Coutard method first in utilizing the more penetrating gamma rays of radium and, secondly, in extending fully the principle of continuity of radiation. By this method the lesion is exposed to the gamma rays of radium (4 Gm. pack and 2 Gm. pack) twice daily in

way it is intended to collect and record a series of observations, which it is hoped may ultimately permit a comparison between the biologic effects and clinical results of x-rays and gamma rays. There is considerable clinical evidence to suspect that continuity of radiation may be one of the most important factors in the sterilization of neoplasms by means of radiotherapy.

One of the most important problems that confront physicians today is the question of the total interval during which radiation is best administered. There is a possibility that such an interval may vary for the different tumors. A determination of the optimal interval for each type of growth constitutes an important clinical and biologic research, which is under way at the present time.

Another factor that remains undetermined is the question of the intensity of radiation. This

is not fully established whether the optimal fraction of 100 röntgens during a period of five minutes differs from the administration of a similar dose during a period of one hour. This question raises problems that are not only of great medical interest but also of considerable scientific importance. Irradiations based on these various questions are presently being carried out at the various radiotherapy centers throughout the world.

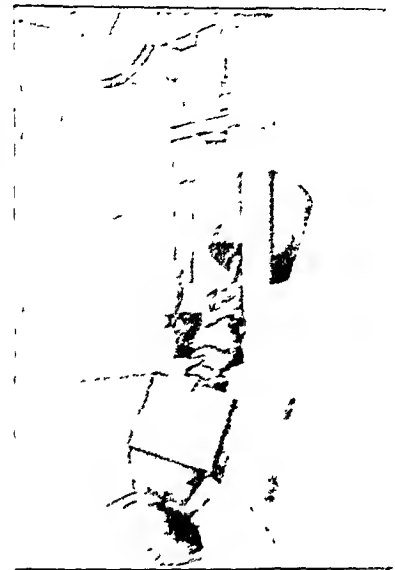


Fig. 11—Telerradium pack, exposing carcinoma of the tonsil, with the telerradium apparatus.

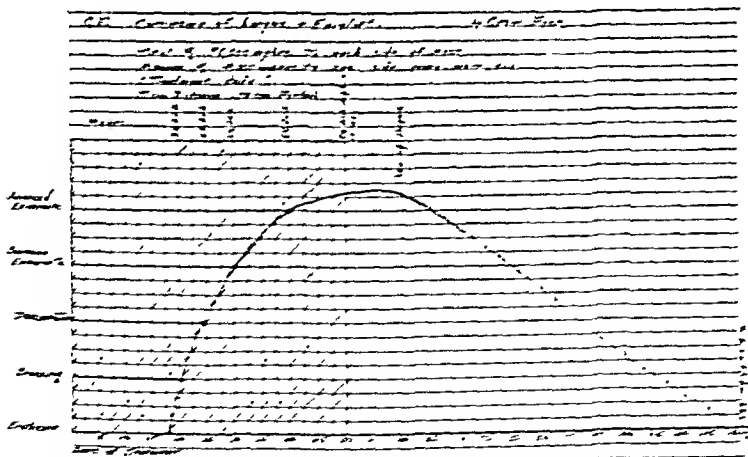


Fig. 12—Course of the relation of the skin reaction following radium therapy to time of treatment and dosage.

conservative days without interruption for periods varying between twenty and thirty days. Treatment is continued until the characteristic reaction is observed in the normal tissues surrounding the growth. In this

ABSTRACT OF DISCUSSION

Dr. JAMES C. BRIDGES, Baltimore, I think that I am rather the proper person now to discuss the treatment of malignant disease by other means than surgery. I do not think that I have discussed from surgery or radiotherapy enough by the contemplation of fact. That report as my clinic told me that 45 per cent of the patients previously operated on in the clinic now are at Dr. Burdison and Dr. Hall for radio therapy. This is based on records. They are not forgettable they are all operable. They are not forgettable cases they are all forgetful but they are well under radiotherapy. This has happened during the last three years not because I have changed any but because the method of radiotherapy has changed. A great change has taken place. First of all radium

and x-rays are no longer looked on as a last resort. Dr. Hickey and I have lived through that phase of surgery when surgeons were looked on as a last resort. I never saw an appendix removed in Philadelphia when I was a surgeon. I have lived through good surgery, and I am living in the time of good radiation. Finally, the evidence that I have today suggests that the time of removing the brain for a meningioma tumor is almost over. One has to get a tumor that is of one month's duration and is smaller than a twenty-

¹¹ Regaud, E., *Radiation in neoplasms*, 1931, 1932.
¹² Coutard, E., *Radiation in neoplasms*, 1931, 1932.
¹³ Monod, J., *Radiation in neoplasms*, 1931, 1932.
¹⁴ Berven, E., *Radiation in neoplasms*, 1931, 1932.

five cent piece (24 mm.), and one has only to find it with a microscope. The chief reason for using radiation therapy will not be that one is certain that it is cancer or not, but that one is uncertain. The majority of lumps of one month's duration and smaller than a twenty-five cent piece are going to be difficult to diagnose as cancer. I remember my reaction in the beginning to the statements of Pfahler. I did not believe a word he said, but I believe them now, because when I accumulated all the cases of jaw tumors that we had in forty years, Pfahler's name stood next to all the living patients who had irradiation. He was the beginning of Coutard's method. I have seen Coutard. I have sat next to him all day long and have seen cancer of the tonsils and of the base of the tongue after five, seven and ten years. I have seen the same thing happen in Baltimore in the hands of Dr. Burnham and Dr. Neil. In cancer of the jaw I know that I have cured 10 per cent of my cases by resecting, and the patients have lived for five years, but mighty few of them are alive after ten years. I do not believe any one has faithfully studied, as I did with Dr. Halsted, beginning first in 1895, forty years ago, the actual results of what I believe can be said today to have been the best surgery. I have seen the results abroad. I saw cancer of the rectum with two great men in London. I am now seeing radiation replace surgery, certainly in the mouth. Of course, warts, skin lesions, and lesions everywhere that can be cut out can be taken off without any mutilation, with 100 per cent results. I think those cases will still be surgical. The radiotherapist has to be just as much a pathologist as the surgeon, and I don't know but that he will have to spend less time in anatomy and more time in pathology, because a pathologic point of view will give courage and direction to all who are treating cancer.

DR. J. SHELTON HORSLEY, Richmond, Va.: I cannot go quite as far as Dr. Bloodgood in repudiating surgery in the treatment of cancer, but I think there is a decided and beneficial tendency toward using irradiation rather than surgery in certain types of malignancy, such as those Dr. Cutler has shown. In many others, a combination of intelligent radiotherapy with excision is beneficial. One must bear in mind, however, that radiation is just as dangerous as a knife. If I had to choose between being operated on by an incompetent surgeon with a sharp knife and being treated by an incompetent radiologist with a powerful x-ray machine, I think I should take my chances with the knife. The indications for the proper treatment of any malignant condition should be carefully studied in every branch of clinical medicine. It is becoming more and more necessary to hitch up pathology with all clinical treatment, for clinical treatment cannot be intelligently carried on without some knowledge of the organic pathologic changes or the perverted physiology that causes the disease.

DR. E. B. KRUMBHAAR, Philadelphia: As I recall Dr. Cutler's definition of radiosensitivity, it implied that all cells of the neoplasm could be destroyed without permanent damage to the surrounding normal tissue. I believe that that would mean a cure, for if all the cells of a neoplasm are destroyed, that particular neoplasm is cured, and even if another neoplasm occurs and occurs in the same place, that is another neoplasm. In this sense, also, the term "relatively radioresistant" is meaningless. Either the tumor can have all its cells killed, or it cannot. Furthermore, I don't believe that in Hodgkin's disease it is ever clinically possible to kill the cells of the Hodgkin's lesion. Therefore, I would not agree to calling Hodgkin's disease a radiosensitive disease in this sense.

DR. MAX CUTLER, Chicago: Since there are varying degrees of radiosensitivity, it is not possible to divide all tumors sharply into two groups. The definition of radiosensitivity is therefore an arbitrary one. The definition of radiosensitivity that I have stated in this communication is that which has been proposed by Regaud and is generally accepted by workers in this field. It is based on well established biologic principles and is practically useful for clinical purposes. In stating that certain forms of Hodgkin's disease are radiosensitive I refer to the highly cellular forms which clinically and microscopically simulate lymphosarcoma so closely that a distinction between the two processes is often not possible. I wish to thank those who have taken part in this discussion.

VALUE OF FRIEDMAN TEST IN DIAGNOSIS OF INTRA-UTERINE AND EXTRA-UTERINE PREGNANCY

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In a review¹ of 4,595 Friedman tests performed by twenty-six different clinical pathologists, it was shown that 5.1 per cent of the tests were false negatives and 0.95 per cent were false positives. In ectopic pregnancy 77.8 per cent were correct positives and 22.2 per cent were incorrect negatives. The technic employed in this series consisted of the injection of 10 cc. of urine into one nonpregnant mature female rabbit followed by gross inspection of the ovaries forty-eight hours later.

At Mount Sinai Hospital, 1,137 Friedman tests have been performed to date. The technic employed differs



Fig. 1.—Normal chorionic villi from ectopic pregnancy. Friedman test positive. The villus stroma, Langhans cells and syncytium are well preserved.

from that reported by others in that 20 cc. of freshly voided morning urine is used and the test is done in duplicate; i. e., two mature nonpregnant female rabbits are used for each case. Five cubic centimeters of urine is injected in the morning and afternoon on two successive days and the ovaries are inspected grossly forty-eight hours after the first injection.

With the employment of this technic in 1,093 intra-uterine pregnancies, there were six false negatives (0.55 per cent) and one false positive (0.09 per cent). The latter proved to be negative when repeated two days later and was found to be due to an error in labeling two specimens received on the same day. The smaller percentage of error in our series is probably attributable to the one essential point in which our technic differs from that generally employed; viz., the use of two rabbits for each test. The value of using two rabbits is demonstrated by the fact that, in twenty-two of our first 635 cases, one of the two rabbits was negative in proved cases of pregnancy. This would

From the Gynecological Service and the Division of Laboratories of the Mount Sinai Hospital.
1. The Friedman Hormone Test for Pregnancy, editorial, Am. J. Clin. Path. 3: 97 (Jan.) 1933.

indicate that at least 3.4 per cent of rabbits are refractory to pregnancy urine.

The value of the Friedman test in ectopic pregnancy is worthy of consideration, as it is in this type of pregnancy that the diagnosis is most often in question.

In forty-four ectopic pregnancies in which Friedman tests were done in duplicate, there were fourteen false negatives (32 per cent error). In this series, the Friedman test was considered to be of value only when it was positive. Not infrequently the diagnosis of ectopic pregnancy was made from the history and clinical observations, in the face of a negative test.

The high percentage of false negatives in ectopic pregnancy can be accounted for if one studies the histologic structure of the specimens removed at operation. In every one of these specimens examined there were either degenerated or necrotic villi. In twelve instances the villi exhibited various stages of degeneration, the majority being necrotic, appearing merely as "ghosts" (figs. 1 and 2). In one instance there was a four months macerated fetus; in another, no villi were found. The latter specimen was reported by the pathologist as a "hematosalpinx, probably an old ectopic."

Of the thirty cases of ectopic pregnancies with positive Friedman tests, well preserved villi were found in the specimens of twenty-two; villi in various stages of degeneration were found in three and no villi in five.

As the positive Friedman test is dependent on the presence in the urine of the anterior pituitary-like hormone elaborated in response to activity of the chorion, it is obvious that with death or degeneration of the chorionic villi the test will become negative. Keeping in mind the fact that quite frequently when the Friedman test is done in a case of ectopic pregnancy there has already occurred either tubal abortion or rupture, so that the chorionic tissue is either degenerated, dead

criteria the chorionic villi are classified as "degenerated" or "ghosts," there is no way of estimating whether or not these villi still have some activity. As regards the five cases with positive tests in which no villi were found, we are forced to the conclusion that the ovum and chorion were lost among the blood clots.

In this connection it is worth while remembering that in intra-uterine pregnancy the Friedman test will



Fig. 3.—Completely degenerated chorionic villi, "ghosts of villi" from ectopic pregnancy; Friedman test negative. There is entire absence of cellular structure; the villus stroma and cellular outline are hyalinized.

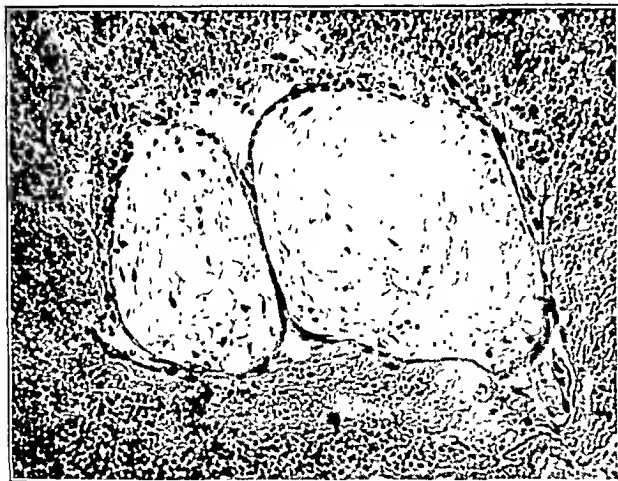


Fig. 2.—Degenerated chorionic villi from ectopic pregnancy; Friedman test negative. The villus stroma is beginning to disintegrate. The Langhans cell layer is incompletely degenerated; remnants of syncytium are still present.

or completely separated from the circulation of its host, the high percentage of false negatives becomes understandable.

How is one to account for the positive tests in the three cases with degenerated villi? As serial sections were not made, it is quite possible that there may have been some active chorionic tissue present which was overlooked. Furthermore, while judged by morphologic

become negative if there is either complete separation or degeneration of the chorion. On the other hand, with a dead fetus, as long as the chorion is preserved, the test will remain positive. We have found the Friedman test positive as long as thirty days after death of the fetus. Death of the fetus was determined by the disappearance of female sex hormone from the blood, as previously reported.² In another case of fetal death a positive Friedman test was obtained with as little as 0.5 cc. of urine. The curettings in this case revealed well preserved placental tissue.

The Friedman pregnancy test is a valuable laboratory aid in the diagnosis of pregnancy. Like other laboratory tests, however, it has its limitations. For the clinician, it is important to remember that a positive test means merely that the patient is excreting anterior pituitary-like hormone which is formed in response to the presence of viable chorion, that the positive test does not indicate whether the fetus is alive or dead, that the test will remain positive in missed and in incomplete abortions as long as viable chorion is attached to the uterine wall, and that a negative test does not exclude the presence of an ectopic pregnancy.

SUMMARY AND CONCLUSIONS

1. In 1,093 normal intra-uterine pregnancies the percentage of false positive Friedman tests was 0.09. The percentage of false negatives was 0.55.

2. This small percentage of error, as compared to other reports, is attributed to the fact that duplicate tests were performed.

3. At least 3.4 per cent of rabbits appear to be refractory to the Friedman test.

2. Spielman, Frank; Goldberger, M. A., Frank, R. T.: Hormone Diagnosis of Viability of Pregnancy, *J. A. M. A.* 101: 266-268 (July 22) 1933.

4. In ectopic pregnancy, the percentage of false negatives in a series of forty-four cases was 32.

5. The high percentage of negative tests in ectopic pregnancy is accounted for by the presence in these cases of dead or degenerated villi.

6. In both intra-uterine and extra-uterine pregnancies the Friedman test is dependent on the viability of the chorion.

7. In missed abortion the Friedman test may remain positive for as long as thirty days after death of the fetus.

8. In incomplete abortion the Friedman test may be positive.

9. The presence of a viable fetus can be determined by study of the female sex hormone of the blood.

10. In the diagnosis of ectopic gestation the Friedman test is of value only in cases in which it is positive.

11. If the test is negative in a case of suspected ectopic pregnancy, the clinical history and observations should determine the diagnosis.

145 West Eighty-Sixth Street.

Clinical Notes, Suggestions and New Instruments

ESTRIN IN HIGH CONCENTRATION YIELDED BY A FIBRO-ADENOMA OF THE BREAST

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BALTIMORE

Diffuse and localized hypertrophy of the breast occurs relatively frequently in both the male and the female. In gynecomastia the hypertrophy may be unilateral or bilateral, but it is usually diffuse. The unilateral type is the more common. The localized change (the so-called fibro-adenoma) is the most common form in the female breast. Diffuse hypertrophy of one or both breasts, known as virginal hypertrophy, is most frequently bilateral. Gynecomastia, fibro-adenoma, and virginal

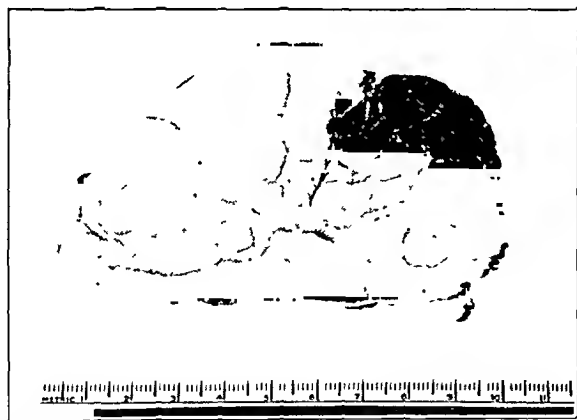


Fig. 1.—Fibro-adenoma occurring in a Negro girl aged 12 years. Menstruation was not established. This shows a section from the mid-section of the gross specimen. The remainder of the specimen was ground and assayed for estrin and showed a concentration in excess of 5 rat units per gram of tissue.

hypertrophy are in almost all instances benign. In extremely rare instances a fibrosarcoma is supposed to have developed in or from a preexisting clinically benign fibro-adenoma.

Histologically these benign lesions are characterized by an increase in the length and diameter of the ducts, an increase

in the number of layers of epithelium lining the ducts, and a proliferation of the periductal connective tissue. The histologic picture is essentially an exaggeration of that observed in the normal female breast when puberty hypertrophy is taking place.

In the adolescent girl, normally, definite changes begin from three to five years before menstruation is established. Enough clinical and experimental evidence has accumulated to warrant



Fig. 2.—An area from the specimen shown in figure 1 showing a typical fibro-adenomatous appearance.

one in assuming that there is a direct relationship between ovarian hormones and the changes occurring at puberty. Having such a relationship in mind, we desired to determine whether estrin could be found in such tumors and, if so, in what amounts. Our observations were so striking that we feel justified in recording the following case:

A Negro girl, aged 12 years, had had no previous illness, with the exception of recurrent attacks of tonsillitis and chicken-pox at 5 years. She weighed 105 pounds (47.6 Kg.). Two years before admission to the hospital the breasts began to enlarge. The enlargement apparently proceeded normally, although the patient's mother said that she thought the breasts were unequal in size. Sometime before admission to the hospital, however, a distinct mass, which grew rapidly, was found in the left breast. This mass was not tender, and attention was attracted to it because of the size.

The girl was well developed. She had a slight scoliosis. The right breast was definitely larger than the breast of a girl of the same age normally would be. The left breast was almost twice as large as the right. It contained a nodular mass about the size of a medium size adult fist. The mass was freely movable, being attached neither to the skin nor to the underlying structures. The skin over the tumor was normal. No abnormalities of the nipple were noted. There was no discharge from the nipples.

April 23, 1934, the tumor in the left breast was removed with some of the overlying skin. Microscopically this tumor was a typical fibro-adenoma. The breast tissue surrounding the tumor showed an increase in the number and size of milk ducts and an increase in the periductal connective tissue.

The tumor, with the exception of a small section saved for microscopic examination, was placed in 95 per cent alcohol. This was sent to Dr. J. A. Morrell of the Biological Laboratories of E. R. Squibb and Sons, through whose kindness the tumor was assayed for estrin. Dr. Morrell makes the following statement concerning the assay: "The tissue contains a great deal more estrin than I had anticipated. It looks as though it contains more than 5 rat units per gram of tissue."

You will agree with me that this is rather remarkable when we find that the maximum which we can obtain from the hog's ovaries by an identical extraction procedure is about 50-75 units per pound of ovary. In other words, hogs' ovaries contain approximately one unit to every 9 Gm. of tissue, so that your breast tumor contains more than forty-five times as much estrin per unit weight."¹



Fig. 3.—Another area of the specimen shown in figure 1. The connective tissue in the tumor is compressing the ducts, which have undergone a marked hypertrophy.

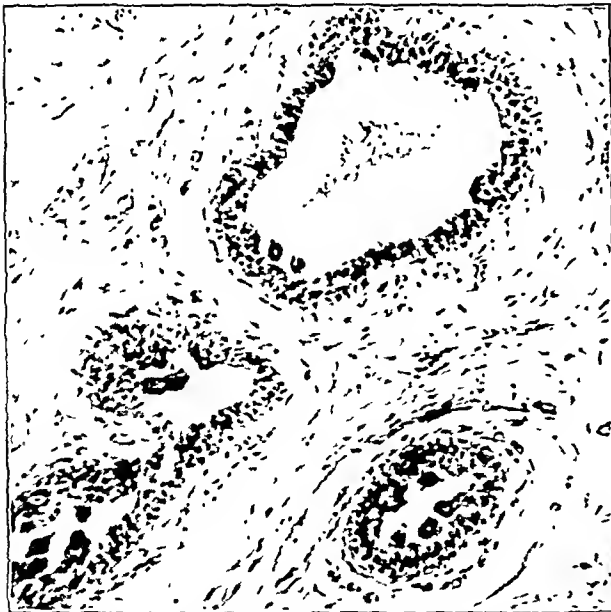


Fig. 4.—Appearance under high power of the breast tissue surrounding the tumor shown in figure 1. The increased number of cell layers in the duct lining and the increase in periductal connective tissue in the tissue surrounding the tumor is possibly in response to a higher level of estrin in the blood.

Hypertrophy of the breast may be produced experimentally in both male and female monkeys by injections of estrin. Large quantities of estrin were found in the tumor just described. We believe that such an abnormal concentration may have an etiologic significance in the production of such a growth.

1. The final bio assay showed 6 rat units per gram of tissue, or nearly 3,000 rat units per pound.

Special Articles

THE PATHOLOGY OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

HENRY E. MELENEY, M.D.

NASHVILLE, TENN.

The papers by Drs. Meleney, Magath and Reed in this issue complete the series of clinical lectures on amebiasis read at the Cleveland session. The papers by Drs. Craig and Simon were published October 6, and the papers by Drs. McCoy and Chesley and by Dr. Lynch were published October 13.

Any description of the pathology of amebiasis must pay tribute to Councilman and Lafleur,¹ who in 1891 first described the lesions in detail and differentiated them from the lesions of bacillary dysentery, and to Leonard Rogers,² Kartulis,³ Kuenen,⁴ Craig,⁵ James⁶ and many others who have made contributions to the subject since that time.

The action of *Endamoeba histolytica* is fundamentally the same in all the tissues that it invades and in all susceptible animals into the tissues of which it gains entrance. This action is based on two weapons of

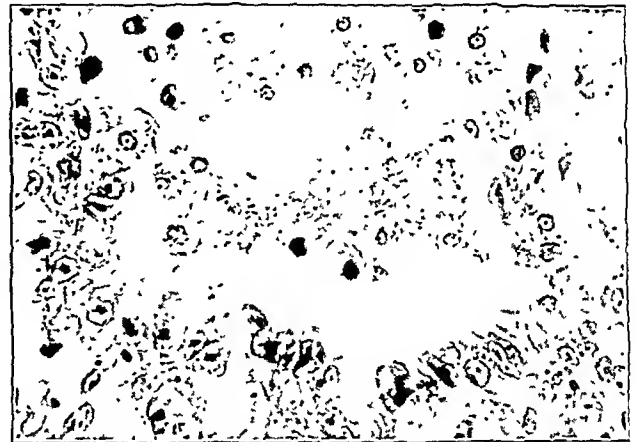


Fig. 1.—Earliest amebic lesion of the colon. A depression in the mucosa showing amebas in the lumen and beginning to invade and destroy the epithelium. One ameba is seen penetrating between two epithelial cells at the left, and another lies beneath several degenerated epithelial cells at the right. Kitten specimen. The amebas can be identified by their nuclei, which have a heavy ring of peripheral chromatin and a small central karyosome (nucleolus).

attack possessed by the ameba; namely, mechanical invasion by means of pseudopods and a toxin that acts directly on the tissues of the host. With these facts in mind it is possible to trace the development of amebic lesions wherever they occur and to understand the fully developed picture that is usually seen in man.

From the Department of Preventive Medicine and Public Health, Vanderbilt University School of Medicine.

Read in the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 12, 1934.

The author is indebted to the Department of Pathology of the Vanderbilt University School of Medicine for preparing the photomicrographs accompanying this paper, and to that department and the Departments of Pathology and Surgery of Columbia University College of Physicians and Surgeons for sections of tissue from which some of the photomicrographs were made.

1. Councilman, W. T., and Lafleur, H. A.: *Johns Hopkins Hosp. Rep.* 2: 393-548, 1891.
2. Rogers, Leonard: *Brit. M. J.* 1: 1315-1319, (June 6) 1903.
3. Kartulis, S., in Kolle and Wassermann: *Handbuch der pathogenen Mikroorganismen*, ed. 2, 7: 651-686, 1913.
4. Kuenen, W. A.: *Arch. f. Schiff- u. Tropen-Hyg.* 13: 441-501 (supplement 7) 1909.
5. Craig, C. F.: *Amebiasis and Amebic Dysentery*, Springfield, Ill., Charles C. Thomas Company, 1934.
6. James, W. M.: *Ann. Trop. Med. & Parasitol.* 22: 201-258 (Aug.) 1928.

AMEBIC LESIONS OF THE INTESTINE

In the first attack on the wall of the intestine, amebas are sometimes found on the surface of the mucosa in contact with epithelial cells, which show obvious toxic damage (fig. 1), or they may first be found beneath the epithelium with no apparent break in the epithelium.

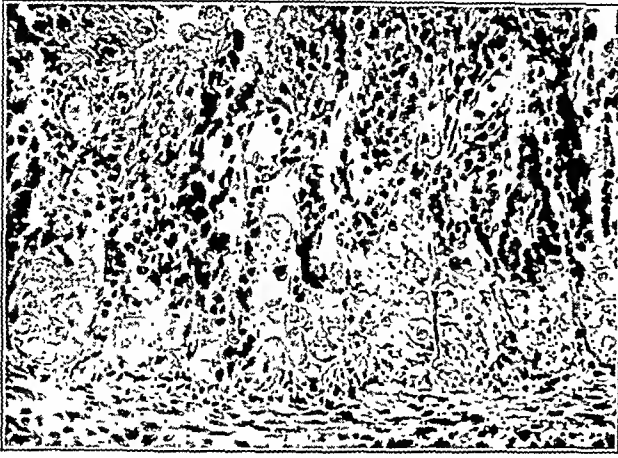


Fig. 2.—Amebas congregated beneath the epithelium in the fundi of vertical glands of the colon. Kitten specimen.

This first attack may occur in a depression between rugae or in the lumen of a vertical gland, or it may occur on the surface epithelium between glands.

Having penetrated the epithelium, the amebas either advance along the basement membrane to the fundi of the intestinal glands, where they congregate and mul-

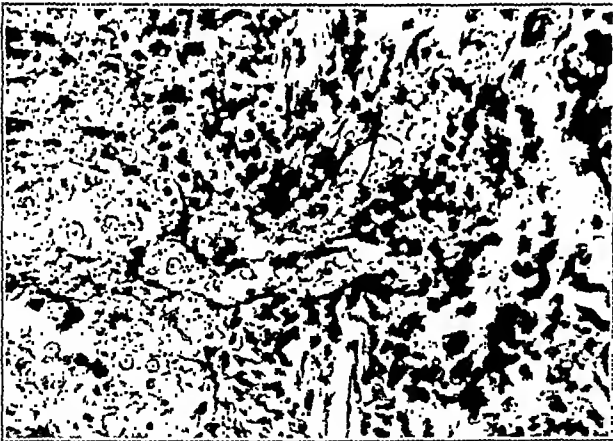


Fig. 3.—Amebas in a lymph vessel leading through the muscularis mucosae into the submucosa of the colon. Kitten specimen.

tiply (fig. 2), or they may penetrate the basement membrane near the surface of the mucosa and enter the connective tissue stroma between the glands. Here they pass down toward the muscularis mucosae, causing edema and necrosis of the tissue and dilatation, rupture or thrombosis of capillaries. Ultimately the necrosis involves the entire thickness of the mucosa. It may extend laterally over a wide area, or it may be sharply limited to a small group of glands.

The amebas in the fundi of the glands soon break through the basement membrane and join those from the stroma of the mucosa in penetrating the muscularis mucosae either through tissue spaces or in the lymph or blood vessels (fig. 3).

In the submucosa the amebas spread out in all directions between the connective tissue fibers. Their toxin causes edema, fibrin formation and degeneration of cells and intercellular fibers. The submucosa often becomes several times its normal thickness. There is little or no cellular response on the part of the host, so that few polymorphonuclear leukocytes and only moderate numbers of mononuclear cells may be found in the lesions; but when bacteria gain access to the tissues, especially gram-positive cocci, there is a marked polymorphonuclear response and the degenerating submucosal lesion takes on the appearance of a pyogenic abscess with few amebas in it. At the periphery of such a lesion, bacteria are usually absent, but numerous

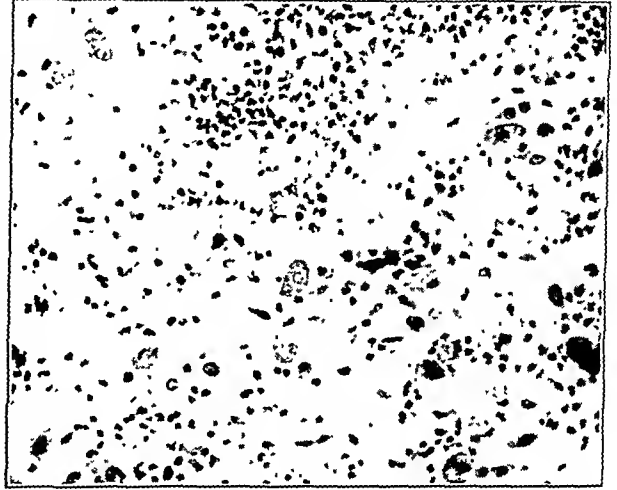


Fig. 4.—Amebas in the edematous submucosa at the margin of an ulcer. Human case.

amebas are present in the advancing area of edema and necrosis (fig. 4).

Meanwhile if the lymphatics of the mucosa have been opened by necrosis, those of the submucosa may become filled with necrotic cells and bacteria, together with



Fig. 5.—Extensive mucosal lesion in colon of kitten showing lymph vessels of submucosa distended with products of the mucosal lesion.

amebas that have entered them in the mucosa. This is more strikingly seen in kittens than in man (fig. 5). In the submucosa the amebas also attack the walls of lymph and blood vessels and are often found in their lumens. Thrombosis of the blood vessels thus attacked is commonly seen.

Although amebas enter the lymph vessels and are undoubtedly carried in them to the mesenteric lymph nodes in many cases, amebic lesions in lymph nodes are practically unknown either in experimental animals or in man.

The lateral extension of the lesions in the submucosa leads to the cutting off of the circulation in the mucosa over the necrotic area. At the same time the discharge of the contents of the submucosal abscess allows the edges of the mucosa to collapse into the cavity thus formed. As the mucosa disintegrates the opening becomes larger, until an ulcer of considerable size may be developed (fig. 6). Frequently adjacent submucosal lesions coalesce, leaving a bridge of normal mucosa over a communicating channel underneath.

The muscular coats of the intestine offer a temporary barrier to the amebas, but the connective tissue septums between muscle bundles furnish paths along which the amebas reach the outer muscular coat and the subserous tissue (fig. 7). Gradually they also penetrate the muscle cells and cause edema, hyalinization and finally necrosis of this tissue. Secondary invasion by bacteria assists in the extension of the ulcer into this layer of the wall.

In the subserous tissue the amebas produce edema followed by the formation of fibrin on the serous sur-

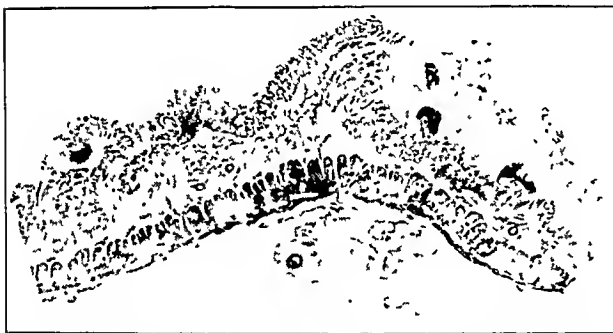


Fig. 6—Section of human colon showing two deep submucosal lesions with overhanging margins of mucosa. Note thickness (edema) of submucosa and puslike contents of the ulcers.

face, which leads to adhesions of apposing peritoneal surfaces. If the necrotic process penetrates through the muscle layers, the serosa easily gives way and perforation occurs.

The lymph follicles of the colon play a minor rôle in the amebic lesions in man. They may, however, be invaded either directly from the surface or by amebas advancing in the submucosa, and they may become involved in the abscess-like lesions by direct extension. The amebas that enter lymph follicles from the mucosal surface advance radially toward the periphery of the follicles, and necrosis and secondary bacterial invasion follow.

The process that has been described represents the unobstructed development of the severest type of amebic lesion in the colon. Sometimes, however, in persons dying of other diseases, although no gross amebic lesions are visible at autopsy, microscopic lesions are found in tissue sections. In such lesions there may be no definite necrosis of the tissues. The glandular epithelium is usually missing in small areas, but except for the presence of amebas there is very little change in the tissues (fig. 7). Such a condition probably represents either the presence of a strain of ameba of a

low degree of pathogenicity or great resistance on the part of the host. It may be the condition that exists in some of the cases of amebiasis that present no clinical symptoms.

With the microscopic pathology in mind, one easily understands the gross lesions as seen on proctoscopic



Fig. 7.—Mild amebic lesion of human colon. No gross ulcers were visible at autopsy. The glandular epithelium has disappeared and there is beginning disintegration of the connective tissue stroma of the mucosa, but not complete necrosis. Very slight edema of submucosa, where numerous amebas are present in the tissue and lymph vessels.

examination or at autopsy. The earliest lesion consists merely of a slightly raised bright red spot of hemorrhage or hyperemia. Following this there are three main types of early lesions. The first is a shallow ulceration of the mucosa surrounded by a narrow ring of hyperemia. The second is a diffuse granular appearance of the mucosa representing many points of invasion of the amebas into the glands without visible ulceration. The third and much the most common in man is a sharply circumscribed nodular projection of the mucosa with a small depressed yellow opening in the center surrounded by a hyperemic ring and leading into a cavity containing gelatinous material. This represents the early stage of the abscess-like lesions in the submucosa.

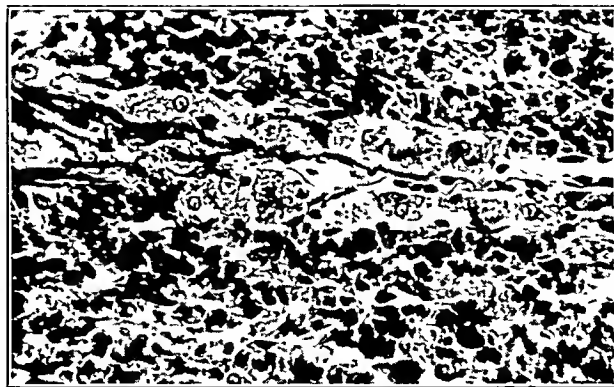


Fig. 8—Amebas advancing in connective tissue septum between bundles of internal muscular layer of human colon. Muscle coat formed base of ulcer.

The larger ulcers vary greatly in size, shape and depth. When discrete, they often occupy the tops of rugae and extend transversely across the intestine. Their edges are raised and overhanging and the base consists of mucoid material covering the necrotic sub-

mucosa or the muscular coat of the intestine. Sloughing shreds of tissue may be loosely attached to the base of the ulcer. These ulcers often coalesce, forming large irregular areas sometimes bridged over with strands of partly necrotic mucosa. They may become very extensive, involving the entire circumference of the intestine and reaching a length of 6 inches or more. As they become deeper the inner muscular layer may be partly



Fig. 9.—Amebic abscess of human lung with pneumonia. Note the noncellular character of the exudate in the alveoli and the absence of alveolar architecture in the abscessed portion. Many amebas distributed irregularly throughout the lesion.

separated and hang in shreds from the necrotic base. Sloughing portions of the wall may be passed out with the stools. With destruction of the circulation or invasion of the serosa, a gangrenous condition develops leading to perforation of the wall. Such perforations are often several centimeters in diameter.

Where extensive ulceration occurs there is usually a general thickening of the wall of the colon due to

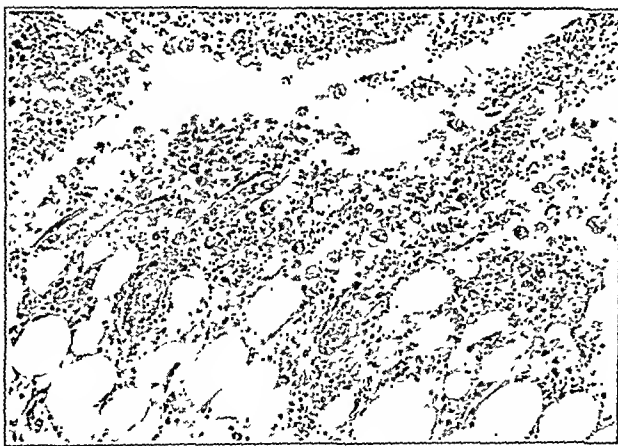


Fig. 10.—Amebic ulcer of the skin, showing invasion of subcutaneous fat by amebas at margin of ulcer.

edema, which is most marked in the submucosa; but if the lesions are discrete the appearance of the intestine between them may be normal.

Healing of intestinal lesions, if they have not advanced beyond the submucosa, frequently occurs. Lesions involving only the mucosa may leave no scar. Deeper lesions often lead to permanent thickening and rigidity or stenosis of the intestine. Peritoneal adhe-

sions may lead to permanent functional disturbances or to kinking and obstruction. Healing and active ulceration in different parts of the same ulcer frequently are in progress at the same time.

The distribution of amebic lesions in the colon may be general or localized. Localized lesions are found most frequently in places where stasis normally occurs. In their order of frequency these places are the cecum, the ascending colon, the rectum, the sigmoid, the appendix and the splenic and hepatic flexures.⁷ In general the most severe lesions tend to occur in the cecum but may be found as low as the sigmoid. Rectal ulcers are more often shallow.

In addition to the colon, the terminal portion of the ileum is occasionally found to be involved. It is probable that such involvement is always secondary to lesions in the colon.

AMEBIC LESIONS OF THE LIVER

The second great site of pathologic lesions in amebiasis is the liver. Amebas are undoubtedly transported to the liver from intestinal lesions by the portal blood stream. Councilman and Lafleur¹ and Rogers²



Fig. 11.—Amebic ulcer of the skin, showing amebas attacking exposed edge of epidermis.

advanced the theory that they might also reach the surface of the liver by way of the peritoneal cavity and that this was the best explanation of the frequency of single abscesses located near the surface of the liver. Such localization, however, may be due to the fact that the portal blood stream probably takes a more direct course toward the capillaries near the liver surface and thus tends to carry the amebas to such locations.

Clinically a condition termed amebic hepatitis is well recognized. This probably represents the existence of many small lesions containing amebas with the first stage of abscess formation. Such cases are usually treated with emetine and go on to recovery, which tends to confirm the diagnosis of amebic hepatitis but does not afford an opportunity to study the pathology of the condition.

The amebic liver abscess is usually single and situated in the right lobe, but there may be multiple abscesses scattered throughout the liver. If the abscesses are multiple they give rise to clinical symptoms early and are diagnosed before they reach a large size, but if

7. Clark, H. C.: *Am. J. Trop. Med.* 5: 157-171 (March) 1925.

the abscess is single it may reach a very large size before the diagnosis is made.

The smallest abscesses on section may be only a few millimeters in diameter. They are solid and white and still show some semblance of liver structure. In slightly larger ones the contents are gelatinous and yellow, and still larger ones contain a reddish brown fluid and shreds of necrotic tissue. In large acute abscesses the wall is usually ragged with no evidence of a fibrous capsule. In abscesses of long standing there may be a definite fibrous capsule. If secondary bacterial infection of the abscess has occurred, the contents are purulent.

Microscopically the picture is one of progressive necrosis of the parenchymatous cells of the liver, followed by dissolution of the connective tissue framework. The process extends radially as the amebas advance, always leaving a zone of collapsed stroma between the normal liver tissue and the completely necrotic center. Thrombosis of blood vessels at the periphery also occurs and may be a factor in the extension of the abscess, particularly toward the surface of the liver.⁴ The absence of a cellular reaction precludes the formation of pus, while the leaking of blood from exposed capillaries probably contributes largely to the reddish color of the fluid contents of the abscess. Amebas may be entirely absent from the fluid contents of a large abscess but are numerous in the wall.

A generalized central necrosis of liver lobules was described by Councilman and Lafleur, and a portal cirrhosis is sometimes found associated with amebic abscess of the liver; but it has not been determined that either of these processes is directly related to the amebic infection.

Because of the superficial localization of the liver abscess its extension to the surface of the liver is the rule, and adhesion to the adjacent viscera or parietal peritoneum is common, often resulting in perforation or direct extension outside the liver.

AMEBIC LESIONS OF THE LUNG

The third most frequent localization of amebic lesions is in the lung. Such lesions are sometimes embolic in origin but are usually caused by direct extension of liver abscesses through the diaphragm. The abscess may rupture into the pleural or pericardial cavity, but more often the lung becomes adherent to the diaphragm and extension occurs directly into the lower lobe. The right lung is usually the one involved. With the advance of the amebas into the lung, a localized pneumonia develops with rapid formation of an abscess. Such an abscess contains the mucoid or gelatinous material that is typical of amebic lesions, together with red blood cells, amebas, large mononuclear cells from the walls of the alveoli and fragments of the elastic tissue of the lung. At the periphery of the abscess is a pneumonic process, partly interstitial in type but mainly showing the alveoli filled with fibrin and amorphous material containing very few cells. Numerous amebas are irregularly distributed in the alveoli and to a less extent in the interstitial tissue (fig. 8).

The lung abscess usually opens into a large bronchus, discharging in the sputum a brownish mucoid material containing blood and amebas. If there is a direct connection with the liver, the discharge is similar to that of a liver abscess.

AMEBIC ULCERS OF THE SKIN

The fourth most frequent site of amebic lesions is in the skin and subcutaneous tissues. Such lesions may occur after the surgical drainage of an amebic abscess, after the drainage of a ruptured appendix or ruptured ulcer of the colon, from a colostomy opening or from direct extension of rectal ulcers through the anus by way of a fistula. They would probably never occur if the primary condition was recognized as amebic and drug treatment instituted.

Amebic infection of the skin usually appears about a week after surgical drainage has been performed. It is manifested by a rapidly spreading, intensely painful ulceration in which the advance is most rapid in the subcutaneous tissue leaving overhanging edges of dying skin, outside of which is a zone of erythema. The ulcer has a necrotic base covered with sloughs. Pus can be expressed from beneath the overhanging margin. Microscopically there is edema at the margin of the lesion into which amebas are frequently seen advancing in a frontal attack. Just behind them the tissue becomes necrotic, and still nearer the open ulcer colonies of bacteria are present. The amebas invade fat tissue (fig. 9) and can sometimes be seen attacking the exposed edge of the epidermis (fig. 10). In one case complicated by diabetes⁸ they were found at autopsy even within the striated muscle cells of the abdominal wall. These ulcers are always contaminated by bacteria, usually streptococci and staphylococci, which contribute to the gross appearance of the ulcers. Infiltration of polymorphonuclear leukocytes into these lesions is usually greater than is seen in lesions elsewhere in the body. Amebas are also found in the pus that can be pressed out from beneath the overhanging margin of the ulcer. Amebic ulcers of the skin are so similar in appearance to ulcers produced by bacteria alone that they should be diagnosed as amebic only by the finding of actively motile amebas containing red blood cells, and by the finding of typical vegetative forms of *Endamoeba histolytica* in biopsy sections.

OTHER AMEBIC LESIONS

Amebic abscesses of the brain have been reported, usually secondary to liver and lung abscesses. Amebic infections of the gallbladder and of the urinary bladder have been described, but there is much dispute about their authenticity. Hodgkin's disease and a certain type of chronic arthritis have also been described as forms of amebic infection, but these observations have not been corroborated and it may be stated with some degree of confidence that *Endamoeba histolytica* plays no etiologic rôle in connection with these diseases.

There are still certain questions to be answered in connection with the pathology of amebiasis. The reasons for the variability in the intensity of the lesions, the exact nature of the toxin secreted by the ameba, the possible effect of the toxin on organs other than those immediately involved, and the factors that lead to the development of liver abscesses are some of the problems that might well claim the attention of those interested in this important disease.

SUMMARY

The pathologic lesions produced by *Endamoeba histolytica* are the result of its mechanical invasion and

8. Engman, M. F., Jr., and Meleney, H. E.: Amebiasis Cutis, Arch. Dermat. & Syph. 24: 1-21 (July) 1931.

its toxic action on the tissues of the host. The toxic action is manifested by edema, fibrin formation, necrosis and dissolution, in varying degree according to the type of tissue involved. In the colon the mucosa is first attacked but the submucosa suffers most severely, and lesions may involve the deeper coats of the wall and result in perforation. There is very little cellular reaction unless bacteria invade the lesions. Occasionally very mild lesions are found in which amebas have invaded the mucosa and submucosa without producing definite necrosis. Partial or complete healing often takes place, and scar formation may lead to serious functional disturbances.

Liver abscess secondary to intestinal lesions is a common complication. Sometimes these abscesses are small and multiple, but more often they are large and single and situated in the right lobe. Extension of liver abscesses through the diaphragm into the lung is common, with development of a secondary lung abscess surrounded by pneumonia. Extension into the pleural and pericardial cavities also occurs.

Amebic lesions of the intestine or liver may also extend by direct contact into other adjacent organs or tissues. Amebic ulceration of the skin occasionally occurs following the drainage of visceral lesions or by direct extension through the anus from rectal ulcers. Amebic abscess of the brain is a rare though well recognized condition. The amebic etiology of other clinical conditions has not been established.

THE LABORATORY DIAGNOSIS OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

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ROCHESTER, MINN.

It has been generally agreed by experts in the subject that the absolute diagnosis of amebiasis is accomplished only when *Endamoeba histolytica* has been identified in the stool, tissues or bodily discharges. To do this clearly requires a special knowledge of protozoa in general and specific knowledge of parasitic forms. Medical schools do not as a rule train physicians to diagnose these species, and only those having special training and experience are competent to make such diagnoses.

It is my purpose in this paper to outline briefly the general phases of the laboratory diagnosis of amebiasis so that the outline may serve as a general, practical guide to the subject, and to summarize the present status of various forms of examinations.

It is obvious that the most direct method of diagnosing amebiasis is finding the parasite in the stool. If the diagnosis is for the purpose of a survey and large numbers of persons are to be examined, one will of necessity proceed along slightly different lines than if the diagnosis concerns an individual presumably suffering with symptoms of the disease. Except under rare circumstances, for purposes of a survey it will be best to examine natural fecal specimens and not those resulting from the administration of a laxative or cathartic. Usually it will be necessary for the individual to bring

the specimen to the laboratory, as facilities rarely can be provided to accommodate large numbers of persons at a convenient time. The stool should be well formed, for loose or watery stools are not suitable for such surveys unless facilities are at hand for collecting the stool at the place of examination.

The most practical container is a pasteboard, paraffined, half-pint carton; on the top should be clearly marked the person's name and address, and the date the stool was passed. If medicolegal or official matters are involved, the container should bear identifying marks, and the conditions for the passage of the stool must be such that a responsible person can vouch for the fact that the specimen belonged to the person in question.

The specimen should reach the laboratory as promptly as possible, but it is not necessary for it to be kept warm. A stale, dried or moldy specimen is unsuitable, but one forty-eight hours old is usually satisfactory if it has been kept reasonably cool; under favorable conditions a longer time may be permitted to elapse. However, the sooner after passage the examination is made, the better the results.

If the purpose of the examination of a stool is to diagnose amebiasis among persons suspected of suffering from the infection, it is best to collect the specimen near the laboratory. The ideal arrangement is to have the toilet facilities immediately adjacent to the laboratory. The most suitable container in which to collect the specimens is an ordinary porcelain chamber. Either formed or loose stools are suitable, depending on the subsequent method of handling the material and on certain other conditions to be discussed later. Urine should not be passed into the chamber.

If a patient is suffering from diarrhea, the stool probably will be unformed, but if it is not, and a liquid stool is desired, it is best to administer from 1 to 1½ ounces (30 to 50 Gm.) of magnesium sulphate. This should be given about 7 a. m. and the patient instructed to eat his normal breakfast and to report to the laboratory about 8 o'clock. Usually the specimen will be passed before 10 o'clock. If the bowels are constipated, the patient should take an enema the evening before and, if the first stool after the salts is not soft, the next specimen should be examined.

Under no condition should any but a saline or non-oily cathartic be used, and oily preparations should be avoided for at least forty-eight hours preceding the test. Barium mixtures for purposes of taking roentgenograms should be avoided for at least seventy-two hours preceding the test.

If the stool is unformed, it should be examined as soon after passage as possible, preferably at once. If some delay must occur, the stool should be kept at body temperature. In no event should more than a few hours elapse before examination and, if facilities for keeping the stool warm are lacking, the examination must be made at once.

In dealing with hospital patients it requires the closest cooperation between the nursing staff and the laboratory personnel to obtain fresh, warm stools for examination and, if specimens have to be transported to other buildings, the most satisfactory method is to place the vessel containing the specimen in a specially constructed, warm, padded box. Under certain conditions it is advisable and preferable for the examiner to take his microscope to the bedside. Too much atten-

tion cannot be given to this phase of the work, for, if accurate diagnoses are to be made on loose stools, the specimen must be fresh and kept warm until the portion to be examined is placed on the slide.

It is evident from the foregoing that it is not practical to examine any but formed stools sent in by mail and, if formed stools are sent by mail, the delay must be minimal.

The number of stools it is necessary to examine in order to detect parasitic protozoa has received much attention. It must be realized that in formed stools certain parasites will rarely or never be seen, as, for example, *Trichomonas hominis*, *Dientamoeba fragilis* and *Balantidium coli*. Hence, a protozoologic examination will not be complete unless loose stools are examined. In general, it may be said that in the formed stool cysts will be found, and that in loose stools, trophozoites, although occasionally both forms are present especially in a loose stool. As a general rule trophozoites are more difficult to identify than cysts and, unless the stools are very fresh, serious errors will result in identifying trophozoites. There is a profound difference in the demonstrability of protozoa in formed and in loose stools. From a considerable number of observations by Dobell,¹ and by Carter, Mackinnon, Matthews and Smith² and others, Dobell concluded that, if a large series of patients is examined, a single formed stool from each will reveal about a third of the infestations present in the series and, further, that a minimum of six such specimens from a given patient must be negative before it can be concluded that he is not infested with *Endamoeba histolytica*. Svensson and Linders,³ in an elaborate mathematical treatment of the subject, concluded that about ten formed specimens are necessary in order to find all or nearly all of the infestations with protozoa, and then those which do not encyst will be missed. Examination of three stools per patient will disclose about 75 per cent of the infestations in a series.

Loose stools and those following a cathartic yield very different results. Under the conditions employed by Svensson and Linders, examination of a single specimen per patient yielded about 75 per cent of the infestations due to *Endamoeba histolytica* and a correspondingly high percentage of other protozoal infestations in a series.

My own observations, conducted over a period of fifteen years and resulting from more than 60,000 examinations, indicate that under proper conditions in about 80 per cent of cases, infestations with *Endamoeba histolytica* can be detected on the first examination, that in 95 per cent the infestation can be found by examining two specimens, and that in approximately all the infestation can be detected by three such examinations.

It is obvious that a given number of stools rendered loose by catharsis will yield a higher number of positive results than an equal number of formed stools, yet the reason is by no means clear. A stool that is semiliquid or liquid is more thoroughly mixed than a formed stool and hence the loose stool offers an opportunity to obtain

a better sample. However, over and above this is the clear evidence that more individual organisms are present in the loose stool than in the formed one. There are those who deny the excystation of amebas in the bowel and claim that the greater number in the loose stool is due to the sweeping out of the trophozoites by increased peristaltic action. Such an explanation is not sufficient unless one supposes that little or no division takes place normally among the trophozoites in the bowel and that the increase of water in the bowel stimulates amitotic division, since one trophozoite gives rise to only one cyst. The most logical explanation appears to be that increased moisture due to catharsis or looseness causes excystation and, hence, the increased number of trophozoites in the loose stool as compared to the number of cysts in formed stools.

It is advisable to have the entire stool from which to make preparations for microscopic examination. If the stool is formed, material should be taken from the outside as well as from the inside and, if patches of mucus, pus or blood occur, samples of these should be examined. In liquid or loose stools, material from several portions should be selected, and mucous flakes or bloody portions should be carefully noted and materials taken from such portions. In cases of amebic carriers, no special gross changes may be evident but, in acute cases, the typical stool will have dark brown streaks of mucus; the stool will be dark brick or reddish brown owing to partly decomposed blood. Sometimes flecks of bloody mucus are present, and in these flecks amebas are most numerous. Charcot-Leyden crystals are frequently present in amebic infestations, but their presence is not necessarily proof that the patient has amebiasis. In amebic stools, as a rule, there is more blood than pus and, when the reverse is true, one should think of tuberculosis or of chronic ulcerative colitis.

EXAMINATION BY DIRECT SMEAR

Microscopic preparations are made by emulsifying a small portion of the stool in a drop of saline solution placed on a clean glass slide; a coverglass is then placed over it. A dilute solution (1:1,000) of water-soluble eosin instead of saline solution may be used. This has the advantage that live amebas and other protozoa remain unstained while all other material, except fresh pus, yeast organisms and erythrocytes, is stained a pale pink, thus making a good contrast for the protozoa. A good rule to follow is to add enough stool to the diluent so that, when the coverglass is applied, one can just read news print through the slide. The emulsion should be homogeneous, and it is better to have the film too thin than too thick. Svensson and Linders recently have reported excellent results with Quensel stain, for trophic amebas, which is applied directly to the fresh preparation. A warm stage is not necessary, but the examination should be conducted in a warm room and, if the atmosphere is chilly, a desk light shining directly on the stage of the microscope will be found advantageous. The light entering the field should be reduced so the refractile amebas stand out sharply.

The amount of the sample of feces to be examined needs some discussion. One deals here with a problem in probabilities and random sampling, although if suspicious portions in the specimen can be found from which to select material, a special problem of selective sampling also enters. The rough average weight of formed stools is about 65 Gm.; if one makes a proper

1. Dobell, Clifford: A Report on the Occurrence of Intestinal Protozoa in the Inhabitants of Britain with Special Reference to *Entamoeba histolytica*, Med. Research Council, special report series 59: 1-71, 1921.

2. Carter, H. F.; Mackinnon, Doris L.; Matthews, J. R., and Smith, A. M.: Protozoological Investigation of Cases of Dysentery Conducted at the Liverpool School of Tropical Medicine, Ann. Trop. Med. & Parasitol., 11: 27-68 (June) 1917.

3. Svensson, R., and Linders, F. J.: The Chances of Detecting Infections with Intestinal Protozoa, Acta med. Scandinav. 81: 267-324, 1934.

coverglass preparation, 22 by 22 mm., about 20 mg. of feces will be used. A rough average weight of stools following administration of salts is 170 Gm. Thus each coverglass affords about $\frac{1}{4,000}$ part of the specimen of a formed stool and about $\frac{1}{10,000}$ part of a stool following catharsis. This appears to be a small sample, but it is relatively 5,000 times more than the sample used to determine the erythrocyte count and about comparable to the sample from which urea in the blood is determined. If one examines two such preparations, although the material examined is doubled, the chance of finding a parasite is unfortunately not twice as great. Many items enter into this problem, but experience has shown clearly that one increases the chances of finding protozoa by taking samples from various parts of the stool and by making more than one coverglass preparation. If the material were homogeneous, of course, each preparation would have an equal chance of being positive, and one preparation would be as good as another. It is quite evi-

or depth of focus is greatly limited by the higher power.

In arriving at the time necessary to examine a preparation, measuring 22 by 22 mm., before deciding that it is negative one must first consider the number of fields on the slide. Allowing a 10 per cent overlap, there are about 160 fields at a magnification of 100 times. One who is experienced and is used to examining protozoa can detect the protozoa in a field if an average of nearly four seconds to the field is allowed. This means that to examine every field would require about ten minutes. If there were but one organism on the slide, it would surely be detected, since every field would be examined. Of course there is a personal factor involved as well as such factors as the evenness of the preparation and the quality of light but, since these vary so much and cannot be taken into a general calculation, computations are made on the assumption that if a protozoon should be in a field it would be seen. The accompanying table indicates the probabilities of finding a protozoon when different numbers or organisms are present in a 20 mg. sample of feces, over the ranges usually encountered. Since the area of the preparation examined and the time vary directly, one may conclude that the examination of one-fourth, one-half, or all the slide is equivalent to two and a half, five and ten minute examinations.

If there are very few organisms in the stool, such as, for example, an average of 0.1 of an organism per 20 mg. of feces, examining twice the number of preparations almost doubles the chance of finding an organism, provided the material is homogeneous. When the average number reaches a level as high as six organisms per 20 mg. of feces, however, the chances of finding an organism in a ten minute search are 0.998, or a failure of only two in 1,000 such examinations. Examining the slide only half so long or examining only half the slide still yields a chance of finding an organism in ninety-five of 100 such examinations. It is interesting to note that it would be better to spend the time on one slide rather than to divide equally the time between two slides, so far as the probability of finding an organism is concerned under the foregoing conditions, if the specimen is perfectly homogeneous as to distribution of organisms. There is another matter, however, which enters this picture and that is the fact that another sample may be better selected.

A question constantly arising is, after one has examined thoroughly a single slide or more than one slide and found no amebas, how many more slides should be examined before one may hope to encounter an organism, provided it is in the stool. These relations may be solved from the table. For example, if one examines four slides and finds no organism, one may be "sure" that there exists less than one ameba per 20 mg. of feces; if there had been as many as one per 20 mg., a single slide would have revealed the organism in 63 per cent of instances. Hence, if four preparations are negative, the concentration of protozoa in the stool is so low as to be almost impossible to detect. Similarly, if ten slides were negative, there would be less than 0.4 organism per 20 mg. of feces. Here again this presupposes a more or less equal distribution of organisms in the stool, and if special parts of the stool are selected the results will be varied. A number of interesting relations can be brought out from a study of the table, but in general one may say that if two coverglass preparations 22 by 22 mm. are examined for five minutes

Probabilities of Finding a Protozoon in a Specimen of Stool

Concentration in Stool, Organisms per		Probability of Finding a Protozoon in the Field Examined*				
		Fields Examined (.2 by 22 mm.)				
Gm.	20 Mg.	$\frac{1}{4}$ Field (2½ Min.)	$\frac{1}{2}$ Field (5 Min.)	1 Field (10 Min.)	2 Fields (20 Min.)	4 Fields (40 Min.)
5	0.1	0.025	0.049	0.095	0.181	0.370
10	0.2	0.049	0.095	0.181	0.340	0.551
15	0.3	0.072	0.159	0.279	0.451	0.699
20	0.4	0.095	0.181	0.340	0.551	0.798
25	0.5	0.118	0.221	0.394	0.622	0.865
50	1.0	0.21	0.394	0.622	0.865	0.982
100	2.0	0.34	0.622	0.865	0.982	0.9997
150	3.0	0.425	0.777	0.950	0.998	
200	4.0	0.492	0.865	0.982	0.9997	
250	5.0	0.54	0.918	0.993	0.99995	
300	6.0	0.577	0.950	0.998		
350	7.0	0.606	0.970	0.9991		
400	8.0	0.633	0.982	0.9997		
450	9.0	0.655	0.989	0.99987		
500	10.0	0.673	0.993	0.99995		

* The calculations are based on the assumption that a single complete field contains 20 mg. of the specimen and that this is a random sample of the stool in which the organisms are mixed at random. If four fields are examined and no organism is found, there is "practical certainty" that there are fewer than fifty organisms per gram in the stool, or fewer than 2.5 organisms in 20 mg. of preparation. Similarly, if two fields are examined and no organisms found, it is "certain" that there are less than 100 organisms per gram, and so forth.

dent, therefore, that one should never examine less than two preparations, because the material is not homogeneous.

After the material is selected and on the slide, the question of how long to examine the slide, with what magnification, and with what chances of finding parasites on the slide if they are actually present are all important problems.

For the initial examination of the smear, the lowest power under which protozoa can be recognized should be used, and all searching should be done with a mechanical stage. The particular organism is then identified by further study with higher powered lenses. One is not ready to begin the actual diagnosis of species until he can "spot" protozoa under the 16 mm. objective and a $\times 10$ eyepiece ($\times 100$ magnification). Herein lies the real difference in the results among many observers. Those who work entirely with lenses of higher power miss many parasites. The field of a 4 mm. lens is one-twelfth the size of a 16 mm. lens and that of the oil immersion lens is one-hundredth the size of the low power lens. In addition, the plane

each, being sure that each field is a new field, in the vast majority of cases if no organisms are found the specimen may be considered negative, provided of course the material has been properly selected and the examiner is competent. When the material is quite evidently not homogeneous and portions contain mucus and blood, a large series of slides should be made from different parts of the specimen, and spending less time on each preparation will give a higher chance of positive examinations than thoroughly examining fewer preparations, because of the introduction of the factor of selective sampling, which outweighs in such instances the mathematical possibilities indicated in the table. Doubling the time on each preparation would not pay, but examining new preparations would yield a higher degree of accuracy. It would be better, if possible, to obtain another specimen from the patient and then repeat the process of examination.

If one examined slides with the 4 mm. objective and the $\times 10$ eyepiece, the time necessary to effect the same degree of accuracy, leaving out of consideration the difficulty of focal depth, would be about two hours for each examination. Under such conditions the slides would have to be ringed with petrolatum to prevent evaporation.

The time necessary to identify any given protozoan would vary with the ability and experience of the examiner and the nature of the organism. Flagellates and ciliates can be identified at a glance, and typical amebas do not require a very long time, but borderline forms and atypical forms may require lengthy observation and a time-consuming technic before positive identification can be made. Degenerating trophozoites give the greatest trouble and should not be too certainly identified.

IDENTIFYING SPECIES

The reader must be referred to standard textbooks and monographs dealing with the characteristics of unstained protozoa for the numerous details of their minute structure. Here it will be sufficient to call attention to a few major considerations. No one can be considered competent to diagnose the presence of *Endamoeba histolytica* unless he can identify the other four species of amebas, the four common flagellates, and one ciliate. One must be expert in recognizing cysts, precysts and trophozoites.

Trophozoites.—In the motile stage, specimens of *Endamoeba histolytica* usually are from 20 to 30 microns in diameter, but small races exist and these may have an average diameter no greater than 12 microns. The size is not a differential feature, except in a general way; *Endolimax nana*, *Iodamoeba buetschlii*, and *Dientamoeba fragilis* as a rule are smaller.

Without doubt the most striking thing about *Endamoeba histolytica* is its motion. It reminds one of the flowing of thick molasses. The important thing is its directional character, which pulls the ameba out in a bandlike form. The whole protoplasm flows along, the ectoplasm being almost unseen in rapidly moving forms. As time elapses, the motion becomes less characteristic, and explosive movements occur, with glasslike ectoplasmic blobs. The motion of all other amebas is nondirectional and not nearly so rapid, although comparison cannot be made unless one examines perfectly fresh, warm stools.

The content of the cytoplasm is a second characteristic. In *Endamoeba histolytica* the protoplasm is finely

granular and almost homogeneous. If the amebas are from a patient with an acute case, or, sometimes, from a well purged carrier, erythrocytes may be seen within the cytoplasm. These probably never are ingested by other amebas, and for practical purposes one may, with assurance, call any ameba containing erythrocytes *Endamoeba histolytica*. Other species of amebas exhibit food vacuoles and ingest all manner of bacteria, fecal debris, and even other protozoa.

The third important characteristic is the nucleus. Because of its delicate nature and the opaqueness of the cytoplasm, the nucleus of *Endamoeba histolytica* is difficult to see; but by careful focusing and adjustment of the light, one frequently can make out the delicately beaded peripheral zone of chromatin, although rarely the central, delicate karyosome. The nucleus of *Endamoeba coli* is coarse, and a ring of chromatin is easily seen outlining it. Frequently, an eccentric karyosome can be distinguished.

Other Amebas.—The other three amebas are distinctly smaller than either *Endamoeba histolytica* or *Endamoeba coli* and, as a rule, quickly lose motility. They contain food vacuoles, with bacteria, and their nuclei are rarely seen in the fresh state.

One of the most confusing things in the examination of feces is the large number of objects which may be mistaken for amebas, and only great study, careful instruction and experience can protect the observer from error. The most confusing object is probably *Blastocystis*, a harmless, yeastlike organism present in many stools. Its peripheral "nuclei," however, clearly identify it. Large macrophages and even pus cells are also frequently mistaken for amebas.

Precystic Forms.—Precystic forms are almost impossible to distinguish in the fresh state, are devoid of food vacuoles and have thin, delimiting membranes. The nuclear characteristics remain constant but can be seen only in very favorable specimens.

Cysts.—The cysts of amebas are rather readily detected in the fresh material by their clear, glasslike appearance and gray-green color. The cysts of *Endamoeba histolytica* and of *Endamoeba coli* are almost always spherical, whereas those of *Endolimax nana* are usually ovoid. The cysts of *Iodamoeba buetschlii* are frequently irregular, whereas cysts of *Dientamoeba fragilis* are described by Kofoid as being spherical. The size varies with the species; cysts of *Endamoeba coli* are the largest, as a rule averaging from 12 to 18 microns, and those of *Endamoeba histolytica* average from 10 to 15 microns, with small races averaging as little as 5 microns and large races up to 20 microns. With favorable light, cigar-shaped chromidial bars may be seen in the cysts of *Endamoeba histolytica* and, occasionally, one may count the number of daughter nuclei in the cyst. In the fully developed cyst of *Endamoeba histolytica*, there are four such nuclei, whereas in that of *Endamoeba coli* there are eight. The structure of these nuclei is like that of the motile forms. Frequently the nuclei of cysts of *Endamoeba histolytica* are near four poles, suggesting two pairs, whereas in cysts of *Endamoeba coli* the nuclei are bunched in the center of the cyst.

IODINE STAINING

As an aid in diagnosing fresh amebas, compound solution of iodine (Lugol's solution) is very helpful. This may be used either to emulsify the fecal material or to run in under the coverglass while watching a

certain ameba under the lens. If one becomes skilful in the latter technic, much time can be saved, since the organisms stain brown with the iodine and are hard to distinguish from the background. Although iodine staining may be used to bring out the nucleus of the motile form, it has its greatest usefulness in identifying cysts. The nuclei can be readily counted and, under the oil immersion lens, the character of the nuclei can be seen in some cases. In addition, the mass of glycogen can be observed. In the early stages of cysts of both *Endamoeba histolytica* and *Endamoeba coli*, diffuse masses of glycogen exist, with a more abundant amount of glycogen in cysts of *Endamoeba coli*. In older cysts, it is rare to see the glycogen. Glycogen in several diffuse masses is usually seen in cysts of *Endolimax nana* whereas in cysts of *Iodamoeba buetschlii* the discrete spherical mass of glycogen is entirely diagnostic.

One must remember that while, as Lynch⁴ remarks, the key to the diagnosis of cysts lies in the fact that those of *Endamoeba histolytica* have four nuclei and those of *Endamoeba coli* eight, at one stage every cyst of *Endamoeba coli* has four nuclei and every mature cyst of *Endolimax nana* four as well; in addition, sometimes, cysts of *Endamoeba histolytica* have more than four nuclei. It is the structure of the nucleus in the cyst that is finally determinative and not the number of nuclei alone. The fine, peripheral, beaded chromatin, and central, minute karyosome of the cyst of *Endamoeba histolytica*, as contrasted with the coarse band of chromatin, or large, heavy blobs, and heavy, eccentric karyosome, with granules between it and the periphery of the nucleus, in that of *Endamoeba coli*, are the true criteria for identification.

PERMANENT STAINED PREPARATIONS

In all cases of doubt, or when evidence is to be kept, permanent, stained slides should be made. One may, in any large routine series, expect to correct about 10 per cent of diagnoses of *Endamoeba histolytica* by properly prepared, stained slides. However, by carefully choosing the specimens for such checking, one can obtain satisfactory results by staining only a relatively few slides. As a rule, it is harder to find amebas on these slides than in fresh smears, and the labor of preparation and searching greatly discourages their general use.

Many methods have been proposed and many modifications offered, but the one most generally used and most satisfactory is iron hematoxylin staining following fixation in Schaudinn's fluid. The following brief outline gives a satisfactory technic:

1. Make a thin smear on a very clean slide and, when the edges begin to dry and while the preparation is still moist, plunge the slide into Schaudinn's fixative.
2. Fix thirty minutes.
3. Wash in running water for thirty minutes to one hour.
4. Treat slide with dilute solution of iodine.
5. Rinse.
6. Pass successively through alcohol solutions, 50 per cent, 70 per cent and 95 per cent, respectively, and harden in 95 per cent alcohol for one hour.
7. Return to water for five minutes.
8. Mordant in 2 per cent iron alum, twenty minutes.
9. Wash with six changes of water.
10. Stain in 0.5 per cent hematoxylin, fifteen minutes.

4. Lynch, K. M.: Protozoan Parasitism of the Alimentary Tract, New York, Macmillan Company, 1930.

11. Wash and decolorize in 2 per cent iron alum until nuclear detail is clear (under the microscope).

12. Wash thoroughly and to the last rinse water add a drop of ammonium hydroxide.

13. Dehydrate, using acetone in which a small amount of eosin has been added instead of absolute alcohol.

14. Place in xylene and mount in balsam. If the proper amount of eosin is used, it will greatly facilitate the identification of amebas which, not taking the eosin as readily as the background, stand out sharply against it.

By this method of staining the diagnostic details of all species of amebas are clearly revealed, and a final decision as to diagnosis may be reached when the organisms are in either the motile or the cystic stage. However, it is important to stress the point that for motile forms the slides must be fixed before the amebas have time to degenerate. Further, the diagnosis must rest, as in examining fresh material, on observing many individuals and sizing up the whole situation, it being remembered that frequently patients may harbor two or more species of amebas.

CONCENTRATION METHOD

In examining formed stools for cysts, one may advantageously resort to a concentration method. A satisfactory method is to emulsify about 2 Gm. of feces in 15 cc. of physiologic solution of sodium chloride in a conical centrifuge tube. The material should be spun for one minute at a moderate rate and the sediment in the bottom of the tube examined. If coarse particles are present in the emulsion, they should be strained out through gauze before centrifugation. One may examine the sediment either unstained, stained with iodine, or fixed; iron hematoxylin stained slides may be prepared as previously outlined.

EXAMINATION OF MATERIAL OTHER THAN FECES

Under certain conditions it will be found advantageous to examine material obtained directly from ulcers in the rectum and colon by means of the proctoscope. One should have a wire curet available and scrape out the crater of an ulcer, placing the material on a slide and applying a coverglass. If the ulcer is amebic, one will observe many organisms of *Endamoeba histolytica* in the mucus and in the bloody exudate; these are in every respect typical and usually contain numerous erythrocytes. Excellent permanent preparations may be made from such material.

Tissue for diagnosis of amebiasis may be conveniently obtained through the proctoscope, but this is rarely indicated. One may be called on to diagnose a surgical specimen or material at necropsy. Here again the demonstration of typical amebas is essential for the positive diagnosis. The type of ulcer is more or less characteristic, with its overhanging edges and undermined deep excavation. However, these characters are not sufficient basis on which to make a diagnosis, and very early lesions do not show such characteristics.

The proper fixative is Schaudinn's fluid and, after allowing from two to six hours for fixation, the material should be handled in the usual way for paraffin sections. Serial sections are not often necessary, but in any event many sections should be made. At least some should be stained with iron hematoxylin. The usual hematoxylin-eosin stain following fixation in formaldehyde is worthless and leads to serious errors.

Recently, Meriwether⁵ has used Best's stain on formaldehyde-fixed tissue with striking success, although the details of the nuclei are not so good as with iron hematoxylin staining.

If tissue is to be examined from a hepatic abscess, a part of the wall should be fixed and sectioned; the amebas will lie in the so-called intermediary zone between the pus and the injured hepatic parenchyma.

Since amebas have been found from other parts of the body besides the bowel, one may have material other than feces to examine. The amebas found in discharges from sinuses and in sputum are vegetative forms and should be sought by examining material fresh from the source. In examining pus from a suspected amebic, hepatic abscess, it should be remembered that the organisms are frequently not in the pus first aspirated from the abscess but are embedded in the more fixed and unresolved margins of the lesion, and they can be obtained only by lightly scraping the walls of the abscess. After drainage has been established, the organisms appear in the pus and can readily be demonstrated in wet smear preparations. One should remember that large pus cells and other reaction cells can resemble amebas and that rigid criteria must be applied to each object under suspicion before a positive diagnosis is made.

CULTURAL METHODS

St. John⁶ was probably the first to report making a diagnosis of amebiasis by a cultural method when direct examination of the stool gave negative results. Since then, many have reported the value of such a method. Some workers have reported finding more positive specimens by this method than by smears; for example, Craig and St. John,⁷ Bundesen and others,⁸ and Tsuchiya,⁹ who found almost twice as many cases of *Endamoeba histolytica* by the cultural method as by that of direct smear. Others, such as Magath and Ward,¹⁰ and Miller,¹¹ have reported the reverse. Still another group of investigators have reported other relations. Thus Johns and Tripoli¹² reported almost precisely checking cultures and smears in a series of cases; seven months later, however, Johns¹³ reported that of fifty cases of *Endamoeba histolytica*, in forty-nine the direct smear was positive and in only thirty-nine was the culture positive. In only one case was diagnosis made by culture and not by direct smear. Svensson and Linders diagnosed infestations of *Endamoeba histolytica* in 94 per cent of their cases by culturing a single stool following the administration of salts. They further reported growths in 84 per cent of the cases of infestation with *Endamoeba coli*, in 51 per cent of those

of *Endolimax nana*, in 60 per cent of those of *Iodamoeba buetschlii*, and in all of those of *Dientamoeba fragilis*.

Poindexter¹⁴ concluded "the cultural method as described to be superior in the interests of accurate diagnosis, because in doubtful cases *Endamoeba histolytica* may be more easily differentiated from *Endamoeba coli* in the vegetative stage than in the encysted stage." However, he did not comment on the fact that in his study he identified *Endamoeba histolytica* sixty-six times in 564 specimens by direct smear, and only fifty-three of these grew by his cultural methods, a loss in the cultures of more than 20 per cent.

A variety of mediums have been used, including such simple mixtures as salt solution and serum. A medium favored by many is a slant of liver infusion agar to which is added, as an overlaying fluid, a mixture of one part serum to seven parts of salt or Locke's solution. To this is then added a small loopful of sterile, rice starch. An egg base may be substituted for the liver-agar and egg-white mixtures in salt solution for the serum mixture. Why some workers fail to obtain uniform growth is not clear, but it is suggested that the quality of the starch may be the crux of the situation and that this question should be further investigated. The cultures reported by Bundesen and others were made from formed stools, but most other investigators have stressed the necessity for a very fresh, warm stool. Growth appears in from twenty-four to forty-eight hours. Overgrowth of harmful bacteria and *Blastocystis* frequently spoils the cultures.

The identification of the amebas in culture is by no means easy, nor have rigid criteria for their identification been as yet set up by any one. How Svensson and Linders identified so many different species is not indicated by them, and if they were correct it suggests that others have confused *Endamoeba histolytica* and *Dientamoeba fragilis* at least, if not other forms. St. John apparently depended on the motility and shape of the moving ameba, but Martin¹⁵ pointed out the marked similarity between cultured organisms of *Endamoeba histolytica* and the trophozoites of *Endamoeba coli*. Some apparently consider any ameba growing in culture as *Endamoeba histolytica*, believing that other forms rarely if ever grow. If Svensson and Linders are correct in their results, such is not the case and, if this is the sole criterion, numerous errors are likely to occur in such diagnoses. One should also remember that free-living amebas may appear in the cultures and that the utmost caution and greatest experience is necessary before one may safely identify amebas in culture; nevertheless, it is a method well worthy of utilizing.

It is evident to any one who has given consideration to the comparison of smear and culture methods that the skill and persistence of the microscopist will greatly determine how many more cultures than smears are found positive. In at least one laboratory it was evident that experience with the low power lenses resulted in finding more by direct smear than by culture when, previously, using the higher power lenses had resulted in the discovery of nearly twice as many infestations by culture as by smear.

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6. St. John, J. H.: Practical Value of Examination for *Endamoeba histolytica* by Culture, J. A. M. A. 86: 1272 (April 24) 1926.

7. Craig, C. F., and St. John, J. H.: The Value of Cultural Methods in Surveys for Parasitic Amebae of Man, Am. J. Trop. Med. 7: 39-48 (Jan.) 1927.

8. Bundesen, H. N.; Rawlings, I. D., and Fishbein, W. I.: The Health Hazard of Amebic Dysentery: Report of an Outbreak, J. A. M. A. 101: 1636-1638 (Nov. 18) 1933.

9. Tsuchiya, H.: Further Studies on the Cultivation of *Endamoeba histolytica* and a Complement Fixation Test for Amebiasis, J. Lab. & Clin. Med. 19: 495-504 (Feb.) 1934.

10. Magath, T. B., and Ward, Charlotte B.: Laboratory Methods of Diagnosing Amebiasis, Am. J. Hyg. 8: 840-857 (Oct.) 1928.

11. Miller, M. W.: Difficulty in Cultivation of *Endamoeba histolytica*, Proc. Soc. Exper. Biol. & Med. 25: 762-763 (May) 1928.

12. Johns, F. M., and Tripoli, C. J.: The Incidence of Infection with *Endamoeba histolytica* in Louisiana as Determined by Comparative Microscopic and Cultural Methods, New Orleans M. & S. J. 82: 224-227 (Oct.) 1929.

13. Johns, F. M.: Cultural Methods and Direct Microscopic Examination in the Diagnosis of Pathogenic Amebas, South. M. J. 23: 236-238 (March) 1930.

14. Poindexter, H. A.: The Puerto Rican Strain of *Endamoeba histolytica*, Puerto Rico J. Pub. Health & Trop. Med. 9: 31-36 (Sept.) 1933.

15. Martin, D. L.: The Lesions in Experimental Amebic Dysentery, Arch. Path. 10: 349-385 (Sept.), 531-579 (Oct.) 1930.

COMPLEMENT FIXATION

The most recent method of diagnosing amebiasis is by complement fixation, described by Craig.¹⁶ The method at the present time has been limited to a few investigators and cannot be considered ready for routine application. The antigen is made by growing large numbers of amebas in cultures and making an alcoholic extract of them. After proper titration, the test is conducted along the lines of routine complement fixation tests. Craig used his antigen undiluted, and his best antigens in antigenic amounts approached closely their anticomplementary unit. This, of course, gives a small working distance, so to speak, and requires great care in setting up the test and caution in its interpretation. Tsuchiya asserted that he had made a better antigen and employed a fourth of the anticomplementary unit of a 1:100 dilution. He concluded that a negative test was significant and valuable in ruling out amebiasis, but while he stated that "a positive serologic test also seems to be quite specific in demonstrating the presence of *Endamoeba histolytica*," his protocols do not warrant such a conclusion. Of seventeen positive tests, four were in cases in which other laboratory tests for amebiasis were negative and, clinically, the diagnosis of ulcerative colitis had been made. There was one patient with amebas in the stools and a negative complement fixation test; hence, the check was actually only thirteen of eighteen patients. The error on the positive side alone was 23 per cent.

The test has great theoretical interest and warrants much more study but is not yet ready to become a routine addition to the clinical laboratory and must, for a while at least, remain in the hands of the most experienced.

SUMMARY AND CONCLUSIONS

It is evident that the laboratory diagnosis of amebiasis requires special knowledge and skill and should not be attempted except by those adequately trained and with a large measure of experience. The problems involved are quite comparable to those involving diagnosis of tissue. The diagnosis of amebiasis should be made only by those specially qualified.

The direct smear method is adequate in the hands of those properly trained in almost all cases but, if doubt exists, one should resort to fixed and stained preparations. Whether one uses formed stools or those resulting from catharsis will depend on the individual problem. Whichever is used, the limitations of the particular method must be clearly recognized.

Culture methods should be used in laboratories qualified to identify amebas, but, for the usual routine, cultures are not necessary, provided the examiner thoroughly knows how to make proper direct examinations. The cultural characteristics of various amebas growing in these cultures have yet to be clearly described, and a series of animal experiments to determine the types in a large series is greatly needed.

Until the complement fixation method is simplified, it is not suitable for routine tests.

Seventy-five per cent of infestations with *Endamoeba histolytica* can be found by examining a single stool following catharsis with magnesium sulphate, whereas only a third of the infestations will be found by examining a single formed stool. It will require from eight to ten formed stools to establish the same number of infestations as three stools following catharsis.

THE TREATMENT OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

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It is my purpose to discuss the treatment of amebiasis in strictly practical terms as condensed from soundly supported scientific evidence and personal experience. No attempt will be made, therefore, to review the history or describe all the methods that have been advised. Since the introduction of ipecac into Europe in 1672, therapy has been influenced by three tendencies. In the first place, ideas of etiology and methods of diagnosis have improved. In the second place, there was a tendency to use complex formulas and substances found useful in other diseases the causes of which were biologically related, as in the case of quinine. Finally there has been the tendency to seek active principles, simple preparations and the exact methods of chemotherapeutic study, with attention to the relation between chemical structure and physiologic action.

MAJOR ANTIAMEBIC DRUGS

Leake¹ states that "few of the agents exploited for use in this condition have sufficient experimental background to justify even controlled clinical trial in human beings." He² lays down the dictum that "physicians are not justified in using new medicinals in their daily practice until . . . favorable reports have been published from trustworthy chemical, pharmacologic and clinical sources." With these criteria in view, I shall briefly summarize the chief drugs that have received widespread use in amebiasis. Leake¹ has made a pharmacologic classification of the major drugs that have been used in the treatment of amebiasis. He divides them into four groups: (I) alkaloids such as in ipecac and kurchi (cinchona might have been added), (II) organic arsenicals, such as acetarsone ("stovarsol") and carbarsone, (III) oxyquinoline derivatives such as chiniofon ("yatren") and vioform and (IV) miscellaneous antiseptics and astringents such as the alkyl resorcinols and bismuth compounds.

GROUP I

In group I, I will consider ipecac and its chief alkaloid, emetine. Quinine has been highly recommended but has not withstood the test of time. Kurchi preparations are less effective in my experience, although Acton and Chopra³ in Calcutta consider them useful. Ipecac powder plays an important part in the history of amebic therapy. Its use today is archaic and completely ignores the tendencies in therapeutics already noted. Its efficacy depended entirely on its content of emetine, which has great advantages in accuracy, ease of administration and effectiveness. The use of ipecac powder at present is therefore to be condemned entirely.

Emetine was first isolated and suggested for use in amebic dysentery by Vedder⁴ in the Philippines in

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1. Leake, C. D.: Chemotherapy of Amebiasis, J. A. M. A. 98:195 (Jan. 16) 1932.
2. Leake, C. D.: Pharmacologic Evaluation of New Drugs, J. A. M. A. 93:1632 (Nov. 23) 1929.
3. Acton, H. W., and Chopra, R. N.: Kurchi Bismuthous Iodide—Its Value in Treatment of Chronic Amebic Infections of the Bowels, Indian M. Gaz. 64:481 (Sept.) 1929.
4. Vedder, E. B.: An Experimental Study of the Action of Ipecacuanha on Amoebs, Far Eastern A. Trop. Med., Tr. 2d Biennial Congress, Hongkong, 1912, p. 87.

16. Craig, C. F.: The Technic and Results of a Complement Fixation Test for the Diagnosis of Infections with *Endamoeba histolytica*, Am. J. Trop. Med. 9:277-296 (Sept.) 1929.

1912. The following year, Rogers⁵ in Calcutta reported its clinical use in acute cases with remarkable and very quick relief of symptoms but, as later shown, amebas persisted after symptoms subsided. These results were soon confirmed by a host of observers. I will now summarize the toxic dangers of emetine and evaluate its position in present-day treatment.

It was early noted clinically that excessive use of emetine was followed by accentuation or recurrence of diarrhea, sometimes attended by nausea, by peripheral palsy and edema, and by weakness and irregularity of the heart, and that locally it was irritant to the tissues. Few adequate reports on human toxicity have been made. Leake¹ summarizes the published data to 1932 on the quantitative toxicity of emetine hydrochloride, with the average figures agreeing closely with the results of Anderson and Leake⁶ in cats and rabbits. Similar observations were made in the case of emetine bismuth iodide, emetine antimony iodide, "auremetine," and iso-amylcephaline phosphate. It seems safe to conclude that the effective dosage of all preparations containing emetine overlaps seriously the toxic range of the alkaloid. Dobell and Bishop⁷ proved this in monkey amebiasis, in which a dosage sufficient to be effective was attended by toxic symptoms in 80 per cent of the animals treated. Levy and Rowntree⁸ reported a fatality in man at a dosage of about 25 mg per kilogram. This range was the same as that reported by Leake¹ as lethal in experimental laboratory animals and by Leibly⁹ in a human case of fatal emetine poisoning. Leake¹ found a striking uniformity of lethal dosage in animals, regardless of the method of administration, except by vein, when it is many times as toxic, and regardless of whether given in a single dose or in divided doses over a relatively long time. He says: "These data indicate that emetine is detoxified or eliminated very slowly indeed, and, in conjunction with experimental and clinical observations, they point to its 'fixation' in some tissue of relatively the same functional significance in all genera, with perhaps quantitative morphologic damage, which, if extensive enough after a certain dosage, leads to such impairment of function that death may follow."

Chopra, Ghosh and De¹⁰ in 1924 concluded that emetine was a general protoplasmic poison with selective action on certain organs in the rabbit. They found that one of the earliest tissues to be affected is the parenchyma of the heart muscle, the changes being (a) cloudy swelling of muscle fibers with disappearance of transverse striations, (b) shrinkage of muscle fibers and (c) atrophy of muscle fibers and their replacement by connective tissue. They state that the occurrence of petechial hemorrhages at the site of emetine injection indicates local damage to the endothelium of the capillaries. The liver and kidneys are affected later, showing

chiefly congestion and fatty infiltration of the parenchyma. Young and Tudhope¹¹ report similar observations and in addition substantiate their claim that emetine experimentally does not affect nerves or nerve sheaths but does cause a myositis by action on muscle fiber protoplasm directly leading to muscular palsy.

Rinehart and Anderson¹² at the University of California have confirmed and extended these observations, showing that lethal or sublethal doses of emetine caused severe injury to the heart muscle in rabbits. Morphologic changes appeared after an interval of time. In animals that survived three days or longer, necrosis was seen in some fibers and degenerative swelling in the remainder. "This resulted in a rarefaction of the heart muscle and in focal proliferations of the interstitial tissue in response to the necrotic muscle fibers. A more chronic intoxication produced with divided lethal doses of emetine hydrochloride resulted in small cellular scars in the myocardium centered about necrotic muscle fibers."

It may be concluded, therefore, that emetine is unsatisfactory and dangerous for routine use for three reasons: first, because effective dosage lies within its toxic range,⁶ second, because of proved damage to the heart muscle in dosages little above therapeutic amounts, with the danger that smaller dosage may mean only a smaller damage instead of freedom from damage, and the added danger of permanent impairment due to the scarring process evoked in cardiac muscle; and, third, because of the low effectiveness of this drug in clinically safe amounts against amebas, even though it is an excellent adjuvant for relief of acute symptoms. The need for cautious administration being recognized, emetine has still an important therapeutic place in liver damage, in malignant or severe acute dysentery and in surgical amebic lesions, in which its use has two decided advantages: (a) It is much less toxic for the liver than other recommended drugs, and (b) it gives quick symptomatic control, preparing the way for more curative drugs. This opinion is supported by Craig,¹³ who says that emetine is of comparatively little value in actually curing amebiasis although most efficient in curing symptoms. Cort,¹⁴ on the basis of wide experience in Siam, believes that emetine is more specific for hepatic than for intestinal amebiasis. Johns¹⁵ considers that emetine and its compounds have at times certain disadvantages "either from the standpoint of difficulty in administration, toxicity, or ineffectiveness in establishing a permanent cure." Manson-Bahr¹⁶ believes that emetine, uncombined with other treatment, is insufficient to eradicate amebic infection, although of great value in acute stages.

GROUP II

Leake's classification of group II includes organic arsenicals. The arsphenamine type of arsenical is not considered here because of the difficulty of administration, toxicity, expense, unproved effectiveness and availability of more satisfactory arsenicals. Out of a considerable number of other arsenicals that have been

5 Rogers, Leonard. The Rapid Cure of Amoebic Dysentery and Hepatitis by Hypodermic Injections of Soluble Salts of Emetine, *Brit M J* 1:1424 (June 22) 1912, Further Experience of the Specific Curative Action in Amoebic Disease of Hypodermic Injection of Soluble Salts of Emetine, *ibid* 2:405 (Aug 24) 1912, Amoebic Colitis in India, Prevalence, Diagnosis and Emetine Cure, *Lancet* 2:1062 (Oct 19) 1912, Sixty Cases of Amoebic Dysentery Illustrating the Treatment by Ipecacuanha and Emetine, *Respectively*, *Indian M Gaz* 47:421, (Nov) 1912.

6 Anderson, H H, and Leake, C D. The Oral Toxicity of Emetine Hydrochloride and Certain Related Compounds in Rabbits and Cats, *Am J Trop Med* 10:249 (July) 1930.

7 Dobell, C, and Bishop, A. Action of Emetine on Natural Amoebic Infections in Macaques, *Parasitology* 21:446, 1929.

8 Levy, R L, and Rowntree, L G. On the Toxicity of Various Commercial Preparations of Emetine Hydrochloride, *J Pharmacol & Exper Therap* 8:120, 1916.

9 Leibly, F J. Fatal Emetine Poisoning Due to Cumulative Action, *Am J M Sc* 179:834 (June) 1930.

10 Chopra, R N, Ghosh, B N, and De, P. Toxicity of Emetine, *Indian M Gaz* 59:338 (July) 1924.

11 Young, W A, and Tudhope, G R. The Pathology of Prolonged Tr Roy Soc. Trop Med & Hyg 20:93-99.

12 Rinehart, J, and Anderson, H H. Effect of Emetine on Cardiac Muscle, *Arch Path* 11:546 (April) 1931.

13 Craig, C F. Symptomatology, Diagnosis and Treatment of Carriers of *E. Histolytica*, *J A M A* 90:1345 (April 28) 1928.

14 Cort, E C. Amebiasis of the Liver, *J A M A* 90:2005 (June 23) 1928.

15 Johns, F M. Amebiasis with Special Reference to Its Treatment with Iodoxy Quinolin Sulphonic Acid, *N Clin North America* 13:1307 (March) 1929.

16 Manson-Bahr, P H. Recent Developments in Treatment of Amebiasis, *Trop Dis Bull* 22:259, 1925.

recommended or suggested on theoretical grounds, I shall note only two, acetarsone and carbarsone.

Acetarsone ("stovarsol") was probably the first organic arsenical administered by mouth as an amebicide. This report was by Marchoux¹⁷ in 1923, after this drug had been recommended for oral use in syphilis by Fournau in 1921. Acetarsone was introduced into this country in 1924 and has been widely used. However, it is too toxic¹⁸ in doses that have reasonable clinical effectiveness, and arsenic poisoning has followed its use in many cases.¹⁹

Carbarsone is a name of convenience for 4-carbamino-phenyl arsonic acid, introduced in 1932 by Reed, Anderson, David and Leake²⁰ at the University of California. It is odorless, tasteless, and highly insoluble in water but soluble in alkaline aqueous solutions. Given by mouth, it is absorbed and excreted at about the same rate as acetarsone.²¹ "Experimentally it is less toxic than acetarsone but more amebicidal, its 'therapeutic index' being about eight times as favorable as acetarsone."²² In clinical use in my service carbarsone has shown no evidence of injury to the optic tract in about 400 patients who have received it to date. "As with arsenicals generally, it is contraindicated in the presence of kidney or liver disease and hence should not be used in amebic hepatitis."²⁰ In therapeutic dosage no toxic symptoms or signs were noted in extensive and well controlled animal experiments. A total dosage of 75 mg. per kilogram of body weight can be divided into two or three doses each day for a period of at least ten days. Carbarsone has been shown to have a high therapeutic efficiency, low toxicity, availability for oral administration and low cost. These desiderata make it, in my opinion, one of the most valuable of the anti-amebic drugs.

GROUP III

The oxyquinoline derivatives offer two drugs for special consideration, chiniofon ("yatren") and vioform.

Chiniofon was introduced as a treatment for amebiasis by Mühlens and Menk²³ in 1921. It has received excellent reports from O'Connor and Hulse,²⁴ for example. Anderson, David and Koch,²⁵ however, found chiniofon not so effective experimentally as the higher halogenated oxyquinoline, vioform. O'Connor and Hulse²⁴ found that liver abscess seemed not to be affected by chiniofon orally and believed that the drug had a direct action on amebas in the intestinal tract only. The cost is considerably higher than that for other equally or more effective drugs. Craig¹² believes that chiniofon therapy requires bed rest, administration both by mouth and by rectum, and a careful diet. Its low amebicidal activity makes a large dosage necessary, about 200

0.25 Gm. pills by mouth being an average course. Two fatal cases with evidence of liver damage have been reported following the use of "yatren" intravenously in actinomycosis.²⁶ Apparently even small doses are toxic, given in this manner.

Vioform (iodochloroxyquinoline) was used on theoretical grounds in amebiasis of macaque monkeys experimentally by Anderson and Koch.²⁷ In monkey amebiasis, they report vioform to be the most satisfactory of all the common amebicides, in completely and promptly eliminating *E. histolytica*. Toxicity studies in rabbits showed no tissue damage in therapeutic dosage. In lethal amounts liver damage was found, and the drug therefore should not be used in the presence of impaired liver function. Vioform has been used in human cases of amebiasis by David, Johnstone, Reed and Leake²⁸ with results in their hands superior to chiniofon. Anderson and Reed²⁹ reported sixty cases of amebiasis treated with vioform orally. Three of these showed evidence of gastrointestinal irritation. Vioform is insoluble, but the soluble hydrochloride is irritating to mucous membranes in a concentration of 1:500. Rectal use is not recommended on this account. In the presence of gastric hyperacidity it may be that enteric coated capsules will prevent irritation. Vioform seems more satisfactory than chiniofon in amebicidal activity, in the need of a smaller dosage at less cost and in requiring neither bed rest nor rectal administration. It seems less satisfactory than carbarsone, in that it appears more apt to cause gastrointestinal irritation, seems somewhat less effective in active dysentery, and lacks the definite tonic and stimulating action of carbarsone. As an adjunct or in alternation with carbarsone it seems to fill an important place in amebic therapy.

GROUP IV

In group IV I shall consider bismuth compounds, certain alkyl resorcinols, and some astringents.

Bismuth subnitrate in massive doses has been used and recommended by many authors, notably by James and Deeks.³⁰ Anderson and Reed point out that reports of nitrite poisoning are not uncommon after ingestion of sufficient quantities of bismuth subnitrate to control diarrhea. Fatal results have been reported both in infants and in adults. Roe,³¹ in a very complete review of the subject, says: "Since most individuals can tolerate huge doses without cyanosis and since methemoglobinemia is most likely to occur in patients who have intestinal putrefaction, nitrite poisoning and methemoglobinemia appear to be dependent on the presence of certain putrefactive bacteria in the intestine, or on an idiosyncrasy to certain drugs (Sollmann, van den Bergh and Beck). Large doses of nitrates taken by mouth may produce collapse, but rectal injections of smaller doses may cause nitrite poisoning much more quickly than that from oral administration. Children

17. Marchoux, E.: Le stovarsol guérit rapidement la dysenterie amibienne, *Bull. Soc. path. exot.* 16: 79, 325, 1923.

18. Anderson, H. H., and Leake, C. D.: Toxicity of Acetarsone, *Proc. Soc. Exper. Biol. & Med.* 27: 267 (Dec.) 1930.

19. Bender, W. L.: Stovarsol Poisoning, *Am. J. M. Sc.* 174: 819 (Dec.) 1927.

20. Reed, A. C.; Anderson, H. H.; David, N. A., and Leake, C. D.: Carbarsone in the Treatment of Amebiasis, *J. A. M. A.* 98: 189 (Jan. 16) 1932.

21. Chen, M. Y.; Anderson, H. H., and Leake, C. D.: Rate of Urinary Excretion After Giving Acetarsone and Carbarsone by Mouth, *Proc. Soc. Exper. Biol. & Med.* 28: 145 (Nov.) 1930.

22. Leake, C. D.; Koch, D. A., and Anderson, H. H.: Effect on Biologic Activity of Substituting Sulphur for Oxygen in an Organic Arsenical Compound, *Proc. Soc. Exper. Biol. & Med.* 27: 714 (Oct.) 1930.

23. Mühlens, P., and Menk, W.: Chronische Amöbenruhr mit Yatren, 802 (June 30) 1921. Mühlens, P.; 5 mit "Yatren 105," *Arch. f. Schiffsu.* 1

24. O'Connor, F. W., and Hulse, C.: Anayodin, XIX Ann. Rep. United Fruit Company, Med. Dept., 1930. Mackie, T. T.: Iodochloroxyquinoline Sulphonate (Anayodin) in Treatment of Intestinal Amebiasis, *ibid.*

25. Anderson, H. H.; David, N. A., and Koch, D. A.: Effects of the Halogenation of Oxyquinoline on Biological Activity, *Proc. Soc. Exper. Biol. & Med.* 28: 484 (Feb.) 1931.

26. Maxon, Hans: Zwei Fälle von Leberschädigung nach Yatren Behandlung, *Ztschr. f. Chir.* 60: 879 (April 15) 1933.

27. Anderson, H. H., and Koch, D. A.: Iodochloroxyquinoline (Vioform N. N. R.) as an Amebicide in Macaques, *Proc. Soc. Exper. Biol. & Med.* 28: 838 (May) 1931.

28. David, N. A.; Johnstone, H. G.; Reed, A. C., and Leake, C. D.: The Treatment of Amebiasis with Iodochloroxyquinoline (Vioform N. N. R.), *J. A. M. A.* 100: 1658 (May 27) 1933.

29. Anderson, H. H., and Reed, A. C.: Untoward Effects of Anti-amebic Drugs, *Am. J. Trop. Med.* 14: 269 (May) 1934.

30. James, W. M., and Deeks, W. E.: Etiology, Symptomatology and Treatment of Intestinal Amebiasis, *Proc. Internat. Conf. Health Problems in Tropical America*, (United Fruit Company) 1924, p. 271; *Am. J. Trop. Med.* 5: 97 (March) 1925. James, W. M.: Treatment of Amebiasis, *J. A. M. A.* 102: 1175 (April 7) 1934.

31. Roe, H. E.: Methemoglobinemia Following the Administration of Bismuth Subnitrate: Report of Fatal Case, *J. A. M. A.* 101: 352 (July 29) 1933.

appear to be more susceptible than adults to nitrite poisoning." This conclusion is important with reference to treatment of intestinal amebiasis, in which a bacterial colitis is so prone to coexist. Bismuth subcarbonate is equally effective on pharmacologic grounds and, in my experience, avoids the definite hazards of the subnitrate. I have had no untoward effects from bismuth subcarbonate and have found it to be of definite value as an adjunct in treatment.

Of the alkyl resorcinols, heptylresorcinol was suggested in antiambic therapy by Faust.³² I was unable to confirm his results. The toxicity of this group seems to increase with increase in size of the alkyl radical.³³ Of the three readily available drugs of this series, the lowest alkyl radical, hexylresorcinol, would seem most worthy of further study. So far, results of its use in amebiasis do not seem to justify recommending it. Other astringents, such as tannates, are of definite symptomatic usefulness.

In general, the criteria of satisfactory therapy in amebiasis may be summarized as follows:²⁰ Drugs used should be clinically nontoxic, should be highly curative without adjuvants, should be available for oral administration, should interfere little, if at all, with the usual activities of the patient, and should be of low cost. These principles must receive full weight in outlining a scheme of treatment. The physician is justified only and strictly in using those drugs which most nearly fulfil these requirements.

PRACTICAL TREATMENT

In outlining an actual program of treatment, James's³⁴ dictum must be kept in mind. "Whether it is always a tissue parasite, or whether it can live harmlessly for long intervals in the lumen of the bowel, *histolytica* is invariably an enemy of its host, actively or potentially, and should be treated as such whenever and wherever found." It is assumed that spontaneous cure does not take place and that the one portal of entry is through the colon. The clinical rule should be to treat effectively every diagnosed case of amebiasis. The disease is transferred by cysts alone. Cysts must be swallowed to cause infection. Food, drink, fingers and utensils therefore offer the only means of transfer. Isolation of the patient is unnecessary, but care in personal hygiene, avoidance of fecal contamination, and clean food and drink are essential.

The scheme of treatment must be based on the colonic infection. In general, seven types of clinical picture must be considered from the standpoint of treatment to be selected: (1) dysentery with acute, malignant onset and course; (2) dysentery or diarrhea with subacute onset and course; (3) chronic amebiasis with recurring, inconstant or absent symptoms; (4) extra-intestinal abscess or ulceration; (5) complications of other diseases or of a surgical nature, and (6) sequels such as sprue, chronic simple colitis, chronic ulcerative colitis, cancer, chronic infections such as tuberculosis, and mechanical defects such as stricture. To complete the classification, a final group must be added, (7) comprising toxic results of drugs used.

1. Dysentery with acute, malignant onset and course requires immediate diagnosis and unusually prompt

treatment. Anderson and I have had excellent results with the rectal use of carbarsone,³⁵ which allows a relatively high concentration of the drug to be applied directly to the diseased area. A cleansing soda enema is followed in one hour by instillation into the rectum of 200 cc. of warm 2 per cent sodium bicarbonate solution containing 1 per cent carbarsone (supplied by Eli Lilly & Co. in 2 Gm. vials). Usually a quick sedative effect is procured by the previous administration of sodium amytal (0.2 Gm.) orally to insure sleep and facilitate retention of the enema over night. If the enema is expelled before morning, the treatment is repeated until at least five enemas have been retained over night. Prompt symptomatic relief is the rule.

If such a course is not possible, or as an alternative and less desirable treatment, emetine hydrochloride may be given hypodermically (never intravenously) in a single daily dose of 0.065 Gm. (1 grain) to a total of six doses. At the most, these six one grain doses may be followed by six doses of one-half grain (0.032 Gm.) each. The ultimate total must never exceed 10 mg. per kilogram of body weight, or 0.65 Gm. (10 grains) for a man of average weight. Other forms of emetine, and especially ipecac, are not advised.

After the initial course indicated, the treatment should proceed as described later for chronic amebiasis.

In this clinical group, often attended by fever and prostration, the patient should be in bed, on a diet of boiled milk, white bread, stale or toasted, soft cooked eggs, gelatins, tea and white rice. Feedings should be at intervals of two and one-half hours. Adequate rest should be secured by the use of sodium amytal or sodium pentobarbital by mouth or hypodermically. Symptomatically for severe colic, excessive frequency of bowel movements and bleeding, the physician may administer equal parts of either dicalcium phosphate or tribasic calcium phosphate and bismuth subcarbonate in 4 Gm. doses from three to ten times daily. Rarely atropine sulphate ($\frac{1}{150}$ grain, or 0.0003 Gm.) may be necessary hypodermically to relieve colonic spasm.

2. Amebic dysentery or diarrhea with subacute onset and course is the ordinary type. Here the need for bed rest is proportioned to the severity of bowel disturbance. It is desirable to order the same diet as given under type 1 until symptoms are controlled, after which the dietary regimen should be the same as for chronic amebiasis. Drug treatment should be exactly as outlined under type 1 to the point of relief of symptoms, at which time the treatment should proceed as described for chronic amebiasis.

3. Chronic uncomplicated intestinal amebiasis, whether a simple so-called carrier state or a condition of recurrent or mildly persistent symptoms, is the most frequent type seen in this country. Either carbarsone or vioform are to be recommended. Carbarsone is given in gelatin capsules, each containing 0.25 Gm., two or three times daily to a total of twenty doses (5 Gm.). Much larger doses have been used with no evidence of toxicity.²⁹ The course may be repeated several times, intervals of at least ten days being allowed between the courses. The urine must show no evidence of renal irritation and the liver must be free from gross damage. These precautions are necessary with both of the drugs under consideration. Except for extensive colon ulceration and severe dysentery,

32. Faust, E. C.: Effect of Di-Hydranol on Intestinal Protozoa of Man and Laboratory Animals, *Proc. Soc. Exper. Biol. & Med.* 27: 905 (June) 1930.

33. Anderson, H. H.; David, N. A., and Leake, C. D.: Oral Toxicity of Certain Alkyl Resorcinols in Guinea-Pigs and Rabbits, *Proc. Soc. Exper. Biol. & Med.* 28: 609 (March) 1931.

34. James, W. M.: Some Observations on Intestinal Amebiasis Due to Infection with *Endamoeba Histolytica*, 16th Ann. Rep. Med. Dept., United Fruit Company, 1927, p. 185.

35. Anderson, H. H., and Reed, A. C.: Carbarsone Rectally in Amebiasis, *Am. J. Trop. Med.* 14: 257 (May) 1934.

I have not found the rectal use of carbarsone necessary. Vioform may be given in 0.5 Gm. doses in gelatin capsules twice daily for ten days. If there is evidence of gastro-intestinal irritation, it can usually be avoided by having the capsules freshly coated with melted phenyl salicylate. This course can be repeated as needed, intervals of at least ten days being allowed. Vioform should not be given by rectum. In the small group of resistant cases, alternating courses of vioform and carbarsone may be used. Repetition of treatment should await reappearance of amebas in the stools.

The diet should in general have a high protein content, low roughage and low carbohydrates. Vitamins should be high, especially vitamin B.³⁶ Dunn,³⁷ writing from a large experience in Shanghai, says that "chronic amebic cases do well, not on a restricted diet, but on a diet rich in vitamins." Many others have also made this observation. Bed rest is not necessary. Bismuth subcarbonate, with or without dicalcium phosphate, frequently makes the patient more comfortable in diarrheic episodes, especially when secondary bacterial infection plays a part, as in type 5. Short courses of irrigations of 1:2,500 acriflavine hydrochloride, given each night for five or six nights, are often useful in relieving associated bacterial infection.

4. Extra-intestinal amebiasis presents an underlying pathologic condition essentially identical with that of intestinal lesions. For practical purposes, such conditions consist chiefly of hepatitis and liver abscess. Abscess of other organs and ulceration of the skin, especially contiguous with sinuses, may require some modification of local treatment. It is probable, a priori, that in every case of intestinal amebiasis the liver is invaded. But unless a frank hepatitis is present, or unless the pathologic process has advanced to the abscess stage, general treatment as already outlined is efficient to control it. In abscess or frank hepatitis, emetine is the drug of choice and should be administered as described under type 1. The subsequent treatment medicinally is the same as in chronic amebiasis. Local treatment of amebic abscess should consist of aspiration, repeated as needed, and irrigation with 1:2,500 solution of emetine hydrochloride. Cort¹⁴ advises this procedure and states that if the fever disappears after emetine treatment it may be concluded that there is no secondary infection and therefore no need for open operation. In obscure cases, Cort advises the use of emetine as a therapeutic test.

5. Amebiasis may be complicated by other infections, by systemic diseases and by surgical conditions. In such cases the drug of choice must be selected with the entire clinical picture in view. For example, emetine would be used cautiously or not at all in the presence of myocarditis. Arsenicals would be used with caution in the presence of gross liver or kidney damage, optic nerve lesions and history of arsenical dermatitis.

With regard to complicating infections, it is to be remembered that bacillary dysentery may coexist and that the presence of some other disease of the bowel, such as cancer, may be masked by the amebic infection. There is reason to believe that amebic ulcerations of long standing may act as do other foci of infection, affording a portal of entry for bacteria, bacterial products and possibly also other chemical substances from the intestinal canal.

Surgical complications are not at all uncommon, especially in the wake of the recent Chicago outbreak. Proper treatment rests on early diagnosis, especially before or at the time of surgical intervention in the abdomen. Intensive emetine treatment is to be avoided before operation, because of the danger of weakening the myocardium. Careful diagnosis will often decide whether a moderate course, not to exceed 5 or 6 grains (0.3 or 0.36 Gm.) of emetine, should be given, or whether the emetine should begin immediately before or after the operation. Only good clinical judgment, with clear recognition of the possibilities of amebic lesions in the absence of discoverable amebas in the stools, will enable the physician to decide on wise therapy. But certainly he must have in mind the frequency with which amebic lesions simulate peptic ulcer, cholecystitis, perforation, appendicitis, gangrene and new growth, and also the extreme danger of operations involving the gastro-intestinal tract when amebic lesions are present and untreated. In this group of surgical complications, emetine is the drug of choice because of quickness of action, to be followed at the earliest safe moment by carbarsone. Surgical complications of amebiasis and amebic granulomas have been well discussed by Connor,³⁸ Gunn and Howard,³⁹ Gilman⁴⁰ and Hines.⁴¹ It is to be remembered that surgical complications may appear early in a first acute attack or late in cases insufficiently treated; also that they may be discovered unsuspected at operation, or operation may be done without recognition or under a wrong or incomplete diagnosis. James³⁰ and others have advised "wide open cecostomy and thorough irrigations through the cecostomy and through the rectum as well It was found to be very effective in the acute fulminating types and also in the chronic types that did not yield to other treatment." Dudley Smith of San Francisco strongly advises a cecostomy, after the manner described by Phillips⁴² of Los Angeles.

6. Sequels of amebiasis include sprue, chronic simple and chronic ulcerative colitis, cancer, chronic infections such as tuberculosis, residual ulceration and colitis maintained by secondary bacterial infection and mechanical disturbances such as scarring and stricture. These are to be considered separately by Dr. Lynch⁴³ and are noted here only for the sake of completeness. It is particularly to be noted that effective treatment early in the course of amebic infection is important in preventing such sequels.

7. The final clinical point needing attention from the point of view of treatment simply crystallizes what has been covered already in respect of the need of avoiding extra hazards from the drugs themselves. Anderson⁴⁴ has discussed this in detail. It is worthy of repetition that the best treatment will approach most nearly the following criteria: high clinical effectiveness, low toxicity, amenability to oral administration, noninterference with the usual activities of the patient, lack of need for adjuvant treatment, and low cost.

350 Post Street.

38. Connor, F. P.: *Surgery in the Tropics*, Philadelphia, P. Blakiston's Son & Co., 1929.

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40. Gilman, P. K.: *Surgical Amebiasis*, California & West. Med. 23:309 (March) 1925.

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36. Barrow, J. V., and Woodward, Stacy: *Study of Human Amebiasis by Means of the Motion Picture*, J. A. M. A. 96:167 (Jan. 17) 1931.
McIntosh, J. A., in discussion on Barrow.

37. Dunn, T. B.: *Amoebiasis*, China M. J. 41:607 (July) 1927.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
H. A. CARTER, Secretary.

HANOVIA HOME MODEL ALPINE SUN LAMP ACCEPTABLE

This is a quartz mercury vapor arc lamp designed for prophylactic ultraviolet radiation applications and manufactured by the Hanovia Chemical and Manufacturing Company, Newark, N. J.

The Home Model Alpine Sunlamp is available in two forms, one for direct current, the other for alternating current. They operate on a 110 volt circuit.

The two lamps employ the same hemispherical polished aluminum hood and reflector mounted in such a way that the radiations may be projected downward or outward. The opening of the hood is $8\frac{1}{2}$ inches in diameter, and at 36 inches the radiation covers a circular area about 30 inches in diameter.

The lamp comes either as a table model or as a stand type model. The stand type lamp is mounted on casters and is provided with vertical adjustment.

The electrical controls of the alternating current lamp are contained in a separate housing 9 by 7 by $8\frac{1}{2}$ inches, weighing about 35 pounds. For the stand type lamp the electrical housing is mounted on the base. A double pole snap switch is provided on the lamp cord. The electrical circuit for the alternating current lamp consists of a transformer and reactor, with a small rheostat for line voltage adjustment, and ballast.

The light generator consists of a two electrode highly evacuated tubular vessel constructed entirely of fused quartz for direct current. This burner operates on either polarity. For alternating current a three electrode burner constructed entirely of fused quartz is employed. Both burners employ the fused-in wire seal.

The lamp is lighted by turning on the electric supply and tilting the burner for the establishment of the arc.

The Home Model Alpine Sun Lamp produces a characteristic quartz mercury arc spectrum with a spectral energy distribution closely resembling that previously given for the physician's therapeutic lamp, the Super Alpine Sun; however, since the electrical energy input is less, naturally the emitting radiation energy is less.

At a distance of 36 inches between the recipient with an average skin and the lamp, no more than fifteen minutes should be required to produce a perceptible erythema.

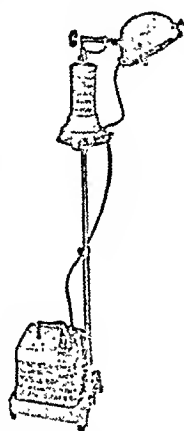
Suitable eye-protecting goggles must be worn when the Home Model Alpine Sun Lamp is employed.

Operating Characteristics

Alternating Current, 60 cycle (25 cycle requires special equipment)		Direct Current	
Line voltage	100 to 125 volts	Line voltage	100 to 125 volts
Starting amperage	5 amperes	Starting amperage	4 amperes
Operating amperage	2.9 amperes	Operating amperage	2 amperes
Wattage	300	Wattage	140
Burner voltage	135	Burner voltage	70
Burner wattage	200		

Note: The direct current lamp has two thirds the intensity of ultraviolet of the alternating current lamp.

Based on evidence that radiations from the mercury vapor arc in quartz lamps at the prescribed distance (36 inches) may prevent rickets and aid in the development of sound bones and teeth, the Council on Physical Therapy declares the Hanovia Home Model Alpine Sun Lamp acceptable for inclusion in its list of accepted devices for one year.



Hanovia Home Model Alpine Sun Lamp.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

- (1) CEDAR HILL BRAND GOLDEN SYRUP
- (2) CEDAR HILL BRAND WHITE SYRUP
- (3) UNCLE SAM BRAND TABLE SYRUP
- (4) PRESIDENT BRAND TABLE SYRUP

Distributors.—(1) and (2) Hassendeubel Grocery Company, St. Louis.

(3) and (4) Gildehaus, Wulff & Co., St. Louis.

Packer.—Union Starch and Refining Company, Granite City, Ill.

Description.—(1) Table syrup; corn syrup flavored with refiners' syrup. The same as Golden Drip Brand Golden Table Syrup (THE JOURNAL, May 26, 1934, p. 1763).

(2) and (4) Table syrup; corn syrup sweetened with sucrose; flavored with vanilla. The same as Union Brand Crystal White Syrup (THE JOURNAL, Sep. 3, 1932, p. 833).

(3) Table syrup; corn syrup flavored with refiners' syrup. The same as Union Brand Golden Table Syrup (THE JOURNAL, July 23, 1932, p. 309).

GOOD MORNING PURE FLORIDA GRAPEFRUIT HEARTS

Distributor.—Chas. W. Bauermeister Company, Terre Haute, Ind.

Packer.—Dr. P. Phillips Company, Orlando, Fla.

Description.—Canned sliced Florida grapefruit sweetened with added sucrose and retaining in large measure the original natural vitamin content; the same as Dr. P. Phillips Florida Fanci-Cut Grapefruit Slices (THE JOURNAL, Nov. 19, 1932, p. 1781).

MONTCO STERILIZED EVAPORATED MILK

Distributor.—William Montgomery & Company, Philadelphia.

Packer.—The Defiance Milk Products Company, Defiance, Ohio.

Description.—Unsweetened, sterilized, evaporated milk. The same as Defiance Pure Evaporated Milk, THE JOURNAL, March 3, 1934, page 693.

FONTANA'S EGG NOODLES FINE FONTANA'S EGG NOODLES WIDE FONTANA'S EGG VERMICELLI FIDEOS

Manufacturer.—Fontana Food Products Co., San Francisco.

Description.—Noodles prepared from flour and egg yolk.

Manufacturer.—The flour, egg yolks and water, in definite proportions, are mechanically mixed and kneaded. The resulting dough is rolled by machine to required thinness, cut, dried on racks under controlled conditions, and packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	12.4
Ash	0.6
Lipids	5.7
Protein (N X 6.25)	13.0
Reducing sugars as dextrose	0.8
Sucrose	0.3
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	68.1
Lipid phosphoric acid as P ₂ O ₅	0.13
Total phosphoric acid as P ₂ O ₅	0.41

Calories.—3.8 per gram; 108 per ounce.

Claims of Manufacturer.—Complies with the United States Department of Agriculture definition and standard.

PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

For eight years the Council on Medical Education and Hospitals with the assistance of the committee of pathologists and of the local advisers has prepared lists of approved clinical laboratories and physicians specializing in pathology and clinical pathology. This work was begun by the Council in 1924 according to instructions received from the House of Delegates. In 1931 the listing of approved clinical laboratories as such was discontinued and a list of physicians specializing in pathology substituted. The laboratories supervised by the physicians listed may be said to be approved.

The original request for some regulation regarding clinical laboratories came from the clinical pathologists in 1923, the American Society of Clinical Pathologists and the American Association of Pathologists and Bacteriologists having worked independently for some time toward a solution of the problem. Some means of eliminating lay specialists in this field was sought. It was held improper for any person not qualified educationally and legally to assume the responsibility of making a diagnosis or prognosis, or of acting as a consultant with regard to disease in the human body. Where the law does not restrict diagnosis and the interpretation of laboratory observations to qualified medical practitioners, all other means available should be used to protect the patient against the incompetence of the lay specialist and the nonmedical clinical laboratory.

In order that patients may be given the benefit of the most accurate analysis with regard to source, nature and progress of disease, physicians should have their work carried out in laboratories under the supervision of capable pathologists. The progress made through the efforts of the Council, to distinguish medical from nonmedical laboratories and to determine which laboratories under medical supervision were to be relied upon, has been proportionate to the cooperation extended by the profession generally. Doubtless, this work has been responsible to some extent for the decrease in the use of lay-supervised clinical laboratories and has brought to many physicians an appreciation of the full importance of medical supervision over this work.

The present list of physicians specializing in pathology and clinical pathology contains 795 names. The first list published in 1926 contained the names of 162 laboratories. The list has grown at the rate of approximately 100 names per year. Physicians everywhere are urged through the publications of the Council to patronize only such laboratories as are under the direction of physician-pathologists, listed or eligible for listing. Applications for recognition on the approved list are being considered regularly by the Council and the local advisory committees.

In 1928 the Section on Radiology requested the Council to carry out a similar work for radiologists. A list of physicians specializing in radiology is also maintained by the Council in the same manner as the list for pathologists and clinical pathologists. At the present time, 1,270 radiologists have been admitted to the Council's list.

BIBLIOGRAPHY

The initial steps, beginning with the authorization of the movement by the House of Delegates of the American Medical Association at the annual session in San Francisco in 1923, are given in *THE JOURNAL*, April 3, 1926. That article contains the names of the members of the joint committee and gives a detailed account of the work of the committee and the Council on Medical Education and Hospitals during the years 1923, 1924 and 1925. It contains a copy of the original questionnaire and the compilation of statistics on clinical laboratories gathered from all states of the Union by means of that questionnaire. Of special importance are the principles stated by the joint committee at that time—important because most of them still hold good, yet some of them would hardly be regarded as pertinent at the present time. The first provisional list was published in the report just referred to. Subsequent developments in the evolution of the list, the present method of preparation and particularly the changes in the list itself, are reflected in the following references:

The second publication of the list appeared in *THE JOURNAL*, March 12, 1927, and contained 145 names; the list was next published in the Tenth Edition of the American Medical Directory in May 1927 and contained 145 names; in *THE JOURNAL*, March 24, 1928, 160 names; March 30, 1929, 174 names; in the Eleventh Edition of the American Medical Directory, July 1929, 175 names; in *THE JOURNAL*, March 29, 1930, 178 names; May 23, 1931, 183 names, and in the Twelfth Edition of the American Medical Directory, June 1931, 183 names; in *THE JOURNAL*, Oct. 22, 1932, 538 names; in *THE JOURNAL*, Oct. 14, 1933, 704 names.

The following list in this issue contains 795 names.

ESSENTIALS FOR THE LISTING OF PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

Admission to the list is open to all physicians in pathologic work in accordance "whether connected with a hospital or not. The work of compiling a list of qualified pathologists according to these "Essentials" is done by the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago.

Definition.—A physician holding himself out as a specialist in pathology may be defined as follows: One who is a graduate in medicine having had satisfactory training and experience in pathology, chemistry, bacteriology or other allied subjects for at least three years subsequent to graduation, who is in good standing and has been duly licensed to practice medicine.

Qualifications.—(a) The pathologist shall be on a full or part time basis with a laboratory for the practical application of one or more of the fundamental sciences by the use of specialized apparatus, equipment and methods, for the purpose of ascertaining the pres-

ence, nature, source and progress of disease in the human body. He should devote the major part of his time to work in this field.

(b) Pathology should be practiced on the same scientific and ethical basis, whether in the hospital or in a detached laboratory. The work represents the practice of medicine as in other specialties.

The pathologist may make diagnoses only when he is a licensed graduate of medicine, has had satisfactory training and experience in pathology for at least three years subsequent to graduation from medical college, is reasonably familiar with the manifestations of disease, and is competent to make reliable reports.

(c) Assistant: The pathologist may have a corps of qualified assistants and technicians, responsible to him, and for whom he is responsible, to carry out promptly, intelligently and accurately the several kinds of service the laboratory offers. All their reports, not only of tissues but also of all bacteriologic, hematologic, biochemical, serologic and pathologic data, should be made to the pathologist.

Scope.—A general pathologic laboratory should be prepared to render the following services:

(a) Hematologic: Blood counts, blood groupings and coagulation tests, and tests for blood parasites in general.

(b) Biochemical: Qualitative and quantitative analyses of urine, blood, gastric contents, body fluids, feces, intestinal contents and cerebrospinal fluids; renal and hepatic function tests and basal metabolism.

(c) Bacteriologic: Bacteriologic diagnoses; preparation of vaccines and blood and body fluid cultures.

(d) Serologic: Serologic diagnoses; agglutination, complement fixation, or precipitin and lysis tests.

(e) Pathologic: Preparation of paraffin, celloidin or frozen sections, microscopic and gross pathologic specimens and necropsies.

(f) Parasitologic: Protozoal and zoological diagnoses.

(g) Metabolic: Disorders of metabolism.

(h) Cardiologic: Disorders of the heart.

It is of course not expected that the candidate shall be prepared to render all the services mentioned, since the work must necessarily be diversified in larger laboratories and in smaller laboratories it is not always practical to have equipment and setups that would be

used only occasionally. Since many pathologists limit their work to one branch of the specialty, referring certain items, far more efficiency is to be expected.

Reports.—Reports should be made solely to the physician in charge of the patient and should be signed by the pathologist. All blanks and reports should have the name of the director printed on them and, if of a diagnostic or prognostic character, the name of the staff physician also.

Records.—Full records of all examinations made by the pathologist, suitably indexed and filed, are essential. Every specimen analyzed in the laboratory should be given a serial number, which should follow that specimen in the records and reports. When the laboratory report concerns a hospital patient, an exact transcript of the laboratory record should be appended to the hospital case record. Each specimen submitted to the laboratory should be accompanied by pertinent clinical data.

Library.—The laboratory should be provided with, or have convenient access to, a library including current scientific books and journals on all the various subjects required in its work.

Fees.—There should be no dividing of fees or rebating between the laboratory or its pathologist and any physician, corporate body or group.

Publicity.—Publicity should be in professional good taste and be limited to statements of fact, as the name, address and telephone number of the laboratory; names and titles of the pathologist and other active responsible personnel; fields of work covered; office hours; directions for sending specimens, and the like, and should not contain misleading statements or claims of unusual superiority. It should not advocate medical fads nor lay undue stress on the importance of laboratory observations.

Only the names of those rendering regular service to the laboratory should appear on letterheads, or any other form of publicity, as being connected with the laboratory.

Advertising matter should be directed only to physicians either through bulletins or through recognized technical journals, and never to the nonprofessional public, as, for example, by announcements in popular journals and periodicals, circulars, pamphlets, telephone lists or other means.

PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

The following list contains the names of 795 physicians specializing in pathology, laboratory diagnosis or clinical pathology, who returned the questionnaire, who were found to meet the "Essentials" and were recommended by the Council's advisers. Those engaged in teaching, research and other activities are admitted, as well as those in active practice. For the list of physicians specializing in pathology in government service, see page 1235.

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ILLINOIS

Bloomington
 Markowitz, Benj. 219 N. Main St.

Chicago
 Arkin, Aaron. 55 E. Washington St.
 Benjamin, Eustace L. 5311 Lakewood Ave.
 Croy, C. Chi. St.
 Davidsohn, J. 14.
 Delaney, P. Ave.
 Dwyer, Thom. St.
 Fishback, Hamilton R. 303 E. Chicago Ave.
 Gardner, Stella M. 30 N. Michigan Ave.
 Heunemoyor, R. J. 1305 E. 63d St.
 Hill, Lewis R. 1120 Leavitt St.
 Hirsch, Edwin F. 1439 S. Michigan Ave.
 Howell, Katharine M. 28th and Ellis Ave.
 Jaffo, Richard H. 533 Grant Pl.
 Kearns, Jerry Joseph. 4458 Madison St.
 Kremer, Rudolph J. 333 Belden Ave.
 Levine, Victor. 3333 Washington Blvd.
 Levinson, Samuel A. 1817 W. Polk St.
 Lewis, Julian K. 5200 Wabash Ave.
 Lincoln, Mary C. 30 N. Michigan Ave.
 Matthes, M. M. 33 N. Wabash Ave.
 Melnik, Perry J. Cook County Hospital
 Moore, Josiah J. 55 E. Washington St.
 Murphy, Leonard H. 4753 Broadway
 Nelman, Benj. H. Cook County Hospital
 Nicoll, Homer K. 122 S. Michigan Ave.
 Petersen, A. S. J. 45-67 W. 111th St.
 Petersen, Wm. F. 1817 W. Polk St.
 Pilot, Isodoro. 185 N. Wabash Ave.
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 Central Ave. and Flournoy St.
 Saphir, Otto. 28th and Ellis Ave.
 Simonds, James P. 903 E. Chicago Ave.
 Swan, Mary H. 55 E. Washington St.
 Sweany, Henry C. 5601 N. Crawford Ave.
 Thalheimer, Wm. 28th and Ellis Ave.
 Weiss, Emil. Univ. of Ill., Coll. of Med.
 Wells, H. Gideon.
 Dept. of Path., Univ. of Chicago

Evanston
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 Schultz, Oscar T. 355 Ridge Ave.

Joliet
 Willson, W. Henry. 204 Scott St.

Moline
 Vollmer, Maud J. 1630 Fifth Ave.

Peoria
 Bohrod, Milton G. 124 Randolph St.

Quincy
 Cohen, Frank. 520 Hampshire St.

Rockford
 Palmer, Harold D. 507 Chestnut St.

Springfield
 Bain, Walter G. 8th and Mason Sts.

INDIANA

Bluffton
 Nickel, Allen A. C. Caylor-Nickel Clinic

Evansville
 McGlumphy, Chas. B. 614 Mary St.
 Seltz, Chas. L. 412 S. E. 4th St.

Fort Wayne
 Rhamy, Bonnelle W. 347 W. Berry St.

Indianapolis
 Banks, Horace M. 3631 Forest Manor Ave.
 Fory, Frank. 4936 Capitol Ave.
 Langdon, Harry K. 23 E. Ohio St.
 Long, Alfred G. 493 E. 49th St.
 Thornton, Harold C. Indianapolis City Hospital

Lafayette
 Hunter, Frank P. 300 Main St.

Muncie
 Cole, Russell E. 203 Western Reserve Bldg.

NAME **ADDRESS**
South Bend
 Giordano, Alfred S. 531 N. Main St.
 Lyon, Marcus W., Jr. 122 N. Lafayette Blvd.
Torro Haut
 Selsam, Etta. 221 S. 6th St.

IOWA

Cedar Rapids
 Mulsow, Fredk. W. 224, 3d St., S. E.

Cherokee
 Pope, John M.

Cilinton
 Boyer, Edward E. H. 114, 32d Ave., N.

Oavenport
 Lamb, Frederick H. 220 Main St.

Des Moines
 Weingart, Julius S. 406, 6th Ave.

Dubuquo
 McNamara, Frank P. 1596 Delhi St.

Iowa City
 Herrmann, Walter W. University of Iowa

Ottumwa
 Hecker, Friedrich A. 130 E. Maple Ave.

Sioux City
 Starry, Allen C. 21st and Court Sts.

KANSAS

Kansas City
 Wahl, Harry R. 39th St. and Rainbow Blvd.

Salina
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 Hellwig, C. Alexander. 623 N. Emporia Ave.

KENTUCKY

Lexington
 Maxwell, Elmer S. 190 N. Upper St.

Louisville
 Allen, John D. 608 S. 4th St.
 McNeill, Clyde. 321 W. Broadway
 Miller, Aura J. 323 E. Chestnut St.
 Weeter, Harry M. 332 W. Broadway

LOUISIANA

Baton Rouge
 Beven, John L.
 Our Lady of the Lake Sanitarium

Lake Charles
 Hebert, Louis A. 834 Ryan St.

Monroe
 Pracher, John. 301 Jackson St.

New Orleans
 Friedrichs, Andrew V. 921 Canal St.
 Johns, Foster M. 927 Canal St.
 Lanford, John A. 3516 Prytania St.
 Lawson, Edwin H. 2700 Napoleon Ave.
 Maher, Aldea. 223 St. Charles St.

Shreveport
 Butler, Willis P. 940 Margaret Pl.
 Ellis, Fredk. G. 624 Travis St.

MAINE

Bangor
 Thompson, H. E. 250 State St.

Lewiston
 Bellevau, Romeo A. 89 Pine St.

Portland
 Gottlieb, Julius. 49 Central Ave.

Warren, Mortimer. 22 Arsenal St.

MARYLAND

Baltimore
 Collenberg, Henry T. 2 W. Read St.
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 Maldeis, Howard J. 104 W. Madison St.
 Spencer, Hugh R. University of Maryland

MASSACHUSETTS

Boston
 Belding, David L. 80 E. Concord St.
 Branch, Chas. F. 80 E. Concord St.
 Burnett, Francis L. 205 Beacon St.
 Flashman, David H. 37 Schuyler St.
 Hinton, Wm. A. 25 Bennett St.
 Hooker, Sanford B. 80 E. Concord St.
 Leary, Olga Cushing. 43 Bay State Rd.
 Leary, Timothy. 43 Bay State Rd.

General Hospital
 Huntington Ave.
 Parker Hill Ave.
 Schlesinger, Monroe J. 330 Brookline Ave.
 Steele, Albert E. 475 Commonwealth Ave.
 Ulrich, Helmut. 30 Huntington Ave.
 Warren, Shields. 195 Pilgrim Rd.

Bradford
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Brookline	
Dairymple, S. C.....	233 Walnut St.
Fall River	
Peasley, Elmus D.....	1820 Highland Ave
Walsh, James H.....	538 Prospect St.
New Bedford	
Wason, Isabel Mary.....	116 Cottage St.
Pittsfield	
Crisfield, Modestino.....	8 Bank Row
Springfield	
Dwyer, John E.....	116 Chestnut St.
Westboro	
Pierce, Lydia Baker.....	
Worcester	
Elliot, William J.....	119 Belmont St.
Freeman, William.....	P.O. Box 489
Goodale, Raymond H.....	71 Jacques Ave.
Looney, Joseph M.....	Worcester State Hospital

MICHIGAN

Ann Arbor	
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Weller, C. V.....	Dept. of Path., Univ. of Mich.
Battle Creek	
Lewis, Welcome B.....	Battle Creek Sanitarium
Roth, Paul.....	Battle Creek Sanitarium
Bay City	
Gambie, Wm. G., Jr.....	2010, 5th Ave.
Detroit	
Amolsch, Arthur L.....	Wayne Univ., Coll. of Med.
Brines, Osborne A.....	
Clark, Harry L.....	5037 Woodward Ave.
Cope, Henry E.....	1551 Woodward Ave.
Davis, James E.....	1512 St. Antoine St.
Hartman, Frank W.....	2799 W. Grand Blvd.
Kasper, Jos. A.....	1151 Taylor Ave.
Morse, Plinn F.....	3823 Brush St.
Oginsky, M. A.....	226 Hancock Ave.
Owen, Clarence L.....	4160 John R. St.
Owen, R. G.....	1551 Woodward Ave.
Stafford, Frank W.....	1111 Griswold St.
Flint	
Backus, Glenn R.....	901 Beagle St.
Grand Rapids	
Bond, Geo. L.....	74 Ionio Ave., N. W.
German, Wm. M.....	Blodgett Memorial Hospital
Grosse Pointe	
Gruhlitz, Oswald M.....	580 Hampton Rd.
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Kalamazoo	
Prentice, Hazel R.....	3404 Oakland Dr.
Saginaw	
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MINNESOTA	
Duluth	
Berdez, George Louis.....	St. Mary's Hospital
Minneapolis	
Baker, Loe.....	1111 Nicollet Ave.
Dahlstrom, Arthur Wm.....	91 S. 7th St.
Drake, Charles R.....	900 Nicollet Ave
Grave, Floyd.....	823 Nicollet Ave.
Lufkin, Nathaniel H.....	
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Merkert, Geo. L.....	1412 E. 24th St.
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Rochester	
Beaver, Donald C.....	Mayo Clinic
Broders, A. C.....	Mayo Clinic
Kernohan, J. W.....	Mayo Clinic
MacCarty, Wm. C.....	Mayo Clinic
Magath, Thos. B.....	Mayo Clinic
Robertson, H. E.....	Mayo Clinic
Rosenow, E. C.....	Mayo Clinic
Sanford, Arthur H.....	Mayo Clinic
Wellbrock, Wm. L. A.....	Mayo Clinic
Wilson, Louis B.....	Mayo Foundation
St. Cloud	
Stangl, Fred H.....	101 7th Ave., S.
St. Paul	
Keda, Kano.....	125 W. College Ave.
Noble, John Franklin.....	Ancker Hospital
MISSISSIPPI	
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White, E. T.....	301½ Washington Ave.
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MISSOURI	
Columbia	
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Jofferson City	
Adams, Charles F.....	Mo. State Board of Health
Kansas City	
Duncan, Ralph Emerson.....	306 E. 12th St.
Hall, Frank J.....	306 E. 12th St.
Helwig, Ferdinand G.....	St. Luke's Hospital
Johnson, Emsley T.....	St. Joseph Hospital
Korltseher, Robt.....	4949 Rockhill Rd.
Narr, Frederick C.....	Research Hospital
Stewart, Edward L.....	1115 Grand Ave.
Trimble, Wm. K.....	1103 Grand Ave.
St. Louis	
Allen, Hollis N.....	634 N. Grand Blvd.
Bulman, Rudolph.....	539 N. Grand Blvd.
Gradwohl, R. B. H.....	3514 Lucas Ave.
Harris, D. L.....	508 N. Grand Blvd.
Ires, Geo.....	3720 Washington Blvd.
Katz, Samuel D.....	3720 Washington Blvd.
Klenk, Chas. L.....	508 N. Grand Blvd.
McCordock, Howard A.....	Washington Univ.
Schery, Chas. Wm.....	529 N. Whittier St.
Stehert, Walter J.....	Washington Univ.
Thompson, Ralph L.....	607 N. Grand Blvd.
Walsh, L. S. Newman.....	5535 Delmar Blvd.
Springfield	
Stone, Murray C.....	200 E. Pershing St.
University City	
Thurston, Eric W.....	6651 Enright Ave.
MONTANA	
Butte	
Peterson, Raymond F.....	57 W. Quartz St.
Great Falls	
Hitchcock, E. D.....	Great Falls Clinic
Walker, Thos. F.....	363, 1st Ave., N.
NEBRASKA	
Omaha	
Eggers, Harold E.....	Univ. of Nebr., Coll. of Med.
Manning, E. T.....	107 S. 17th St.
Moody, W. B.....	206 S. 19th St.
Myers, John T.....	Univ. of Nebr., Coll. of Med.
Rubnitz, A. S.....	107 S. 17th St.
Russum, B. Carl.....	306 N. 14th St.
Tollman, James P.....	42nd and Dewey Ave.
NEVADA	
Reno	
Parsons, Lawrence.....	235 W. 6th St.
NEW HAMPSHIRE	
Hanover	
Miller, Ralph E.....	9 Downlog Rd.
NEW JERSEY	
Arlington	
Gilman, C. M. B.....	59 Seeley Ave.
Asbury Park	
de Pons, Isabel S. C.....	501 Grand Ave.
Pons, C. A.....	501 Grand Ave.
Atlantic City	
Kilduffe, Robt. A.....	26 S. Ohio Ave.
Bayonne	
Antopol, Wm.....	Bayonne Hospital
Elizabeth	
Casilli, A. R.....	618 Newark Ave.
Englewood	
Halpern, Herman.....	143 Engle St.
Greystone Park	
Christian, Thos. B.....	
Jersey City	
Alter, Nicholas M.....	410 Fairmount Ave.
Mount Holly	
Vitteri, Luis E.....	137 High St.
Newark	
Brown, Lewis W.....	15 Fulton St.
Eulinkson, Joseph I.....	845 S. 12th St.
Goldberg, Samuel A.....	27 S. 9th St.
Gray, John W.....	142 Clinton Ave.
Yaguda, Asher.....	201 Lyons Ave.
Orange	
Cline, Benj. F.....	264 Central Ave.
Paterson	
Davis, A. Hobson.....	528 Market St.
Kim, Goy B.....	703 Main St.
Plainfield	
Borow, Louis S.....	934 Park Ave.
Teaneck	
Markley, Luther A.....	Holy Name Hospital
Toms River	
Halbach, Robert McC.....	513 Main St.
Trenton	
Rogers, Wm. N.....	1255 Brunswick Ave.
NEW MEXICO	
Albuquerque	
Beam, M. P.....	221 W. Central Ave.

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Albany		
Gilbert, Ruth.....	116 N. Allen St.	
Horner, Henrietta Callhoun.....	171 S. Main Ave.	
Jacobson, V. C.....	44 Lawnridge Ave.	
Klinek, Gustavus H., Jr.....	Albany Med. Coll.	
Wright, A. W.....	Albany Med. Coll.	
Binghamton		
Bergstrom, V. W.....	21 Park Ave.	
Gregory, Hugh S.....	Binghamton State Hosp.	
Brooklyn		
Black, F. A.....	32 Court St.	
Derby, Irving Marsh.....	681 Clarkson Ave.	
Fein, M. J.....	50 Greene Ave.	
Fink, Harold.....	1304 Beverly Rd.	
Grahlek, Abraham.....	119 Sumner Ave.	
Greeley, Horace.....	140 Clinton St.	
Kantrowitz, Abraham R.....	475 Ocean Ave.	
Lederer, Max.....	555 Prospect Pl.	
Marten, M. Edward.....	515 Ocean Ave.	
McNally, Robert F.....	1010 Bushwick Ave.	
Miller, Margaret A.....	437 Irvington Ave.	
Mollier, Wm. Jr.....	1219 Dean St.	
Morrison, Maurice.....	250 Ocean Pkwy.	
Nidish, Edward H.....	1272 Bergen St.	
Polayes, Slikk H.....	425 Prospect Pl.	
Wiener, Alexander S.....	520 Crown St.	
Buffalo		
Beniz, Charles A.....	126 W. Humboldt Pkwy.	
Hanan, Ernest B.....	462 Grider St.	
Jacobs, William F.....	408 Richmond Ave.	
Vaughan, Stuart L.....	100 High St.	
Warwick, Margaret.....	375 Lafayette Ave.	
Williams, Herbert U.....	39 Arlington Pl.	
Central Islip		
Trygstad, Reidar.....	Central Islip State Hosp.	
Clifton Springs		
Thomas, Walter S.....	42 Kendall St.	
Corning		
Shafer, Rudolph J.....	163 E. 1st St.	
Cortland		
Wall, Wm. A.....	134 Homer Ave.	
Elmira		
Bleyer, Leo F.....	555 E. Market St.	
Stuart, Anna M.....	656 Park Pl.	
Far Rockaway		
Handelman-Kalashnikoff, Pauline.....		
	536 Beach 22d St.	
Glens Falls		
Maston, Morris.....	191 Glen St.	
Ithaca		
Hauenstein, B. F.....		
	Tompkins Co. Memorial Hospital	
Jamaica		
Buxbaum, Edward J.....	8711, 150th St.	
Campbell, N. H. M.....	89-18, 130th St.	
Werne, Jacob.....	89-04, 148th St.	
Kings Park		
Priestman, Gordon.....		
Little Neck		
Van Nostrand, Hobart S.....		
	45-06 Little Neck Pkwy.	
Long Island City		
Angrist, Alfred.....	43-42, 45th St.	
Hala, Wm. W.....	30-20, 29th St.	
Marcy		
Bower, George C.....	Marcy State Hospital	
Middletown		
Kelly, Wm. E.....		
	Middletown State Homeopathic Hosp.	
Newark		
Baumgartner, E. A.....	Newark State School	
Newburgh		
Wescott, A. M.....	231 Liberty St.	
New Rochelle		
Brooks, Henry T.....	35 Woodland Ave.	
McIlroy, P. T.....	421 Huguenot St.	
New York		
Aronson, Wm.....	150 E. 182d St.	
Brown, Chester R.....	150 W. 87th St.	
Cocheu, Lindsley F.....	205 E. 69th St.	
Curphy, Theodore J.....	115 E. 61st St.	
Darlington, Charles G.....	75 E. 55th St.	
Dolgopol, Vera B.....	131 W. 110th St.	
Donnet, J. Victor.....	152 W. 58th St.	
DuBois, Phoebe L.....	150 E. 73d St.	
Eggston, Andrew A.....	653 Park Ave.	
Ehrlich, Joseph C.....	220 Boscobel Pl.	
Elser, Wm. J.....	525 E. 68th St.	
Ewing, James.....	2 W. 106th St.	
Felsen, Joseph.....	667 Madison Ave.	
Ferraro, Louis R.....	711 E. 230th St.	
Foot, Nathan Chandler.....	525 E. 68th St.	
Fraser, Alexander.....	153 W. 11th St.	
Frosch, Herman L.....	1882 Grand Concourse	
Gelger, Jacob.....	25 Central Park West	
Gonzales, Thomas A.....	56 E. 87th St.	
Grauer, Frank.....	226 W. 71st St.	
Hadjopoulos, L. G.....	6 E. 78th St.	

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Helpern, Milton	155 E. 91st St.
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Jacobson, Sheldon A.	1919 Madison Ave.
Jaffe, Henry L.	1919 Madison Ave.
Jeffries, Ferdinand M.	18 E. 41st St.
Jessup, D. S. D.	411 W. 114th St.
Kalks, David J.	70 E. 83d St.
Klemperer, Paul	385 Central Park West
Kopel, Moses	1454 Grand Concourse
Larimore, L. D.	750 Riverside Dr.
Lisa, James R.	New York City Hospital
McNeal, W. J.	303 E. 20th St.
Manhels, Perry J.	27 W. 96th St.
McNell, Archibald	18 E. 41st St.
Moolten, Sylvia E.	60 E. 96th St.
Oleot, Charles T.	1300 York Ave.
Pinus, Julius	250 W. 75th St.
Price, Aaron S.	335 W. 50th St.
Rohdenburg, G. L.	111 E. 76th St.
Rosenthal, Nathan	51 E. 90th St.
Rous, Peyton	
Rockefeller Institute for Medical Research	
Rubinstein, Morris	600 W. 181st St.
Saccone, Andrea	331 E. 116th St.
St. George, Armin	400 E. 29th St.
Secof, David P.	1970 Daly Ave.
Shuster, Mitchell	30 E. 40th St.
Smith, Lawrence W.	Willard Parker Hospital
Sondern, Frederic E.	20 W. 55th St.
Sophian, L. H.	428 W. 59th St.
Stanford, Addie D.	450 E. 64th St.
Stillman, Ralph G.	535 E. 68th St.
Taub, Jacob	1574 Leland Ave.
Thro, William C.	1300 York Ave.
Welss, M. Arthur	235 W. 76th St.
Whitcher, Burr R.	305 E. 20th St.
Ossining	
Gosline, Harold I.	275 Spring St.
Ozone Park	
DeVeer, J. Arnold	101-32 97th St.
Poughkeepsie	
Carpenter, H. P.	Hudson River State Hospital
Peckham, A. L.	Vassar Brothers Hosp.
Rochester	
Brown, Herbert R.	224 Alexander St.
Gaspár, István	501 W. Main St.
Hawkins, William B.	260 Crittenden Blvd.
Kennedy, Robert P.	176 S. Goodman St.
Lindsay, Saml. T.	309 W. Main St.
O'Grady, Geo. W.	277 Alexander St.
Rye	
Loder, M. M.	
Saranac Lake	
Gardnor, L. U.	7 Church St.
Schenectady	
Kellert, Ellis	Ellis Hospital
Syracuse	
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Weiskotten, H. G.	309 S. McBride St.
Troy	
Curry, A. Hazel	467 Pawling Ave.
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Gallagher, C. D.	1676 Sunset Ave.
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Dalldorf, Gilbert J.	Grasslands Hospital
Russell, Hollis K.	Grasslands Hospital
Springer, Joyce M.	Grasslands Hospital
Watertown	
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Westfield	
Fleld, Cyrus W.	88 N. Portage St.
Yonkers	
Cook, Ward H.	Dept. of Public Health

NORTH CAROLINA

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Chapel Hill	
Bullitt, James B.	
Charlotte	
Barret, Harvey P.	403 N. Tryon St.
Todd, Lester C.	403 N. Tryon St.
Durham	
Baker, Roger D.	Duke Hospital
Byrnes, Thomas H.	Watts Hospital
Forbus, Wiley D.	Duke Hospital
Porto, Francis W.	Duke Hospital
Rigdon, Raymond H.	Duke Hospital
Sprunt, Douglas H.	Duke Hospital
Wake Forest	
Carpenter, C. C.	Wake Forest School of Med.
Wilmington	
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NORTH DAKOTA

Bismarck	
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Salk, A. K.	Univ. of N. Dak. Med. Sch.

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Patterson, James N.....	Univ. of Cincinnati	
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Kline, Benjamin S.....	1800 E. 105th St.	
Moritz, Alan R.....	2085 Adelbert Rd.	
Columbus		
Coons, J. J.....	370 E. Town St.	
Fidler, Roswell S.....	700 N. Park St.	
Hoffman, Ralph W.....	1542 W. 1st Ave.	
Reinhart, Harry L.....	1711 Essex Rd.	
Shilling, Ellis Ray.....	345 E. State St.	
Dayton		
Payne, Foy C.....	201 S. Main St.	
Simpson, Walter M.....	134 Apple St.	
Dover		
Shawoker, Max.....	Reeves Bank Bldg.	
Elyria		
Rosenzweig, Maurice.....	630 E. River St.	
Lorain		
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Toledo		
Crumline, Ralph M.....		
.....	Lucas County General Hospital	
Hindman, S. S.....	316 Michigan St.	
Ramsey, Thomas L.....	225 Michigan St.	
Rucker, James B., Jr.....	630 W. Central Ave.	
Schade, August H.....	320 Michigan St.	
Steinberg, Bernhard.....	Toledo Hospital	
Zbinden, Theodoro.....	706 Madison Ave.	
Youngstown		
Kramer, G. B.....	Youngstown Hospital	

OKLAHOMA

Bartlesville	
Chamberlin, E. M.	329 S. Johnstone Ave.
El Reno	
Muzzy, Wm. J.	212 S. Evans St.
Oklahoma City	
Balliey, Wm. H.	300 W. 12th St.
Jeter, Hugh G.	1200 N. Walker St.
Tulsa	
Nelson, I. A.	108 W. 6th St.
Venable, Sidney C.	420 S. Main St.

OREGON

Eugene		
Furrer, Emil D.....	130 E. Broadway	
Portland		
Foskett, H. H.	1058 S. W. Taylor St.	
Hunter, Warren C.	Univ. of Oregon Med. Sch.	
Lawrence, H. J.	322 Alder St.	
Manlove, Chas. H.	2206 Marshall St., N. W.	
Menno, Frank R.	Univ. of Oregon Med. Sch.	
Robertson, Thomas D.	2545 N. E. 45th St.	

PENNSYLVANIA

Ablington	
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Allentown	
Milstead, L. C.....	4th and Chew Sts.
Wenner, John J.....	941 Hamilton St.
Williams, Helen L.....	Allentown State Hospital
Altoona	
Brumbaugh, A. S.....	1312, 11th St.
Ardmore	
Belk, William P.....	Times Med. Bldg.
Chester	
Sickel, Geo. B.....	525 Welsh St.
Danville	
Hunt, Henry F.....	
Easton	
Gaines, Carl.....	130 N. 3d St.
Zitlessen, F. O.....	244 Bushkill St.
Erie	
Armstrong, E. L.....	2d and State Sts.
Gettysburg	
Stewart, Henry.....	
Greensburg	
Mayhew, J. Morgan.....	532 W. Pittsburg St.
Harrisburg	
Denison, Charles M.....	Harrisburg State Hospital
Moffitt, George R.....	Harrisburg Hospital
Van Horn, Herman H.....	3d St. and Polyclinic Ave.
Huntingdon	
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Johnstown	
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Kingston	
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Lancaster	
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Lansdowne	
Kennedy, Patrick J.	65 Fairview Ave.
McKeesport	
Sandblad, A. G.	1701 Union St.
Now Brighton	
McLaren, Harold J.	541, 11th Ave.
Norristown	
Laubach, Charles A.	Norristown State Hospital
Simpson, John C.	920 Swede St.
Philadelphia	
Asnis, Eugene J.	1524 Chestnut St.
Barthmaler, O. F.	2303 W. Lehigh Ave.
Bauer, John T.	8th and Spruce Sts.
Beck, James S. P.	Univ. of Pa., Sch. of Med.
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Brown, Claude P.	1930 Chestnut St.
Bucher, Carl Joseph	15th and Spruce Sts.
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SATURDAY, OCTOBER 20, 1934

THE TREATMENT OF MUSCULAR DYSTROPHY WITH GLYCINE

The idea of treating muscular dystrophy by the administration of glycine resulted directly from chemical analysis of the urine. The fact that the method is not yet definitely established as clinically successful in the present form of application does not detract from the essential importance of the fundamental observations. Creatinuria has been noted in many diseases that primarily or secondarily attack the muscular system. This led Thomas and his co-workers to investigate the effect of prolonged administration of glycine on the clinical course of progressive muscular dystrophies. In their preliminary report it was stated that the ingestion of from 15 to 20 Gm. of glycine daily raised the creatinuria of different cases by different degrees, depending on the extent of the original creatinuria. After some weeks the creatinurias were found to decrease despite the continuance of glycine. Coincident with the decrease in the creatinuria there was a rise in the creatinine output and an improvement in the patient's ability to hold ingested creatine. It was also reported that simultaneously the patients improved clinically.

Cuthbertson and MacLachlan¹ recently reported the results of prolonged glycine administration in nine cases of muscular dystrophy of different types and in two other cases exhibiting selective muscular atrophy. The conditions of observation were controlled as carefully as possible. There was no massage, and no electrical or tonic treatment was given, but the patients were allowed to be up and encouraged to exercise according to their powers. They were placed on a basal diet free from meat, meat extract and fish. The total creatinine and preformed creatinine outputs were estimated in the twenty-four hour specimens of urine. The difference between the two estimations represented the quantity of creatinine excreted. At various intervals the patients' reaction to ingested creatine was determined. During

these periods no glycine was taken. The amounts excreted were expressed as milligrams of nitrogen daily. Glycine therapy was usually started about three or four days after the first dose of creatine. The adults received 15 Gm. daily, the children 10 Gm. daily, dissolved in milk. Generally speaking, the greater the muscular incapacity the greater the degree of creatinuria and the less the excretion of creatinine.

In testing the reaction to the ingestion of creatine, 4.4 Gm. of anhydrous creatine was taken in one dose by the adults and 2.64 Gm. by the children. In the cases of muscular dystrophy the initial retentions of ingested creatine varied from 41 to 60 per cent of the intake in adults and from 42 to 78 per cent in the children. In the two cases of muscular atrophy the percentage retentions were 59 and 44. Following glycine therapy a definite increased retention capacity was noted in only one case of dystrophy. Four showed definitely diminished retention capacities. In three there was a definite coincident increase in the creatinine excretion. Following the ingestion of glycine, the creatine excretions increased in all the cases of dystrophy, in some to three or four times their basal values. These maximum periods of creatine excretion occurred during the first three weeks of therapy. The maximum daily creatine excretions in the various cases did not always occur in the period of maximum excretion, though this was usually the case. Following these periods of maximum excretion the daily excretions of creatine generally fell in some instances to below the basal level. Subsequent readministration of glycine after an intermission was usually accompanied by an increased creatinuria.

Clinically, five of the nine cases of muscular dystrophy were of the pseudohypertrophic type. With one exception the cases belonging to the dystrophy group showed definite general improvement as evidenced by increase in weight, gain in strength and feeling of well being. None of the patients became worse. In the majority there was also some evidence of improvement in the power of some of the specific muscles affected, but this was least in the pseudohypertrophic group. The Glasgow workers believe that in the majority of the cases the changes were in excess of those which might be expected to occur from hospitalization alone but that the term "cure" cannot be applied to the end results.

In another investigation on the same subject, the Linnewehs² attempted to study the question of possible glycine deficiency in muscular dystrophy. Their work was based on the studies of Magnus-Levi, Lewinski and Quick which demonstrated that a portion of benzoic acid, when ingested in large doses, is excreted as glyconic acid monobenzoate instead of quantitatively as hippuric acid and that the appearance of this reducing substance in the urine is a sign of glycine poverty of the

1. Cuthbertson, D. P., and MacLachlan, T. K.: The Treatment of Muscular Dystrophy with Glycine, *Quart. J. Med.* 3: 411 (July) 1934.

2. Linneweh, W., and Linneweh, F.: Zur Frage des Glykokollmangels und der Glykokolltherapie bei progressiver Muskeldystrophie, *Deutsches Arch. f. klin. Med.* 176: 526 (July 9) 1934.

organism. Two patients with unquestionable progressive muscular dystrophy and one normal person were investigated in this manner under controlled conditions of diet. The glycine supply and the glycine building power of the body were thus determined by the benzoic acid tolerance and it was established that no difference from the normal organism existed in this respect; therefore no true glycine deficiency exists. Consequently, glycine therapy is not a form of substitution therapy and its mode of action remains uncertain.

Careful chemical and clinical studies are gradually clarifying the underlying scientific and practical applications of an undoubted consistent chemical abnormality. Scientific medicine may again congratulate itself on the fruits of a well established mode of investigation.

"THROW-AWAY" MEDICAL PERIODICALS

The little magazines sent without subscription charge to various classes of readers are an interesting phenomenon. The complete costs of publication are of course borne by the advertisers. As might be expected, there is none too rigorous a control over the nature of goods advertised or the claims made in the advertising. Most of the advertising in such publications consists of the promotion of materials that could not possibly be accepted by the various councils and committees of the American Medical Association. A survey made of one of the most widely circulated free publications showed 85 per cent of the goods advertised as unacceptable to these rating bodies. From this point of view, then, these periodicals are a vicious menace to the high standards of medical practice in this country.

The "throw-away" called "Medical Economics" has appealed to the basest motives of those whom it attempts to reach, setting cash above conscience in medical practice. It seems much more concerned with the maintenance of income than with the maintenance of satisfactory standards of treatment. True, it devotes considerable space in its pages to the business aspects of medical practice. Regardless, however, of the extent to which other scientific periodicals may have been derelict in their failure to discuss such matters as collection of bills, the credit standings of patients, the outfitting of an office, or legal methods of enforcing payment, "Medical Economics" also attacks the ideals and principles of organized medicine and attempts to create disruption in medical thought. Its effect is an insidious attempt to undermine the councils and committees that have made therapy scientific and thereby rendered precarious the livelihood of promoters of nostrums.

A more recent comer in this field is a periodical called "Modern Medicine," emanating from Minneapolis. This purports to be a medical periodical along the lines of *Time* magazine. It falls somewhat short of the *Time* standard both in the method of presentation of material

and in the quality of the material presented. Its advertising is for the most part of products that simply could not be accepted, yet it contains as an advisory board a list of leading names in the field of medicine, many of them officers of well established medical organizations. One wonders to what extent the services of these medical advisers are actually utilized. Are the names merely used in the promotion of the publication? There was a time when the names of vast numbers of doctors used to be put on periodicals to lend them status. Nowadays it is considered more reputable to refuse the use of one's name or to permit its use on an editorial board unless one is actually in some manner concerned with the policies of the periodical and the material it publishes.

A third class of periodical in the "throw-away" field is the one that purports to be a digest of medical literature, including either the abstracts or the condensations of medical articles. In the lay field such publications are sold by subscription and seem to serve a useful purpose.

For years manufacturers of proprietary medicine have been circulating house organs and other medical literature to physicians with the obvious intent of promoting interest in the drug field and particularly in the products which they manufactured. Such material was sent to the medical profession with the clear intent of selling goods. The new type of throw-away periodical has its intent concealed. It is thus not to be compared in its ethical status even with the type of house organ freely circulated by the proprietary medical interests. The mottoes of mankind for many centuries have warned against "something for nothing." "Beware the Greeks bearing gifts" goes back two thousand years.

THE EVALUATION OF SEROLOGIC PROCEDURES FOR THE DIAG- NOSIS OF SYPHILIS

A plan, now under way, to evaluate independently in the United States serologic procedures for the diagnosis of syphilis has much to commend it. Briefly, it is proposed to collect and transport comparable specimens of blood from approximately 1,000 donors to all serologists of this country who have described an original modification of a complement fixation or a flocculation test. Specimens sent to serologists most distant from the point of collection will be forwarded by air mail, and delivery to nearby serologists will be purposely delayed so that the delivery time to all participants will coincide. Great care will also be exercised in the selection of the donors. The first group will consist of syphilitic patients who have received varying amounts of anti-syphilitic treatment, and the third, or control group, of individuals who, on the basis of previous serologic and clinical examinations, are believed to be almost certainly not syphilitic. Consideration will also be given to the

influence of such diseases as tuberculosis, acute febrile diseases, leprosy, malignant growths and jaundice in the production of a positive serologic test. Specimens from such cases will be included in the third, or control, group if definite assurance can be obtained that the donor does not have syphilis.

An intelligent choice of patients in these several categories should serve as an accurate measure of specificity and sensitivity for all serologic tests for syphilis. Additional factors of importance in such an evaluation plan are the ease with which the procedures may be adopted by technicians generally, and their simplicity and rapidity of performance. No matter how effective a test may be in the hands of its originator, it cannot be regarded as reliable unless it can be applied with reasonable efficiency by other serologists and serologic technicians. Likewise, a test the technic of which is so simple and rapid that it can be performed daily is preferable to more complicated procedures of similar specificity and sensitivity.

The plan is fortunate in having the support of unprejudiced national organizations. It is sponsored by the United States Public Health Service, cooperating with the American Society of Clinical Pathologists. A committee consisting of five members—two clinical syphilologists of nation-wide reputation, two prominent members of the American Society of Clinical Pathologists, and an officer of the Public Health Service—will organize the project. The final reports from the participating serologists will also be interpreted by this committee on the basis of clinical information obtained from the individual donor.

Most American workers believe that the complement fixation test has been more highly developed in the United States than in any other part of the world. The efficiency of the American precipitation test was established by Kahn both at Copenhagen and at Montevideo. None of the American serologists who have described original modifications of the complement fixation test were represented at the other serologic conferences. The plan that is now proposed will permit a fair comparison of the best complement fixation and flocculation procedures in this country. It should not merely be of value in proving the efficacy of a given serologic procedure but should again focus the attention of the practicing physician on the importance of these tests in the diagnosis of syphilis. The information thus obtained should be made use of by the physician, the public health officer and others concerned with the important problem of the control of syphilis in assuring themselves that only the most specific and sensitive serologic procedures are employed.

The success of this plan is largely in the hands of the individual serologists. It is hoped that all such workers who have described an original modification of the complement fixation or the flocculation test will take part,

and that such an evaluation plan may be held in the future at intervals of from three to five years. Only in this way will an accurate picture of the progress of the serology of syphilis be available to the medical profession.

Current Comment

THYROIDECTOMY IN DIABETES MELLITUS

The influence of the thyroid gland in diabetes has been recognized since Dumontpallier reported a case of glycosuria with exophthalmic goiter in 1867. As the goiter improved under treatment so did the diabetes. Since that time there have been isolated reports of various associations of the thyroid gland and diabetes. So far as is known, however, the recent report of Wilder, Foster and Pemberton¹ is the first of complete resection of the thyroid gland in an uncomplicated case of severe diabetes. The patient was a man, aged 26, who had had severe diabetes of eleven years' duration. His basal metabolism was normal ($+5$ and $+2$ per cent). In spite of a rigidly restricted diet, about 45 units of insulin was required daily. Before the thyroidectomy he was placed on a diet of 2,300 calories, consisting of 103 Gm. of carbohydrate, 59 Gm. of protein and 183 Gm. of fat. An arbitrary dose of 10 units of insulin was given three times daily. The twenty-four hour excretion of dextrose in the urine on this regimen averaged 36 Gm. Following the operation, at which nearly all of the thyroid was removed, a small amount of thyroid tissue being left at the hilus of each lobe, progressive increase in sugar tolerance and progressive fall in basal metabolic rate were noted from about the tenth day. At dismissal, thirty days after the operation, the urine was practically sugar free with the patient on the previous diet with only 15 units of insulin daily. The basal metabolic rate was -29 per cent. Symptoms of myxedema appeared about sixty days after the operation. Twelve grains (0.8 Gm.) of desiccated thyroid was taken orally over a period of four days. The symptoms of myxedema disappeared promptly but the insulin requirement increased from 10 to 30 units. Two weeks after the desiccated thyroid was stopped the insulin requirement was back to 10 units, but thirty days later signs of myxedema recurred. This oscillation continued with the patient reporting dissatisfaction with the results six months later while taking from 8 to 10 units of insulin and one-tenth grain (0.006 Gm.) of desiccated thyroid daily. A year after the operation he wrote that he was comfortable, taking one-half grain (0.03 Gm.) of desiccated thyroid and from 14 to 16 units of insulin daily. This report serves as a good illustration of the substitution of one pathologic state for another. The interaction is self evident. With regard to the therapeutic procedure, few will be found to disagree with the patient and the authors that the improved sugar tolerance does not justify the production of a myxedematous state.

1. Wilder, R. M.; Foster, R. F., and Pemberton, J. de J.: Total Thyroidectomy in Diabetes Mellitus, *Endocrinology* 18: 455 (July-Aug.) 1934.

Association News

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD IN CHICAGO, SEPTEMBER 20 AND 21

The Board of Trustees met in Chicago at the headquarters office on September 20, and at the Palmer House on September 21 during the Annual Conference of Secretaries of Constituent State Medical Associations.

COUNCIL ON PHYSICAL THERAPY

The Council on Physical Therapy, which had been invited to meet with the Board, attended the Thursday morning session and took part in a lengthy discussion of the work to be undertaken by that body.

USE OF PERIODIC HEALTH EXAMINATION FORM BY NATIONAL COMMITTEE ON GIRLS AND BOYS CLUB WORK

Permission was granted to the National Committee on Boys and Girls Club Work to use a modified form of the Association's periodic examination blank.

CHAIRMAN OF LOCAL COMMITTEE ON ARRANGEMENTS

The nomination of Dr. W. J. Carrington to act as chairman of the Local Committee on Arrangements for the Atlantic City Session of the Association was confirmed by the Board.

APPOINTMENTS

The following appointments were made: Dr. Frank Hammond Krusen to membership on the Council on Physical Therapy, with a view to complying with the resolution adopted by the House of Delegates at the Cleveland session of the Association providing for additional physical therapists on that body. Dr. Lydia Roberts to the Committee on Foods, to succeed Dr. James S. McLester, who is now President-Elect of the Association. Dr. H. Douglas Singer, editor-in-chief of the *Archives of Neurology and Psychiatry* to succeed Dr. T. H. Weisenburg (deceased). Dr. William H. Park, New York, and Dr. George M. Piersol, Philadelphia, to succeed themselves as representatives of the American Medical Association to the American Association for the Advancement of Science. Dr. Ludvig Hektoen and Dr. Urban Maes to succeed themselves on the Advisory Committee of the Committee on Scientific Exhibit. A committee composed of Drs. C. B. Wright, Rock Sleyster and Austin A. Hayden to confer with a similar committee of the American Dental Association on matters of mutual interest.

APPROPRIATIONS

Appropriations were made to enable the Committee on Mental Health to carry out its plans for the current year, and for subsidized and section exhibits in the Scientific Exhibit for the Atlantic City session.

EXPRESSION OF APPRECIATION TO NATIONAL BROADCASTING COMPANY

The appreciation of the Board was expressed for the courtesy of the National Broadcasting Company in granting the Association a fifteen minute period every Tuesday afternoon from 4 to 4:15 over its chain.

REQUEST FOR EXHIBIT FOR DEPARTMENT OF MEDICINE AND HEALTH OF MUSEUM OF SCIENCE AND INDUSTRY

A request from the Museum of Science and Industry for the Association's exhibit at A Century of Progress after the close of that exposition was granted, with the understanding that the exhibit will be placed in the Department of Medicine and Health.

PHYSICIANS SERVING ON ADVISORY BOARDS OF MEDICAL PERIODICALS

The acceptance on the part of physicians of membership on advisory boards of medical periodicals in the publication of which they have no voice was deprecated by the Board.

ENTERTAINMENT OF BRITISH PHYSICIANS IN 1935

Plans were arranged for the entertainment of members of the British Medical Association who come to the United States

in August 1935 en route to the meeting of that Association in Australia.

MISCELLANEOUS BUSINESS

Various resolutions adopted by the House of Delegates were given consideration, and necessary steps were taken with a view to carrying out the provisions of those resolutions.

Numerous other matters were given attention and reports on many of these will be made later.

The Board adjourned, to meet in Chicago November 15 and 16.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

October 25. What Is a Serum? W. W. Bauer, M.D.
November 1. The Common Drinking Cup, W. W. Bauer, M.D.
November 8. Your Child's Sleep, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

October 23. Reading About Health, W. W. Bauer, M.D.
October 30. Diphtheria Must Go, W. W. Bauer, M.D.
November 6. The Fight Against Appendicitis, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Naturopathic Initiative Measure.—A naturopathic initiative measure will be voted on by the electorate of Arizona, November 6. This measure proposes to create a board of naturopathic examiners to examine and license naturopaths, to exempt naturopaths from the basic science requirement, to license without examination naturopaths who have been practicing in Arizona for three years, to license without examination naturopaths who hold "certificates" from the American Naturopathic Association, Arizona District, to authorize naturopaths to practice in any hospital supported by public funds, and to confer on naturopathic licentiates the right to practice the healing art without express limitations.

The Indian Service Physicians.—The Indian office, Washington, D. C., has approved the recent organization of the Indian Service Medical Society at Winslow with the following officers: Drs. Hudspeeth E. Scoles, Tuba City, president; Marshall E. Burgess, Oraibi, vice president, and Le Roy Jones, Winslow, secretary. The area covered by the membership extends from the Consolidated Ute Agency with headquarters at Ignacio, Colo., through the Navajo country to Truxton Canyon Agency at Valentine, on the west. To date there are twenty members and six honorary members. The purposes of the society are to promote cooperation among service physicians and to enhance the value of their services to the government. All physicians and dentists of the U. S. Indian Service are eligible for membership. A meeting of the society was held at Fort Defiance, October 10.

CALIFORNIA

Another Veterans' Hospital Opened.—The new Veterans' Administration Facility in San Francisco has been opened. Dr. James G. Donnelly is manager of the institution, which has a capacity of 334 beds. A staff of ninety nurses and attendants has been assembled.

Infantile Paralysis Among Nurses.—The closing of the Orange County Hospital, Orange, October 4, to all except emergency cases was necessitated by an outbreak of infantile paralysis among the nurses. The normal nursing force numbers about forty. Five patients in the hospital have infantile paralysis, the *Chicago Tribune* reported.

Los Angeles County Given Health Award.—The American Public Health Association, at its recent annual meeting in Pasadena, presented to Dr. John L. Pomeroy, health officer of Los Angeles County, the Peter Ling Award. Each year the association presents the award to the county having the lowest infant mortality rate in the nation. For the fiscal year 1933-1934, there were thirty-eight infant deaths per thousand live births, newspapers reported.

Naturopath Placed on Probation.—Axel O. Lindstrom, a naturopath of San Francisco, was placed on probation for five years at a recent meeting of the California State Board of Medical Examiners, following a hearing of charges that he aided and abetted an unlicensed practitioner who operated the Gillberg Institute, 406 Sutter Street. At the same meeting of the board, the license of Will H. Coleman, naturopath, was revoked, on a charge of practicing beyond the limitation of his license.

Naturopathic Initiative.—A naturopathic initiative measure, to be voted on by the people of California, November 6, will, if adopted, create a public corporation to be known as the "Naturopathic Association of California." This corporation is to be vested with exclusive jurisdiction over naturopathy, conducting examinations and issuing licenses. Naturopathic licentiates will be given all the rights and privileges of any and all other practicing physicians of any class in the treatment of any and all diseases, injuries, deformities or other mental or physical conditions. The right to practice in all institutions supported wholly or in part by public funds will be accorded naturopaths.

DISTRICT OF COLUMBIA

University News.—Dr. Hans Lauber, professor of ophthalmology, University of Warsaw, Poland, addressed the faculty and students of George Washington University School of Medicine, October 2, on "Heredity, Particularly in Relation to the Eye."

Colonel Ashburn Appointed Hospital Superintendent.—Dr. Percy M. Ashburn, colonel, U. S. Army, retired, is now superintendent of Columbia Hospital for Women, Washington. Colonel Ashburn began his services with the army in 1898, and he was retired, Dec. 31, 1931. He is the author of "The Elements of Military Hygiene," 1909, and "History of the Medical Department of the United States Army," 1929.

GEORGIA

Appointments at University of Georgia.—New appointments to the full time faculty of the University of Georgia School of Medicine, Augusta, include the following:

Dr. Sam M. Brock, professor of surgery.
Dr. Evans B. Wood, assistant professor of gynecology and obstetrics.
William F. Hamilton, Ph.D., professor of physiology and pharmacology.
Everett S. Sanderson, Ph.D., professor of bacteriology and public health.
Fred A. Mettler, Ph.D., assistant professor of anatomy.
W. R. Brown, assistant professor of chemistry.
Robert A. Woodbury, Ph.D., assistant professor of physiology and pharmacology.
Robert B. Dienst, Ph.D., assistant professor of bacteriology and public health.

The new wing of the University Hospital, named for Milton Antony, who founded the school in 1828, was to have been completed about October 1. The building was made possible by a grant from the Public Works Administration and by funds contributed by the Alumni Association, the city of Augusta and the county of Richmond. It will have an outpatient department on the first floor and a contagious disease hospital on the second.

ILLINOIS

Society News.—At a special meeting of the Will-Grundy County Medical Society in Joliet, October 3, Drs. Joseph Colt Bloodgood, Baltimore, and Max Cutler, Chicago, were the speakers, on cancer. Dr. Philip Lewin, Chicago, addressed the society, October 10, on "Classification, Etiology and Treatment of Arthritis."—Dr. James H. Hutton, Chicago, addressed the DeWitt County Medical Society, October 4, on the endocrine aspects of essential hypertension.

Chicago

Dr. Leake to Lecture.—Dr. James P. Leake, senior surgeon, U. S. Public Health Service, Washington, D. C., will give an illustrated lecture before a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine at the Chicago Woman's Club, October 26. His subject will be "Poliomyelitis, with Special Reference to Epidemiology." Dr. Leake has been in California for several months studying the epidemic there.

Sir Harold Gillies Speaks at Northwestern.—The fourth annual Mayo Lecture in Surgery will be delivered by Sir Harold Gillies, London, at Thorne Hall, McKinlock Campus, Northwestern University School of Medicine, October 23. His subject will be "The Development and Scope of Plastic Surgery." Sir Harold is on the staffs of several hospitals, including St. Bartholomew's and St. Andrew's, London.

The Belfield Lecture.—Dr. Paul R. Cannon, professor of pathology, University of Chicago, will present the sixth annual William T. Belfield Lecture at the Palmer House, October 25, under the auspices of the Chicago Urological Society. His subject will be "Bacterial Localization." Preceding the lecture there will be a fellowship dinner at 6:30 p. m. in honor of Dr. Cannon, to which all members and guests of the society are invited. This lecture was established in 1929 in honor of Dr. Belfield, a founder of the Chicago Urological Society.

"The Common Cold."—The Chicago Medical Society will devote its meeting, October 24, to a symposium on the common cold, presented by the following physicians:

Russell L. Cecil, professor of clinical medicine, Cornell University Medical College, New York, Influenza and the Common Cold.
Frank Jirka, director, state department of health, Springfield, Field Studies of the Common Cold.
William V. Bauer, director, bureau of health and public instruction, American Medical Association, The Economic Cost of the Common Cold.
Walter H. Nadler, associate professor of medicine, Northwestern University School of Medicine, Treatment, Complications and Sequelae of the Common Cold.

The evening has been designated "General Practitioner's Night." Dr. Edward H. Ochsner will give a demonstration prior to the symposium on x-ray carcinoma of the hands.

Dr. Jordan Awarded Medal.—Edwin O. Jordan, Ph.D., formerly chairman of the department of hygiene and bacteriology, University of Chicago, was awarded the Sedgwick Memorial Medal for distinguished service in public health at the annual meeting of the American Public Health Association in Pasadena in September. Although he retired officially from the university in 1933, after forty-one years' service, Dr. Jordan has been offering graduate courses and has continued his research in the department of hygiene and bacteriology. He had been chairman of the department since it was set up in 1914, and professor since 1907. He is editor of the *Journal of Preventive Medicine* and joint editor of the *Journal of Infectious Diseases*. He is a former president of the Society of American Bacteriologists and the American Epidemiological Society. He is the author of many volumes on bacteriology and related subjects, and co-author of a biography of W. T. Sedgwick, for whom the medal is named.

INDIANA

Many Years in Practice.—A recent meeting of the Grant County Medical Society was devoted to honoring the following physicians who had been in practice forty years or longer: John C. Knight, Jonesboro; Leander H. Conley, Gas City; John F. Loomis, Marion; William A. Fankbouer, Marion; William S. Resoner, Swayzee; Nettie B. Powell, Marion; Edwin M. Trook, Marion, and Zed T. Hawkins, Fairmount.

Meeting of Anesthetists.—Twenty-eight physician-anesthetists, from all sections of the state, assembled for a dinner meeting at Purdue University, Lafayette, September 11, to establish contact between Purdue Research Foundation and the practicing specialists in anesthesia. Speakers included Dr. Franklin S. Crockett, Lafayette, who discussed the recent ruling of the state board of medical examiners that the administration of an anesthetic was in fact medical practice. A petition was signed, looking toward the organization of a section in anesthesia in the state association, according to the *Journal of the Indiana State Medical Association*.

Society News.—A symposium on rheumatic fever will be presented before the Indianapolis Medical Society, October 23, by Drs. Russell R. Hippensteel, George S. Bond and Horace M. Banks. Dr. Roy W. Scott, Cleveland, will address the society, October 30, on "Modern Aspects of the Problem of Vascular Disease." A symposium on foreign bodies in the lungs constituted the program of the society, October 2; Drs. Lyman T. Meiks, Cecil S. Wright and Delbert O. Kearby were the speakers.—Dr. Otis C. Higgins, Lebanon, discussed encephalitis before the Boone County Medical Society at Lebanon, October 2.—At a meeting of the Hendricks County Medical Society in Danville, September 28, Fredric R. Henshaw, D.D.S., dean, Indiana University School of Dentistry, spoke on the relation of medicine to dentistry.—The Porter County Medical Society was addressed at Valparaiso, September 25, by Dr. Sidney A. Portis, Chicago, on "The Medical Management of Gallbladder Disease."—The Delaware-Blackford County Medical Society was addressed in Muncie, September 18, by Dr. Henry E. Bibler, Muncie, on encephalitis.

IOWA

Society News.—Speakers before the Jackson County Medical Society, August 2, were Drs. Dean M. Lierle and Nathaniel G. Alcock, Iowa City, on "Otolaryngology from the Standpoint of the Practitioner" and "Resection Method in the Treatment of Diseases of the Prostate," respectively. Dr. Russell L. Cecil, New York, will speak before the Linn County Medical Society, October 25, on arthritis. Dr. Joseph B. DeLee, Chicago, addressed the society in Cedar Rapids, October 4, and showed motion pictures on forceps operations and episiotomy; Dr. James Stuart McQuiston, Cedar Rapids, presented a paper on "Functional Diseases and General Medicine."

KANSAS

Society News.—Dr. Clifford C. Nesselrode, Kansas City, addressed the Southeastern Kansas Medical Society in Chanute, September 13, on cancer. Dr. Kerwin Armand Fischer, Arkansas City, addressed the Cowley County Medical Society in Winfield, September 20, on "Injuries to the Navicular Bone," and Dr. Fred E. Torrance, Winfield, syphilis. Dr. Edward T. Gibson, Kansas City, Mo., addressed the Lyon County Medical Society at Emporia, September 4, on "Treatment of Head Injuries."

State Cancer Program.—Plans for an educational program against cancer were recently adopted by the Kansas Federation of Women's Clubs at a meeting addressed by Dr. Earle G. Brown, secretary of the state board of health and state chairman of the American Society for the Control of Cancer. Other speakers were J. Scott Walker, D.D.S., Chetopa, president of the state dental society, and Dr. Clifford C. Nesselrode, Kansas City, chairman of the cancer committee of the state medical society. According to the *Bulletin* of the American Society for the Control of Cancer, a three year health program emphasizing cancer control is anticipated.

KENTUCKY

Personal.—Dr. Jacob Leland Tanner, Albany, has been appointed health officer of Henderson County. Dr. Herman T. Carter, Gilbertsville, has been chosen health officer of a new health unit to be established in Metcalfe County. Dr. John G. South, Frankfort, has been named chief of the bureau of registration of the state board of health, it is reported.

Society News.—Dr. Derrick T. Vail Jr., Cincinnati, addressed the Louisville Eye and Ear Society, October 11, on "The Ophthalmologist Looks at Dacryocystorhinostomy." Dr. Oscar O. Miller addressed the Louisville Medico-Chirurgical Society, October 12, on silicosis. Dr. James Royden Peabody will speak, October 26, on "Diagnosis and Treatment of Brain Abscess of Otic Origin." Dr. Stephen C. McCoy will be the speaker at a meeting of the Louisville Urological Society, October 30, on "Renal Resection." Dr. William Barnett Owen addressed the Society of Physicians and Surgeons of Louisville, October 18, on osteomyelitis.

LOUISIANA

Personal.—Dr. Glenn J. Smith recently resigned as superintendent of the East Louisiana State Hospital at Jackson, a position he had held since 1929; he has been succeeded by Dr. John A. Thames, Natalbany. Dr. Walter W. Poinboeuf, Bastrop, has been appointed director of the St. Landry Parish Health Department, with headquarters at Opelousas.

Resolution Urges Health Unit Be Discontinued.—In a resolution adopted at a special session in Opelousas, August 29, the St. Landry Parish Medical Society declared itself opposed to the continued operation of the local health unit and asked that the old system of the appointment of a health officer be adopted. The resolution states that there have been numerous complaints against the encroachment of the health unit on the legitimate interests of the practicing physicians of the parish, and suggests that the appropriation to maintain the unit be discontinued.

Society News.—Dr. Rudolph H. Kampmeier, New Orleans, addressed the Second District Medical Society at Norco, September 16, on diagnosis and treatment of infections of the respiratory tract. At a meeting of the Concordia-Catahoula Bi-Parish Medical Society in Jonesville, September 6, Dr. Naum G. Nasif, Jonesville, discussed diathermy in the treatment of lobar pneumonia. The Orleans Parish Medical Society was addressed in New Orleans, October 8, by Henry T. Scott, Ph.D., Madison, director, biologic research, Wisconsin Alumni Research Foundation, on "Light and Its Application to the Irradiation of Foods."

MARYLAND

Personal.—Dr. Francis Dana Coman, Baltimore, sailed, August 22, for Honolulu en route to New Zealand to join the Antarctic expedition of Lincoln Ellsworth. Dr. Coman accompanied Rear Admiral Richard E. Byrd on his first expedition to the Antarctic.

Semiannual Meeting.—The Medical and Chirurgical Faculty of Maryland held its semiannual meeting at Point Lookout, October 11-12. Dr. Leonard B. Johnson, Morganza, president, St. Mary's County Medical Society, gave the address of welcome, and Dr. George O. Sharrett, Cumberland, president of the medical faculty, the response. The scientific session was given over to papers by Drs. Eugene L. Flippin on "Roentgen Findings in Primary Malignancy of the Lung"; Howard E. Ashbury, "Management of the Cancer Patient," and Sydney R. Miller, "Present Concepts of the Diagnosis and Therapy of Chronic Nephritis."

Society News.—The Baltimore City Medical Society was addressed, October 19, by Drs. Adolph Weinzirl on "The Diphtheria Prevention Campaign in Baltimore"; John T. King Jr., "Factors in the Etiology of Hypertension," and Harvey B. Stone and James C. Owings, "Living Grafts and Thyroid and Parathyroid Glands." Dr. Newton W. Hershner, Mechanicsburg, Pa., was elected president of the Cumberland Valley Medical Association at its thirty-second annual meeting in Hagerstown in September. Other officers elected are Drs. Henry C. Lawton, Camp Hill, Pa., and Julius E. Kempster, Chambersburg, Pa., vice presidents, and Drs. William A. Gordon, Hagerstown, and Percy D. Hoover, Waynesboro, Pa., secretary and treasurer, respectively.

MASSACHUSETTS

Committee on Research in Dental Medicine.—A committee on research in dental medicine comprising seven representatives of the faculty of arts and sciences and the medical and dental schools has been appointed at Harvard University. The committee has been given general supervision over research in the dental school. Its purposes will be to promote important dental research, act as a clearing house for research that is important to other fields, and to provide official contacts through which the dental school can readily get assistance for its research problems that overlap those of other departments. A grant from the Milton Fund has been given to the committee for work on its first problem, which will deal with the effects of nutrition on teeth and their supporting structures. Members of the new committee are Elmer P. Kohler, Ph.D., Abbott and James Lawrence professor of chemistry; Alfred C. Redfield, Ph.D., professor of physiology and director of the Biological Laboratories; Dr. Simeon B. Wolbach, Shattuck professor of pathologic anatomy, and consulting pathologist to the Cannon Commission of Harvard University; Dr. Walter B. Cannon, George Higginson professor of physiology; Percy R. Howe, S.D., Thomas Alexander Forsyth professor of dental science, and instructor in pathology, Harvard Medical School; Lawrence W. Baker, D.M.D., professor of orthodontia, and George P. Matthews, D.M.D., instructor in anatomy. Dr. Leroy M. S. Miner, dean of the dental school, will serve as a member ex officio of the committee.

MINNESOTA

Trudeau Celebration.—Dr. James Burns Amberson Jr., New York, was the guest speaker in the celebration of the Minnesota Trudeau Medical Society, October 6, to observe the eighty-sixth anniversary of the birth of Dr. Edward Livingston Trudeau. Dr. Trudeau was born, Oct. 5, 1848. Dr. Amberson's subject was "Estimation of the Healing Process in Pulmonary Tuberculosis and Its Importance in Treatment." The tribute to Dr. Trudeau was made by Dr. Walter J. Marcle, Minneapolis.

MISSISSIPPI

Society News.—At a meeting of the Issaquena-Sharkey-Warren Counties Medical Society in Vicksburg, September 11, speakers included Dr. George W. Gaines, Tallulah, La., on "Streptococcal Sore Throat." Dr. Edgar Burns, New Orleans, addressed the Pike County Medical Society, recently, on genito-urinary tuberculosis. Speakers before the Tri-County Medical Society at Monticello, September 11, were Drs. John W. Wilson, Monticello, on significance of adenitis; John R. Markette, Brookhaven, what vomiting may indicate, and Oscar N. Arrington, Brookhaven, hematuria. The next meeting of the society will be held in Brookhaven, December 10. A clinical pathologic conference on heart disease was a feature of the meeting of the Northeast Mississippi Thirteen

Counties Medical Society at Houlka, September 12; guest speakers were Drs. James S. McLester, President-Elect of the American Medical Association, and George S. Graham, Birmingham, Ala. Other speakers on the program were Drs. Theodore H. Rayburn, Pontotoc, on subphrenic abscess; William T. Pride, Memphis, Tenn., conduct of a normal labor case, and Douglas D. Baugh, Houston, recognition of common mental disorders.

Illegal Practitioners Investigated.—The Mississippi State Board of Health has provided the following news about certain illegal practitioners. Affidavits were made against "Dr. C. Hester," McCall Creek, July 9, for practicing medicine without a license. Investigation disclosed that he had obtained a copy of the license of Dr. Charles F. Hester from the records in the circuit clerk's office at Philadelphia and passed himself off as this physician. He filed this copy of the license with the circuit clerk at Meadville. It is reported that he pleaded guilty, paid his fine and court costs and was to have left the state; however, it was stated that he is still practicing. He had been arrested and charged with obtaining a narcotic license fraudulently. Dr. Charles F. Hester, now living in Amarillo, Texas, is the only physician with this name ever licensed to practice in Mississippi. He testified at the trial of the imposter "Dr." R. C. Watts, colored, was tried, July 10, at Anguilla, on a charge of practicing medicine without a license; he was convicted, the fine being suspended on condition that he would leave and stay out of the state. Richard Tigue, colored, was tried before a justice of the peace near Louisville, August 18, for practicing medicine without a license. He was charged with delivering a woman in labor. The attorney who pleaded his case endeavored to show that no fee was paid for the service. Tigue was convicted and fined \$200; the verdict was appealed to the circuit court of Winston County. Joe Hatton, colored, has been acting as a midwife for colored women in Jones County for several years. He pleaded guilty in his trial before a justice of the peace at Soso and was given a suspended fine of \$200 on condition that he refrain from this practice. Other investigations are being conducted in Coahoma, Hinds, Lafayette, Pearl River, Rankin, Tippah and Winston counties. The state board of health urges practicing physicians to cooperate with it in this campaign against illegal practitioners.

NEW JERSEY

Society News.—Drs. George T. Pack, New York, and Samuel M. Beale, Sandwich, Mass., addressed the Bergen County Medical Society, Hackensack, September 11, on "Recent Advances in Cancer Research" and "Small Doses of Insulin," respectively. Dr. Edward J. Donovan, New York, addressed the society, October 9, on "Abdominal Surgery in Children." —Dr. William D. Haggard, Nashville, Tenn., addressed the Atlantic County Medical Society, Atlantic City, October 12, on "The Delayed Operation for Appendicitis in Delayed Cases—An Analysis of 3,225 Operative Cases." —Dr. S. Bernard Wortis, New York, addressed the Hudson County Medical Society, Jersey City, October 2, on "Head Injuries—Treatment and Evaluation."

NEW YORK

Personal.—Dr. Henry R. O'Brien, Oberlin, Ohio, recently health commissioner of Lorain County, Ohio, has been appointed assistant district health officer on the staff of the New York State Department of Health. —Dr. William A. Howe, chief of the medical inspection bureau of the state education department, retired October 1, after being associated with the department since 1915. —Dr. Philip J. Raffe of the staff of the state department of health, has been appointed temporary district health officer with headquarters in Syracuse until a successor to the late Dr. Frederick W. Sears is selected by civil service examination. —Colleagues of Dr. Edward R. Baldwin, director of the Edward L. Trudeau Foundation, Saranac Lake, marked his seventieth birthday, September 8, by presenting him an armchair. Dr. James Woods Price made the presentation speech at a gathering at Dr. Baldwin's home in the evening, attended by about twenty-five physicians and others.

New York City

Society News.—Among speakers at a meeting of the Society for Experimental Biology and Medicine, October 17, were Drs. Irving Sherwood Wright, on "Treatment of Adult Scurvy with Crystalline Vitamin C (Ascorbic Acid)"; Alfred N. Richards, Ph.D., Benton B. Westfall, Ph.D., and Phyllis A. Bott, Philadelphia, on "Renal Excretion of Insulin, Creatinine and Xylose in Normal Dogs." —Dr. Mortimer N. Hyams gave an afternoon lecture before the Medical Society of the County of Queens, October 5, on "Sterilization of the Female by

Coagulation." —Dr. John L. Rice, health commissioner of New York, addressed a joint meeting of the Medical Society of the County of Queens and the Queensboro Tuberculosis and Health Association at Forest Hills, September 26, on "Municipal Control of Tuberculosis."

Hospital Planning Board Established.—Planning of hospital buildings under the jurisdiction of the city department of planning and construction set up by Dr. Sigismund S. Goldwater, hospital commissioner, October 11. Responsibility for critical examination of building plans will be vested in a board made up of the following: the medical superintendent of the department, a representative of the division of engineering, the head of the division of nursing and the head of the division of dietetics. In addition, the department's director of laboratories and director of roentgenology will be associate members, and the superintendent of the individual hospital affected in any case will be a member ex officio. In the future plans for hospitals will not be accepted until they have received the written approval of this board, it was said.

OHIO

State Medical Election.—Dr. Ralph R. Hendershott, Tiffin, was chosen president-elect of the Ohio State Medical Association at the annual session in Columbus, October 4-6. Dr. John A. Caldwell Jr., Cincinnati, became president. The 1935 meeting will be held in Cincinnati.

Anniversary of Library Association.—The fortieth anniversary of the founding of the Cleveland Library Association was celebrated at a dinner in honor of its charter members at the Allen Memorial Library Building, October 19. Dr. William E. Bruner gave a talk on the founding of the library and Dr. Howard T. Karsner, an appreciation of surviving charter members.

Third Graduate Course.—The Cleveland Academy of Medicine will present its third graduate course beginning October 26 and continuing weekly until March 22. The course this year is in the general field of obstetrics and gynecology. The first eight lectures will be as follows:

October 26, Physiology of the Female Genital Organs Including Endocrinology, Dr. Robert L. Faulkner
November 2, Functional Disorders of Menstruation, Dr. Gerald B. Hurd
November 9, Sterility, Dr. James L. Reycraft.
November 16, Diseases of the Ovary, Dr. Marion D. Douglass Jr.
November 23, Diseases of the Uterus, Dr. William D. Fullerton.
December 7, Carcinoma of the Cervix and Radium Treatment, Dr. Lawrence A. Pomeroy
December 14 and 21, Nonoperative Treatment of Gynecologic Conditions, Dr. William H. Weir.

OREGON

Cult Initiative Measure.—On November 6, the electorate of Oregon will vote on a proposed initiative measure to adopt a "healing arts amendment" to the constitution of the state. This constitutional amendment, if adopted, will abolish the requirements that all practitioners of the healing art shall demonstrate their fitness in anatomy, physiology, pathology, chemistry and hygiene before a nonsectarian, impartial board. It will confer on examining boards and schools of drugless healers the right to enlarge the scope of practice of drugless healers at will. It will permit injured employees to select any physician, including drugless healers, to treat their injuries. It will require all hospitals to admit any practitioner of the healing art, including drugless healers, selected by any injured or sick person to the hospital. It will deprive the legislature of Oregon of any further jurisdiction over the practice of the healing art in the state.

PENNSYLVANIA

Society News.—Dr. George W. Ramsey, Washington, addressed the Washington County Medical Society, October 10, on acute pancreatitis. —Dr. Harry Ryerson Decker, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, October 11, on treatment of pulmonary infection. —Dr. John P. Henry, Pittsburgh, gave a clinical demonstration of the injection treatment of varicose veins before the Cambria County Medical Society, Johnstown, October 11, and Dr. Bernard J. McCloskey, Johnstown, discussed "Treatment of Empyema by Aspiration." —Dr. Horace B. Anderson, Johnstown, addressed the Bedford County Medical Society, September 20, on heart failure. —Dr. Harold A. Miller, state director of emergency medical relief, Harrisburg, addressed the Delaware County Medical Society, October 11, on "The Present Social Order in Its Relation to Medical Care Given to the Indigent and the Necessity for Study of Alternate Methods with the Thought of Constructing a Program Agreeable to All."

Philadelphia

Society News.—Dr. Maurice N. Richter, New York, addressed the Pathological Society of Philadelphia, October 11, on "Experimental Aspects of Leukemia."—Speakers at a meeting of the Philadelphia Roentgen Ray Society, October 11, were Drs. Barton R. Young and William Edward Chamberlain, on "Hodgkin's Disease: A Clinical and Roentgenologic Review," and Wendell C. Hall, "Roentgenologic Significance of 'Milk of Calcium' Bile."—Dr. Alfred Gordon, among others, addressed the Philadelphia Psychiatric Society, October 12, on "Epilepsy and Arteriosclerosis."

Discussion of Hospital Problems.—The regular meeting of the Philadelphia County Medical Society, October 10, was devoted to discussion of hospital problems. E. H. Lewinski-Corwin, Ph.D., New York, discussed "The New York Hospital Situation"; Mr. Charles F. Neergaard, hospital consultant, New York, "The Hospital Situation with Special Reference to Philadelphia"; Dr. Harold A. Miller, state director of emergency medical relief, "Alternative Methods of Medical Functioning in Relation to the Indigent," and Mr. Louis I. Matthews, superintendent of St. Luke's and Children's Hospital, "Lay and Professional Relationships in Hospitals."

TENNESSEE

Flexner Lectures at Vanderbilt.—Prof. Erik Gunnar Nyström, professor of surgery at the University of Upsala, Sweden, will give the fourth series of the Abraham Flexner Lectures at Vanderbilt University School of Medicine, Nashville, in February and March, 1935.

Society News.—Dr. James R. Reinberger, Memphis, addressed the Hamilton County Medical Society, Chattanooga, September 27, on "Results in Repair of Relaxed Perineum at Time of Delivery."—Drs. Horace B. Cupp and Carroll H. Long, Johnson City, addressed the Washington County Medical Society, October 4, on "Backache: A Problem in Ex-Service Men" and "Diagnosis and Treatment of Endocrine Disorders in the Female," respectively.—Dr. C. C. Hacker was recently elected mayor of Elizabethton.—Dr. Hugh J. Morgan addressed the Nashville Academy of Medicine, October 2, on "Factors Conditioning the Transmission of Syphilis by Blood Transfusion."

District Meeting.—The third district of the Tennessee State Medical Association held a meeting in Chattanooga, September 28, with Dr. James S. McLester, Birmingham, Ala., President-Elect of the American Medical Association, as the guest of honor. Dr. McLester delivered an address on "Recent Advances in Our Knowledge of the Deficiency Diseases" at the scientific meeting and spoke at an evening banquet. Other speakers included Drs. Gilbert Madison Roberts, Chattanooga, on "Transurethral Prostatic Resection"; Robert P. Ball and Stanton S. Marchbanks, Chattanooga, "Roentgen Examination in Obstetrics" and William E. Van Order, Chattanooga, "Abdominal Pain in Children."

WASHINGTON

State Medical Election.—Dr. Nathan L. Thompson, Everett, was elected president of the Washington State Medical Association at the annual session in Corvallis, September 12. Dr. Curtis H. Thomson, Seattle, was reelected secretary. The 1935 meeting will be held in Everett.

GENERAL

International Radiologic Congress.—Dr. Arthur C. Christie, Washington, was elected president of the International Congress of Radiology at the recent session in Zurich, Switzerland, and it was decided to hold the next congress in the United States in 1937, possibly in Chicago. Dr. Benjamin H. Orndoff, Chicago, was elected general secretary.

Saunders Memorial Medal.—Recommendations for candidates for the 1935 Walter Burns Saunders Memorial Medal should be sent to the headquarters of the American Nurses' Association, 50 West Fifth Street, New York, before December 31. This medal is given for distinguished service in the cause of nursing. Rules governing eligibility may be obtained from the association.

Society News.—The annual conference of the National Society for the Prevention of Blindness will be held in New York, December 6-8. Subjects selected for discussion will be causes of blindness, sight saving classes, prevention of eye accidents, and prevention of prenatal accidents that may cause blindness. Dr. Edward Jackson, Denver, will make the principal address, on "A Wide Basis for Blindness Prevention."—Dr. John Shelton Horsley, Richmond, Va., was elected

president of the American Society for the Study of Neoplastic Diseases at its meeting in Washington, September 6-8, succeeding Dr. Max Cutler, Chicago. Dr. Charles F. Geschickter, Baltimore, was named vice president and Dr. Eugene R. Whitmore, Washington, D. C., secretary.

Death Rates in Large Cities.—An analysis of the vital statistics of twenty-eight large cities made by the New York City Department of Health shows a general death rate for 1933 of 10.95 per thousand of population. Washington, D. C., had the highest rate (15.89) and Milwaukee, the lowest (8.23). Among the five largest cities Chicago had the lowest infant mortality rate (.49); the lowest rates in the group were for Seattle, Portland, Ore., and Oakland, Calif., each 38 per thousand live births. The highest rates were for Buffalo, N. Y., and Columbus, Ohio, each 69. The highest rates for some important causes of death were as follows: cancer, Boston, 176 per hundred thousand; pulmonary tuberculosis, Washington, D. C., 103.2; diabetes, Jersey City, N. J., 36.6; typhoid, Washington, 3.6; diphtheria, Louisville, Ky., 10.4; suicides, San Francisco, 37.6; homicides, Houston, Texas, 26.1; automobile accidents, Los Angeles, 36.2. Lowest rates for the same causes were: cancer, Houston, 70.3; pulmonary tuberculosis, Minneapolis, 14.7; diabetes, Houston, 10.3; typhoid, Portland, Ore., none; diphtheria, Seattle and Rochester, N. Y., none; suicide, Jersey City, 8.3; homicide, Milwaukee, 2.2; automobile accidents, Rochester, N. Y., 13.8.

World Prevalence of Smallpox.—Figures assembled by the Health Section of the League of Nations showing the distribution of smallpox throughout the world during the past two years indicate a noticeable decline in the United States. The total number of cases reported in 1933 was 6,233, as against 49,000, 30,000 and 11,000 during the previous three years. A study of the regional distribution shows that the disease is rare in the Northeastern states, relatively high in the Central and Southern states and highest in the Far West. Elsewhere in North America smallpox is also on the decline but still causes several thousand deaths each year in Mexico. Portugal and the Soviet Union are the only important smallpox foci in Europe; in both countries it appears to be of the serious type, according to the report, whereas in many countries the mortality is extremely low. In 1933 Egypt had the most serious epidemic of smallpox in Africa, with 5,697 cases and nearly 1,000 deaths; it has definitely declined during 1934. The number of cases rose in the Belgian Congo from 1,241 in 1931 to 3,410 in 1933. In Asia the most important focus is British India, for which provisional figures showed 250,000 cases in 1933. In the ports of China, where there was an epidemic in the winter of 1932-1933, the disease remained endemic, with a slight rise in Shanghai in the early months of this year. Japan has also had an increase after being comparatively free for several years.

CANADA

Personal.—Dr. James A. Faulkner, Belleville, has been appointed minister of health for Ontario, succeeding Dr. John M. Robb. Dr. John M. Uhrich, Regina, has been appointed minister of public health for Saskatchewan.—Dr. Alberic Marin was recently elected president and Dr. Paul H. Poirier, secretary, of the Montreal Dermatological Society.

Society News.—At the annual meeting of the British Columbia Medical Association in Kamloops, September 17-18, the speakers included: Drs. James C. Masson, Rochester, Minn., on "Malignancy of the Large Bowel" and "Use of Living Sutures in the More Difficult Abdominal Herniae"; William P. Murphy, Boston, "Therapeutic Effects of Intramuscular Injections of Liver Extract," and Francis M. Pottinger, Monrovia, Calif., "Role of the General Practitioner in Diagnosis of Tuberculosis."

Bar Sale of Dinitrophenol.—Changes in the Food and Drugs Act to correct discrepancies between it and the Proprietary or Patent Medicine Act were enacted by the recent federal parliament and will go into effect Jan. 1, 1935, according to the *Canadian Medical Association Journal*. The principal change was to insert in the Food and Drugs Act a list of nearly forty diseases for which remedies cannot be sold. The journal points out that since obesity is one of the conditions listed, the sale of dinitrophenol would appear to be barred.

CORRECTION

A Defense of Suprapubic Prostatectomy.—In a letter on prostatectomy by Dr. E. L. Keyes (*THE JOURNAL*, October 6, p. 1086, column 1, bottom of page), the statement "172 suprapubic cystotomies" should be "172 suprapubic prostatectomies."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 22, 1934.

The International Sanitary Control of Aerial Navigation

The government has published the report of the International Sanitary Convention for Aerial Navigation, which has been signed by most of the important countries of the world. If the regulations adopted are properly carried out, the risk of conveyance of disease from one country to another should be minimized. Each country undertakes to provide at its aerodromes a sanitary organization adapted to the current needs of prophylaxis, which as a minimum will consist of the attendance of a physician at such times as may be necessary for the medical examinations contemplated by the convention. It rests with each country to take into account the risk of infectious disease to which its territory may be exposed and to decide whether to establish sanitary aerodromes, which will have an organized medical service with one medical officer and one or more sanitary inspectors, who will not necessarily be in constant attendance. The sanitary aerodrome will have (1) equipment for taking and dispatching suspected material for examination in a laboratory, if such examination cannot be made on the spot; (2) facilities for the isolation and care of the sick, for the isolation of contacts separately from the sick, and for the carrying out of disinfection and deratization. In the journey log of the aircraft the following must be entered: 1. Any facts relevant to public health which have arisen in the course of the voyage. 2. Any sanitary measures undergone by the aircraft before departure or at places of call, in application of the present convention. 3. Information concerning the appearance in the country of departure of the following infectious diseases: plague, cholera, yellow fever, typhus and smallpox. If any of these diseases appear in a noninfected country, the aerodrome authorities shall enter the information in the journey log of any craft leaving it during a period of fifteen days from the receipt of the information. The medical officer of the aerodrome has the right of sanitary inspection of the passengers and crew, and on his advice the embarkation of persons with symptoms of infectious diseases may be prohibited. Aircrafts in flight are forbidden to let fall matter capable of causing an outbreak of infectious disease.

REGULATIONS APPLICABLE TO CERTAIN INFECTIOUS DISEASES

Plague, cholera, yellow fever, typhus and smallpox are subject to special measures. For purposes of the convention the period of incubation of plague is reckoned as six days, of cholera five days, of yellow fever six days, of typhus twelve days, and of smallpox fourteen days. The measures to be adopted on the departure of an aircraft from a local area infected by plague, cholera, typhus or smallpox are (1) thorough cleansing of the aircraft, (2) medical inspection of passengers and crew, (3) exclusion of any person showing symptoms of these diseases as well as of persons in such close relation with the sick as to be liable to transmit these diseases, (4) inspection of personal effects, which shall be accepted only if in a reasonable state of cleanliness, (5) in case of plague deratization, if there is any reason to suspect the presence of rats on board. On arrival from such infected areas the aircraft may be required to land at a prescribed sanitary or authorized aerodrome and the movements of the passengers and crew may be restricted. If there is on board a recognized or suspected case of plague the following measures are applicable: (1) immediate disembarkation of the sick, (2) surveillance of contacts and sus-

pects for a period not exceeding six days, (3) disinfection and disinsectization of personal effects, and (4) deratization. For a case of cholera the measures are similar except that the period of surveillance is five days and the drinking water may be disinfected and emptied. For typhus the measures are similar except for delousing and surveillance for twelve days after this. For smallpox the special measures are vaccination and surveillance for a period not exceeding fourteen days of those on board. In regions in which yellow fever has occurred or is endemic aerodromes must be at an adequate distance from the nearest inhabited center, provided with a water supply protected against mosquitoes and with mosquito-proof dwellings for the aircraft crews and for the accommodation of passengers. The aircraft and cargo must be inspected to see that they do not contain mosquitoes and, if necessary, disinfected. Passengers and crew may be put under surveillance for six days from exposure to infection.

New Regulations for the Dusty Industries

New and more stringent regulations have been made by the government for the dusty industries, which include the refractories, sandstone, pottery and asbestos. Those seeking employment in these industries must be examined by a member of the medical board. Their employment will not be allowed if their physique does not satisfy the following requirements: 1. The chest must be at least of average development and the respiratory passages free from obstruction. 2. There must be no sign of disease of the lungs or heart. 3. There must be no tuberculosis in any region.

PARIS

(From Our Regular Correspondent)

Sept. 12, 1934.

A New Vaccine Against Plague

Important research on vaccination against plague has been carried out in Madagascar, in the Institut Pasteur de Tananarive, by Girard and Robic, the results of which were recently reported by Professor Mesnil to the Academy of Medicine. The vaccines against plague at present in use are prepared from cultures of killed bacilli, which confer an immunity of only a few weeks duration. The soldiers who are vaccinated before they leave the capital lose the greater part of their immunity by the time they reach their destination in the colonies and it is often necessary to repeat the vaccinations, which sometimes give rise to unpleasant anaphylactic reactions. Girard and Robic have prepared a new vaccine, with living bacilli derived from strains that have been attenuated by many successive cultures, according to the method that Calmette employed in the preparation of the BCG vaccine against tuberculosis. With this new vaccine they have vaccinated 15,000 persons among the population of the high plateaus of Madagascar, where both the pulmonary and the bubonic form of plague is rather frequent, with a high mortality. From March 1 to April 15, an average of 150 new cases per week was recorded, only a third of which were of the bubonic type. No untoward incidents were observed following the vaccinations. No vaccinated persons have contracted the plague as yet, although many were living in infected surroundings. It would seem that, owing to these measures, the epidemic will be eradicated soon.

Tuberculosis in the Army

The detection of tuberculosis among the young men who are enlisted by conscription for the army is a matter of great importance. The law has decided that any soldier who is declared by the army physicians to be in perfect health on his arrival at the barracks, and who later becomes tuberculous, is assumed to have contracted the disease during his military service, which fact not only entitles him to an immediate discharge from the army but also to a pension for the remainder of his life. This constitutes a heavy burden on the budget.

Hence the army physicians are urged to exercise great care in the examination of recruits, each of whom must undergo two examinations. The first examination is given at the time the young conscript presents himself for the first time to the registration officers the day before his enlistment. This examination is a hasty and summary proceeding, being public and extending over only a few minutes. It enables the examiners to eliminate only those who are unacceptable at first sight, by reason of undersize, insufficient chest development, deformities, albuminuria, diabetes and the like. Following this examination, conscripts are accepted only provisionally and assigned to their respective units. Thereupon the chief physician of the regiment proceeds with an individual detailed examination. He is allowed a period of three months in which to complete his examinations, and he may, if he deems it necessary, send any recruit for a consultation with specialists in the military hospitals of the nearest large city. It often requires shrewdness to detect the simulators. Formerly it was common for some to simulate deafness, excessive myopia or dysentery in order to be relieved of military service. Since the enactment of the new law the reverse is true. Now the simulators seek to conceal any disease with which they are affected in order not to reveal it until after two examinations have been completed, so that their disease may be declared to be a consequence of military service and give them the right to a pension. The physicians take great precautions to detect all fraudulent practices, most of which are well known to them. Considerable improvement has been brought about by the ruling that all conscripts are to be subjected to a thorough radioscopic examination before they are definitely assigned to their unit. Médecin général Rouvillois, in collaboration with Messieurs Christian and Liégeois, reported recently to the Academy of Medicine the first results obtained following the introduction of radioscopic examinations in the army. The idea was first proposed by Médecins généraux Rieux and Sieur, but it took time to procure the technical equipment and the requisite personnel. The results secured confirm the importance of the introduction of this means of investigation. Out of a total of 115,150 recruits examined, 1,093 eliminations were made and final or temporary discharges were granted, representing an average of 9.4 to the thousand, which included 143 persons in whom open tuberculosis was diagnosed. These observations are interesting because they have to do mostly with recruits who had already been accepted at the first examination. The number of cases of tuberculosis detected by systematic radioscopic examination constitutes about one third of the cases detected at the first examination. Following this address, Professor Sergent emphasized the value of this innovation and expressed the hope that the same methods would be applied before persons are allowed to enter any collective group: high schools, universities or even factories. Mr. Béclere took occasion to stress the need of distinguishing types of tuberculosis in an active state from old lesions long since cured.

Noise in the Cities

The steady increase of the external noises today in all large cities has finally begun to attract the attention of hygienists. A crusade against noise has been organized by many municipalities. Almost everywhere one encounters the indifference of the public authorities and the selfishness of the persons responsible for the noises. Some have gone so far as to deny the existence of the nervous disorders produced by noise and to say that noise disturbs only neuropaths and persons who are already ill—who would do well to move into the country. In opposition to such views, Dr. Segard has published a clinical study on what he terms the "Syndrome of Persons Suffering from the Noise Evil." He distinguishes the effects of continuous noises from unexpected noises, which produce a nervous shock, the repetition of which is positively harmful. To the

latter class belong noises of gasoline motors, particularly motorcycles and airplanes, loud speakers and phonographs, and the like. A few years ago it was common to compare the irritability of city dwellers to the calmness of villagers. Noises cause nervous disorders. They provoke disturbances of sleep, digestive disorders, irregularity of the pulse and an increase in blood pressure. Dr. Segard stated that the special commission on the noise evil, with headquarters in New York, has estimated that in mental workers this syndrome observed in persons subjected to noises reduces by 20 per cent their working capacity. It is the duty of the municipalities and the responsible authorities to pass regulations controlling the use of automobile horns, locomotive whistles, factory sirens, loud speakers, phonographs and radio sets and to prevent unnecessary noises of vehicles, advise and prescribe the construction of buildings of sound-proof materials, and impose effective penalties for violations of the specifications. It has been proposed that persons troubled by noises at night should put pledgets of absorbent cotton or wax in the ears to reduce the transmission of sound. But such measures are only partially effective and are not without danger. From time to time, persons who are affected by the noises of the city should spend a short period in the country. It would be a good thing if the authorities of certain small cities would make more widely known the measures they have adopted to prevent noise. They would not fail to attract many persons from the large cities who are seeking a quiet place in which to spend their vacation.

BERLIN

(From Our Regular Correspondent)

Aug. 27, 1934.

Heredity and Diseases of the Blood Vessels and Kidneys

Professor Weitz addressed recently the Berlin Medical Society on "Hereditability of Diseases of the Heart, the Blood Vessels and the Kidneys." Congenital cardiac defects are relatively more frequent in certain families and are concordant in dizygotic twins. In one family, pronounced cyanosis could be followed through four generations in seven persons. Numerous necropsy reports refer to similar congenital cardiac defects in siblings. Frequently not only a general predisposition to malformations of the heart are inherited but also even the predisposition to certain definite malformations. The hereditary course may apparently be dominant and recessive.

In acquired cardiac defects, external factors play an essential part. In enzygotic twins, acquired cardiac defects are frequently found to be discordant. A hereditary predisposition must be assumed. Since researches on twins show that a tendency to sore throat is decidedly hereditary, this is doubtless, in many cases, the explanation for the familial aspects of heart defects after endocarditis.

Constitutional cardiac disease is found chiefly in vasoneurotic, infantile and asthenic subjects and in persons with disturbances of the internal secretions. Researches on families and on twins show that vasomotor disturbances, a tendency to extrasystoles and to paroxysmal tachycardia, drop heart and pendulous heart are traceable to hereditary factors.

It has been observed that there are families in which there is a high incidence of the consequences of hypertonia; for example, cerebral hemorrhages. The parents of young hypertonic patients die at an early age from heart disease and cerebral hemorrhage. The hereditary course is in this case dominant.

Alcoholism, mental excitement, immoderate physical exertion and the ingestion of animal protein constitute external factors that serve as precipitating causes in the manifestation of the predisposition. In this connection, interest attaches to investigations on monks. In contrast to monks using a mixed diet, hypertension was seldom found in monks subsisting on a vege-

tarian diet. Arteriosclerosis shows a certain connection with hypertension, and in a heredobiologic study they cannot be entirely separated. Also cerebral arteriosclerosis and angina pectoris have been found to have a familial incidence.

Weitz reports having observed several instances of hypertension in parents and children. Concordant behavior in enzygotic twins and familial occurrence prove the hereditary nature of thrombo-angiitis obliterans. With respect to varices, family trees have been studied that point unequivocally to a dominant hereditary transmission of the predisposition. In enzygotic twins, varices that occurred were always concordant.

Of the renal diseases one must examine, for three reasons, the heritability of glomerulonephritis: an increased incidence among siblings following diseases that seldom give rise to nephritis; increased incidence of scarlatinal nephritis in some siblings; increased incidence of nephritis in the family in general.

The cystic kidney in the new-born is probably a recessive hereditary disorder. Cystic kidney in adults, which usually appears beyond the forties in a much more harmful form, seems to have a dominant hereditary course. Since in many cases a cystic kidney is associated with a grave malformation, sterilization is to be considered.

Treatment of Spasm of the Pylorus

In recent years, hypertrophic stenosis of the pylorus in infants has frequently been operated on in accordance with a procedure introduced by Professor Ramstedt of Münster. In 1929 Ramstedt sent a questionnaire to about sixty children's clinics and hospitals for infants to secure information concerning the results of this method. This questionnaire revealed that, during the ten-year period from 1919 to 1928, 1,842 cases of pylorospasm had been treated in the institutions solicited for information. The mortality ranged around 18 per cent, internists reporting a mortality of 16 per cent, while that of cases coming to operation was 22.5 per cent. A recent inquiry of the same nature and extent covers 2,432 cases, with a general mortality of 10.7 per cent, internists reporting a mortality of 9 per cent, while that of cases coming to operation was 14.4 per cent. Thus there has been not only a marked increase in the number of cases but also a gratifying reduction of the mortality in this dangerous disorder. Today this disorder is better diagnosed—more frequently in its beginnings, so that treatment can be begun earlier. Whether the splitting of the hypertrophic pylorus muscle, which Ramstedt recommended, has proved its worth is doubtful, for there is as yet no general agreement as to the indications for operation. The success of surgical treatment makes a better showing if the results of certain clinics that applied only operative methods or only internal methods are compared. In two such series of cases the mortality among 958 infants receiving internal treatment was 10 per cent, and among 1,609 infants receiving surgical treatment, only 8.5 per cent. In the series of cases coming to operation, fifteen pediatricians and surgeons who are advocates of the early operation had an average mortality of only 4 per cent. The children's clinic in Düsseldorf has made a careful comparison. Up to 1928, conservative methods were used exclusively. From 1919 to 1928 the mortality in ninety-two cases was 18.4 per cent; later (1927-1933), when surgical procedures exclusively were employed, the mortality in a series of 110 cases was only 3.6 per cent (four deaths). It would appear that the question has been decided in favor of the operative method. The children treated by operation get well much more rapidly, and they are much less likely to contract intercurrent diseases and infection.

Professor Hertel, surgeon at the University of Münster, expressed himself thus: Up to the present the Ramstedt operation has been performed in twelve cases, in all of which a cure was effected. The age of the patients on the day of the

operation ranged between 16 days and 4 months, the average being about 7 weeks. The average duration of treatment was thirty-five days, although in a few instances a child could be dismissed at the end of eleven days. The increase in weight of the infants during this period was about 840 Gm. The vomiting ceased usually immediately after the operation; in some cases it continued several days, being evidently connected with the elimination of the reflex disturbances.

Professor Vogt, ordinarius in pediatrics at the same university, said that the question of choice of method cannot be decided by the scrutiny of statistics, for there is no reason to feel assured that the comparison of the successes is being based on truly comparable cases. Stenoses of the pylorus are sometimes produced by other causes than a simple hyperplasia of the musculature; for example, by changes in the position of the duodenum, with kinking. Experience does not justify the assumption of definite periods within which internal treatment must show good results. In some cases it may take a week and in other cases two weeks or longer before there is a definite turn for the better. Hence progress can be expected only from further research on the dynamics of the various clinical manifestations. In any event, the endeavor to get along with internal treatment without operation is justified primarily by the observations that show the clinical symptoms may disappear permanently in spite of the fact that hypertrophy of the pylorus remains.

Hence, in mild cases, as Ramstedt admits, internal treatment must be tried first, and the pediatrician should select the cases for operation and also determine the time for the operation. That, moreover, the effects of pyloromyotomy are not always immediate is due to the facts that sometimes the muscular hypertrophy along the pyloric ring, which is pushed forward toward the duodenum like a cervix, is especially well developed and that precisely this portion is often difficult to reach with the knife or cannot be divided without danger of opening the duodenum. Such an accident must be avoided without fail.

Diabetes in Jews

Professor H. Strauss, director of the department of internal medicine of the Jewish Hospital in Berlin, has been able to show by mortality statistics that diabetes is of frequent occurrence in Jews. Women are somewhat more frequently affected than men (280:271). The researches on heredity revealed that hereditary influences played a part in 20.6 per cent of the cases in women and 29.7 of the cases in men. The hereditary influence manifests itself usually in a recessive form. A large majority of the patients were merchants. That wealth exerts a decided influence could not be demonstrated. More than three fourths of the cases were moderate or mild. In a large number of cases, only diabetes innocuus was involved. In 20 per cent of the cases the duration of the disorder extended over eight years or more. Polydipsia as a beginning symptom was demonstrated in men in 46 per cent and in women in 40 per cent of the cases. Pruritus was an associated disorder in 27.5 per cent of the women. Furunculosis was more frequent in men than in women. Gangrene of the extremities was found in 7 per cent of the men and in 5 per cent of the women. In the opinion of Strauss, the real frequency of diabetes in the Jews is due to hereditary influences and to increased lability of the vegetative nervous system.

The Health of School Children

In 1925 Professor Czerny and Professor Keller, pediatricians of Berlin, reached the conclusion that the damage to the development and the health of children caused by the war period was less than was expected. The economic crisis in 1930 and the increasing unemployment have awakened renewed interest in the matter. Also the League of Nations has studied the question of "Economic Crises in Relation to Public Health." Examination of school children in later years did not reveal

harmful late effects of war conditions. A change occurred, however, in 1933, for health conditions among the youth took a turn for the worse last year. Many different types of infectious disease appeared in the districts controlled by school physicians—often in an unusual form. Of decisive significance, as Professor Keller points out, was the condition discovered in the children who entered school for the first time in February 1934. The entrance examination revealed the wretched bodily condition of the children born in the years 1927 and 1928. Many of these children gave evidence of very poor nutrition and a poor constitution. A normal set of teeth was rare, and it was evident that they lacked adequate resistance toward disease. Hence special welfare measures must be applied to these children, and they must receive supplementary food allowances for the first few months of school life. Physicians engaged in social work should determine the extent of this impaired condition of health among school children and endeavor to remedy conditions as promptly as circumstances will permit.

Personal

Prof. Kurt Schneider of Munich has received a call to the chair of psychiatry, as the successor of Prof. W. Weygandt (retired), in Hamburg.

Prof. Erich Hoffmann, ordinarius for dermatology at the University of Bonn, has been relieved of his official duties and has been appointed an outside member of the Georg Speyer-Haus in Frankfurt-on-Main.

Prof. S. J. Thannhauser, ordinarius for internal medicine in Freiburg-im-Breisgau, has been retired by reason of the new legislation pertaining to officials. Professor Bohnenkamp of Giessen has been appointed his successor and will serve also as director of the University Medical Clinic.

Professor Jacobsthal of Hamburg has been called to the University of Guatemala as professor and director of the Bacteriologic Institute.

Dr. H. Löhr, superintendent of the Bethel Hospital, near Bielefeld, has been appointed ordinarius for internal medicine at the University of Kiel, to succeed Professor Schittenhelm, who has been called to the University of Munich.

Professor Nonnenbruch of Prague has declined a call to the chair of internal medicine in Hamburg, as the successor of Prof. L. Brauer, retired.

Prof. Otfried Müller, director of the University Medical Clinic in Tübingen, has been relieved of his official duties because of illness.

Dr. R. Fetscher, extraordinary professor of eugenics and biology as pertaining to heredity, at the Dresden Polytechnicum, has been retired by reason of the new legislation.

Prof. F. Dessauer, radiologist and ordinarius for medical physics at the University of Frankfurt-on-Main has been retired by reason of the new legislation.

Professor Broemser of Heidelberg has accepted a call to the chair of physiology at the University of Munich.

Prof. Heinrich Braun, formerly director of the infirmary in Zwickau, has died at the age of 71. Braun performed meritorious service in the development of local anesthesia and is the author of a textbook on this subject.

Prof. P. Mühlens of Hamburg has been appointed director of the Hamburg Institut für Schiffs- und Tropenkrankheiten, in which he had been serving as department director. He has likewise become ordinarius in tropical medicine at the University of Hamburg.

Prof. Dr. Paul Krause, ordinarius in internal medicine in Münster (Westphalia), is a suicide at the age of 62.

Prof. Dr. Heinrich Eymer of Heidelberg has accepted a call to the chair of gynecology at the University of Munich, as the successor of Geheimrat Professor Doederlein, retired.

Prof. Dr. Gustav Aschaffenburg, psychiatrist and ordinarius of Köln, has been relieved of his official duties.

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug. 15, 1934.

Malignant Diphtheria

Drs. Jose M. da Rocha, pediatrician of the Hospital São Sebastião, and Clarindo Rabello, intern of the hospital, reported before the Society of Pediatrics a case of malignant diphtheria in a child, aged 9 years, which died in four days. Necropsy revealed punctiform hemorrhages in the skin and mucosae and hemorrhages in the lungs, kidneys, heart, peritoneum and stomach. They had injected 100,000 units of anti-diphtheritic serum, of which 20,000 was given intravenously. Cases of hemorrhagic malignant diphtheria are rare in Rio de Janeiro but they have become more frequent lately. The authors reviewed the various theories on the causes of malignant diphtheria: bacterial association, virulence, toxicity of the germs and toxins, and constitutional factors. They came to the conclusion that the factor of greatest importance is a constitutional predisposition to hemorrhages.

Roentgenkymography of Aortic Aneurysms

Dr. J. M. Cabello Campos, roentgenologist of the Sanitary Service of Santa Casa and of the Institute of Hygiene of São Paulo, presented to the Society of Medicine and Surgery some work on roentgenkymography. He enumerated the difficulties encountered in practice in diagnosing tumors of the mediastinum, particularly aneurysms, in which the relations of the tumor mass to the artery and its movements are valuable signs. After giving an outline of the technic employed and a description of the apparatus in use, he reported in detail the kymographic curves of four cases of aneurysm. Roentgenkymography is indispensable in the differential diagnosis of tumors of the mediastinum.

VIENNA

(From Our Regular Correspondent)

Aug. 23, 1934.

Arteriosclerosis in Vienna

Addressing recently the Vienna Medical Society, Dr. Fellner reported his observations on 12,000 patients with arteriosclerosis. His research considered the degree and the dissemination of sclerosis in the aorta, the coronary vessels, the vessels of the brain, and the remaining large arteries. It was found that, as a rule, women contract the disease later than men and present a milder type. Not until the age of 70 is reached are the curves for the two sexes approximately the same. One finds, however, fatty degeneration of the vessels more frequently in women. Calcification begins with the arteries of the brain after the age of 35, and from 10 to 15 per cent of the 70-80 age group give distinct evidence of this condition. The heart vessels are calcified in about 50 per cent of the persons belonging to the age groups above 60. A difference between the calcification of the aorta and the remaining vessels is seen only in inveterate smokers. Thirty per cent of the latter give distinct evidence of calcification of the peripheral vessels. The aorta and the heart vessels are more frequently calcified in persons of stocky build than in persons of a more athletic type; the latter, however, often present sclerotic heart vessels. Obese persons show a tendency to fatty degeneration of the vessels—obese women particularly. Sclerosis appears earlier and more frequently in Jews than in the average population. In the rural population, the disease develops later and in a milder degree. Social factors appear to play a part. The well-to-do classes are inclined to live a sedentary life and doubtless ingest more toxins in their diet; hence arteriosclerosis appears earlier in this class. The same thing is true of mental workers. In the latter class, however, not the brain but the aorta is attacked

earlier and more severely. Severe physical labor that is combined with considerable movement does not predispose a person to early sclerosis; but if the severe labor is done in a standing position with little movement (porters, laundresses), arteriosclerosis develops early. Alcohol addicts are no more predisposed to arteriosclerosis than are abstainers. Excessive use of tobacco, however, plays havoc with the blood vessels. Tuberculosis has no effect on the blood vessels, whereas syphilis produces grave changes, particularly in the ascending aorta. Rheumatism and carcinoma appear to have no influence on the vessel walls, although diabetes is frequently associated with early and severe arteriosclerosis. Gallstones and liver disorders frequently produce fatty degeneration of the vessels.

The Population of Vienna

On March 22, 1934, a census of Austria was taken, the preliminary results of which have been published. The population of Vienna is given as 1,874,618, which is a loss of 142,000 as compared with 1914. The total number of living births for 1913 was 12,137, and the total number of deaths was 23,472. In 1914 there were more than 26,000 births, which shows a decline of more than 50 per cent, over against 22,000 deaths. The excess of deaths over births, amounting in 1933 to 11,335, was counterbalanced by immigration. The total number of immigrants was 155,587, over against an emigration of 122,443, so that, in spite of the declining birth rate, the population had increased by 21,809. For the first quarter of 1934 the number of living births was 3,368; the number of deaths, 6,642; the number of immigrants, 35,426, and the number of emigrants, 30,019, so that the net increase in population for the first quarter of this year was 2,133.

The statistics for the Jews of Vienna are interesting. In 1914, and also in 1934, the Jews constituted about 10 per cent of the total population (200,000 and 178,000 respectively). The decline in the birth rate among the Jews (60 per cent) is possibly even greater than among the non-Jewish population, but the mortality is somewhat lower. There were no Jewish immigrants, and the emigration was small, although the last two years have shown an increase. An evident fact, however, is the constant distinct decrease in the Jewish portion of the population since 1920. From a total of 218,000 in 1918, the Jewish population has dropped to 178,000, signifying a loss of 40,000, or almost 20 per cent of the maximum.

A Study of Abortion

Professor Zacherl and Dr. Richter of the Innsbruck Geburtshilfliches Universitäts-Institut reported to the Austrian public health service on their research on the sequels of abortion. All statistical reports reveal a marked increase of abortion, since the war, among all civilized nations. It was found that the immediate damage resulting from abortion, such as death and inflammatory processes, is of less significance, on the whole, than the late results affecting the health of the woman and her fertility. The damage due to abortion may be considered under three heads: hemorrhages, infections and anatomic injuries. The speakers reported the results of their observations in a series of 2,000 gravidas in Innsbruck. The majority of the women presented after abortion various disorders of genital origin. Menstruation was much disturbed in more than 50 per cent, while amenorrhea was a frequent symptom. In a large number of cases, sterility was later demonstrable; likewise, anatomic changes in the genitalia were observed in many cases. Later births, and even pregnancies, are more likely to show complications than in women who have never had an abortion. Placenta praevia is especially frequent; likewise, weak labor pains are common, and prolongation and disturbance of the after-birth period. Death of the fetus before the end of term, habitual miscarriage and febrile births are relatively more fre-

quent in such women. Both speakers expressed the view that a large part of the late injuries following interruption of pregnancy are due to errors of technic. They recommend, therefore, a very conservative operative method in abortion and conservative after-treatment—methods that take careful account of the physiologic conditions. A common error of technic is the too radical removal of the uterine mucosa. The resulting inadequate regeneration produces a functional inferiority of the mucosa, with the aforementioned consequences, and also leukorrhea, chronic inflammations, disturbance of nidation of the ovum, and the frequently observed secretory, hormone disturbances.

Conflict Between the Vienna Faculty of Medicine and American Students

A controversy that threatened to destroy the friendly relations between the Vienna Faculty of Medicine and the medical students from America studying in Vienna was settled at the last moment by the intervention of the American ambassador to Austria and the Austrian ministry of public instruction. The controversy arose over the selection of courses of study designed for foreigners, which are largely attended by Americans. The society of American medical students bearing the name "American Medical Association of Vienna" has functioned satisfactorily for about thirty years. The society established, some years ago, its own committee for the selection of the courses to be given by English-speaking Vienna professors. It goes without saying that, in the selection of these courses, the wishes of the Americans, who were in the majority, received the chief consideration. The Vienna Faculty of Medicine has also its committee to decide what courses shall be given in the German language. For various reasons the attendance on these courses has been, in recent months, much reduced. In order to improve the attendance on its own courses, the committee of the Faculty of Medicine attempted to deprive the American Medical Association of Vienna of the right to organize its own (English) courses. Doubtless, certain political factors played a part in the controversy; for, in the Faculty of Medicine, there was evidence of influence traceable to the national-socialists. There seemed to be a movement to allow certain physicians the privilege of holding medical courses in English, but, at the same time, an endeavor was made to withhold this source of income from Jews.

In other words, the committee on courses of the Faculty of Medicine desired to furnish the association not only the courses but also the lecturers, without giving much consideration to the wishes of the students themselves. The proposal was rejected by the American physicians as being untenable, and they even went so far as to threaten to leave Vienna in a body if they were to be denied the privilege of selecting their own courses. In spite of this, the Faculty of Medicine, under the influence of political agitators, refused to yield. Thereupon the president of the association entered into correspondence with the universities of Prague and Budapest, which expressed a willingness to meet the requirements of the foreign physicians, in order to induce them to move to their city. The American ambassador in Vienna was informed of the situation, and he took up the matter with the ministry of public instruction. At last a way had been found to effect a solution of the difficulty. The ministry of public instruction issued an order that the selection of courses for the American physicians be continued to be made as in the past. By the events in July, which took the form of a Nazi revolt, the disturbing agitators in the Faculty of Medicine were eliminated, so that it appears likely that the differences between the Faculty of Medicine and the foreign medical society of Vienna will soon be settled and that the medical school of Vienna will retain its age-old position as a center for medical education.

Marriages

JUNIUS HAZEL McLEOD, Fayetteville, N. C., to Miss Waverly Gwynne Thomas of Smithfield, Va., August 5.

LINVILLE MURRELL HALLORAN, Beckley, W. Va., to Miss Frances Louise Williams of Lexington, Va., August 31.

ROBERT LUCIEN McCOLLUM, Flushing, N. Y., to Miss Virginia Muir of St. Albans, September 21.

MALACHI WILSON SLOAN JR., Berrysburg, Pa., to Miss Ellen Kathryn Wisler of Norristown, August 11.

FREDERICK EARL McLENDON, Athens, Ga., to Miss Bennie Venetta Bell of Nashville, Tenn., June 27.

RAYMOND L. CLATERBAUGH to Miss Louise H. Scruggs, both of Clifton Forge, Va., September 8.

JAMES F. CASTO, Topeka, Kan., to Miss Lorane Carder of Lawrence at Wellsview, September 9.

OSCAR ADOLPH KAER, Winston-Salem, N. C., to Miss Helen Elizabeth Seifert, September 24.

ENNETT A. DOLES, Havre, Mont., to Miss Claremae Vielleux of Fort Benton, September 29.

OSCAR LEE HITE, Richmond, Va., to Miss Inez De Jarnette of South Boston, September 22.

EDWARD CHARLES MAEDER, Minneapolis, to Miss Irene Kangas of St. Paul, July 24.

JAY McLEAN, New York, to Miss Georgia Alpin of Fayetteville, N. C., June 5.

FRANCIS W. BRIGGS to Mrs. Agnes Lamey, both of Havre, Mont., recently.

Deaths

Curran Pope of Louisville, Ky.; University of Louisville School of Medicine, 1889; member of the House of Delegates of the American Medical Association in 1912; past president of what is now known as the American Congress of Physical Therapy and the Ohio Valley Medical Association; member of the American Psychiatric Association and the Kentucky Board of Charities and Corrections; lecturer on pathology, bacteriology and microscopy, Hospital College of Medicine, 1891-1894; professor of neurology and psychiatry, Louisville College of Medicine, 1895-1899; adjunct professor of neurology, psychiatry and physical therapy, Kentucky School of Medicine, 1902-1908, and professor of physical therapy at his alma mater, 1909-1910; consulting neurologist and psychiatrist to St. Anthony's Hospital; medical director of a hospital bearing his name; author of "Practical Hydrotherapy"; aged 67; was found dead, September 21, of a self inflicted bullet wound.

Arthur Percival Procter, Vancouver, B. C.; Canada; Manitoba Medical College, Winnipeg, 1896; for twenty-two years registrar of the College of Physicians and Surgeons of British Columbia; for twenty-five years chief medical officer of the Canadian Pacific Railway for the British Columbia division; for seventeen years district medical officer department of pensions and national health, Shaughnessy Military Hospital; aged 67; died, August 20, of a gunshot wound.

Guy Edmund Manning, San Francisco; Hahnemann Medical College and Hospital of Philadelphia, 1890; at one time librarian, professor of materia medica, physiology and chemistry; Hahnemann Medical College of the Pacific; for many years member of the city board of health; health commissioner of San Francisco, 1907-1921; director of the Hahnemann Hospital, 1910-1918; aged 67; died, September 1, of cerebral thrombosis.

Edward Ernest Maxey, Aberdeen, Wash.; College of Physicians and Surgeons of Chicago, 1891; member of the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; served during the World War; past president and secretary of the Idaho State Medical Society; on the staffs of St. Joseph's and Aberdeen General hospitals; aged 67; died, August 31, of coronary occlusion.

Fellows Davis Jr., New York; Columbia University College of Physicians and Surgeons, New York, 1899; served during the World War; formerly on the staff of the New York Nursery and Child's Hospital; governor of the American Hospital, Neuilly, France; aged 62; died, September 5, at his summer home in St. James, L. I., of adenocarcinoma of the prostate.

Clarence Ruter Dufour, Washington, D. C.; Howard University School of Medicine, Washington, 1889; Georgetown University School of Medicine, 1890; member of the Medical Society of Virginia; formerly emeritus professor of clinical ophthalmology, Georgetown University School of Medicine; aged 71; died, September 11.

Richard Charles Weithas of Brooklyn; George Washington University Medical School, Washington, D. C., 1909; member of the American Urological Association; fellow of the American College of Surgeons; urologist to the Bushwick and Coney Island hospitals; aged 51; died suddenly, September 27, of heart disease.

John Milton Garrett of Fort Dodge, Iowa; Marion-Sims College of Medicine, St. Louis, 1892; Bellevue Hospital Medical College, 1896; past president and secretary of the Webster County Medical Society; on the staffs of the Lutheran and St. Joseph Mercy hospitals; aged 65; died suddenly, August 18, of heart disease.

Edward Montraville Swift of Perth Amboy, N. J.; Howard University School of Medicine, Washington, D. C., 1927; on the staff of the Perth Amboy General Hospital; aged 47; died, September 9, in the Mount Sinai Hospital, New York, of malignant hypertension, urcemia and heart disease.

Jacob H. Mitnick, Baltimore; Baltimore Medical College, 1890; member of the Medical and Chirurgical Faculty of Maryland; veteran of the Spanish-American and World wars; aged 76; died, September 22, of arteriosclerosis, diabetes mellitus and coronary thrombosis.

Samuel Pilgrim Gerhard of Philadelphia; Medico-Chirurgical College of Philadelphia, 1891; Jefferson Medical College of Philadelphia, 1893; formerly lecturer on medicine, Temple University School of Medicine; aged 67; died, September 8, of heart disease.

Cornelius DeWeese of Washington, D. C.; Jefferson Medical College of Philadelphia, 1895; member of the American Psychiatric Association; medical director of the Laurel Sanitarium, Laurel, Md.; aged 59; died suddenly, September 15, of cerebral hemorrhage.

James Arthur Kirk, Danville, Ill.; Hospital College of Medicine, Louisville, Ky., 1904; served during the World War; aged 53; on the staff of the Veterans' Administration Facility, where he died, September 3, of Hodgkin's disease and chronic pulmonary tuberculosis.

George Enos Burdick, Hines, Ill.; University of the City of New York Medical Department, 1888; served during the World War; on the staff of the Veterans' Administration Facility; aged 69; died suddenly, September 24, in Glen Ellyn, of coronary occlusion.

Marvin Whitfield Glasgow, Fairfield, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; aged 56; on the staff of the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company, where he died, September 20, of heart disease.

Antoine Paul Cartier, St. Hyacinthe, Que., Canada; School of Medicine and Surgery of Montreal, Que., 1872; formerly conservative member of the Quebec Legislative Assembly for the County of St. Hyacinthe; aged 85; died, July 10.

William N. Gilmore of East Liverpool, Ohio; Western Reserve University Medical Department, Cleveland, 1882; on the staff of the East Liverpool City Hospital; aged 76; died, August 29, of cerebral hemorrhage and arteriosclerosis.

Louis Nels Andersen of Inglewood, Calif.; College of Physicians and Surgeons, Medical Department Kansas City (Kan.) University, 1896; served during the World War; aged 70; died suddenly, September 6, of heart disease.

John Alva Longmore of Brooklyn; University of Michigan Medical School, Ann Arbor, 1900; formerly lecturer in medicine and chief of the clinic, Long Island College Hospital; aged 59; died, September 13, of heart disease.

Francis Bernard Conway, Boston; Tufts College Medical School, Boston, 1903; member of the Massachusetts Medical Society; aged 64; died, September 10, in the City Hospital, of coronary thrombosis and bronchopneumonia.

John Philip Dougherty of Sioux City, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, Chicago, 1904; aged 59; died, August 18, following an operation for gallstones.

Belmont De Forest Bogart, New York; Columbia University College of Physicians and Surgeons, New York, 1896; aged 62; died, September 8, in the Hospital for Ruptured and Crippled, of hypertensive heart disease.

Bernard M. Turbow, East Chicago, Ind.; Chicago College of Medicine and Surgery, 1913; member of the Indiana State Medical Association; aged 48; died, October 2, at his home in Indiana Harbor, of coronary thrombosis.

Caesar A. Queirolo, Oakland, Calif.; Université de Genève Faculté de Médecine, Genève, Switzerland, 1897; aged 65; died, July 18, in the Providence Hospital, of carcinoma of the pleura with abdominal metastasis.

John Rogers Parry ♂ Woodsfield, Ohio; Medical College of Ohio, Cincinnati, 1878; formerly secretary of the Monroe County Medical Society; aged 79; died, August 29, of chronic myocarditis and arteriosclerosis.

Frank Lydston Newman, Detroit; Detroit College of Medicine, 1887; formerly emeritus professor of pharmacology and therapeutics at his alma mater; aged 74; died, August 23, of uremia and chronic nephritis.

Archibald Williamson, Richmond Heights, Mo.; Beaumont Hospital Medical College, St. Louis, 1889; aged 68; died, July 25, in the Evangelical Deaconess Home and Hospital, St. Louis, of carcinoma of the pancreas.

John Harrison Wedig ♂ Wood River, Ill.; Chicago College of Medicine and Surgery, 1910; served during the World War; aged 49; died, September 7, in St. Joseph's Hospital, Alton, of sarcoma of the lung.

Oscar Beesley Dunn, Ironton, Ohio; Miami Medical College, Cincinnati, 1878; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 84; died, September 11, of myocarditis.

Jesse Bell Porter, Fort Myers, Fla.; Northwestern University Medical School, Chicago, 1903; aged 62; died, August 1, in a hospital at Miami, of bronchopneumonia following bilateral herniotomy.

Stanislaus A. Kulick ♂ Detroit; Michigan College of Medicine and Surgery, Detroit, 1896; aged 59; died suddenly, September 5, at his summer home in Fair Haven, Mich., of cerebral hemorrhage.

Horace Greely Pangle, Russellville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; aged 61; died, September 6, in a hospital at Greenville, of diabetes mellitus and heart disease.

Henry Burton Parrish, Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1904; served during the World War; aged 55; died, September 23, in the Protestant Hospital.

Jefferson Woolsey, Karnes City, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; served during the World War; aged 64; died, July 26, of cerebral hemorrhage.

Joseph Edward Pelletier, Worcester, Mass.; School of Medicine and Surgery of Montreal, Que., 1903; aged 58; died, August 7, of arteriosclerosis, coronary sclerosis and auricular fibrillation.

Llewellyn C. Kellogg ♂ Loma Linda, Calif.; College of Medical Evangelists, Los Angeles, 1922; professor of anatomy at his alma mater; aged 58; died, September 1, of coronary occlusion.

Clement Emerson Sayers, Hawthorn, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; member of the Medical Society of the State of Pennsylvania; aged 66; died in June.

William Bidwell Page, Denver; University of Michigan Homeopathic Medical School, Ann Arbor, 1883; aged 77; died, September 2, of arteriosclerosis, coronary sclerosis and myocarditis.

Milton S. Gray, Phoenix, Ariz.; Ensworth Medical College, St. Joseph, Mo., 1896; member of the Missouri State Medical Association; aged 64; died, September 8, of heart disease.

Nolan Ray Currie, Jackson, Miss.; Birmingham (Ala.) Medical College, 1909; member of the Mississippi State Medical Association; aged 51; died, September 4, of heart disease.

George William Flynn, St. Louis; St. Louis University School of Medicine, 1910; member of the Missouri State Medical Association; aged 48; died, August 23, of heart disease.

Marie McGarvey Peake, Blair, Neb.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1900; aged 68; died, August 26, of polyneuritis and inanition.

Dale L. Walker, St. Clairsville, Ohio; Jefferson Medical College of Philadelphia, 1885; aged 73; died, September 8, in Columbus, of cerebral hemorrhage and arteriosclerosis.

Alwin Meigs Guittard, Cabanatuan, P. I.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1885; aged 74; died, July 14.

John Andrew Podsedly, Cleveland; St. Louis University School of Medicine, 1926; aged 34; died, August 9, in the Cleveland Clinic Hospital, of a pontile tumor.

George Oliver Gernon, Ste. Geneviève de Pierrefonds, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1879; aged 80; died, July 1.

Jacob Kurnik, Brooklyn; Long Island College Hospital, Brooklyn, 1914; aged 46; died, August 26, in the Worrell Hospital, Rochester, Minn., of pemphigus.

Harry Lee Bell ♂ Knox, Ind.; Chicago College of Medicine and Surgery, 1908; served during the World War; aged 56; died, August 7, of acute myocarditis.

Timothy Charles Weber, West Salem, Ill.; Barnes Medical College, St. Louis, 1897; served during the World War; aged 64; died, August 28, of tuberculosis.

Aaron P. Baldwin, Tyler, Texas; Louisville (Ky.) Medical College, 1883; aged 76; died, July 10, of hepatitis, cholecystitis, myocarditis and chronic nephritis.

Julius H. Krueger, Chicago; Hahnemann Medical College and Hospital, Chicago, 1887; aged 88; died, September 25, of cerebral hemorrhage and arteriosclerosis.

Ida Leonora Schell ♂ Milwaukee; Northwestern University Woman's Medical School, Chicago, 1900; aged 71; died, September 21, of cerebral hemorrhage.

Albert M. Phillips, Eulogy, Miss.; University of Tennessee Medical Department, Nashville, 1887; aged 69; died, August 30, of cerebral hemorrhage.

Henry Jakob Strauch, Donora, Pa.; Jefferson Medical College of Philadelphia, 1928; aged 42; died, September 8, in the *Morro Castle* disaster.

James Patrick Coll, Jersey City, N. J.; Jefferson Medical College of Philadelphia, 1904; aged 51; died, September 8, in the *Morro Castle* disaster.

Charles Bloodgood, Grand Rapids, Mich.; Rush Medical College, Chicago, 1881; aged 81; died, September 7, of a self inflicted bullet wound.

Walton Worthey Shoemaker, Handley, Texas; Medical College of Alabama, Mobile, 1892; aged 77; died, July 26, in a hospital at Fort Worth.

William Erastus Wells, Tampa, Fla.; University of Louisville (Ky.) School of Medicine, 1901; aged 58; died, July 15, of dilatation of the heart.

James E. G. Simmons, Boyd, Texas; Atlanta (Ga.) Medical College, 1888; served during the World War; aged 74; died, July 26, of senility.

Albert James Storm, Collingdale, Pa.; Medico-Chirurgical College of Philadelphia, 1915; served during the World War; aged 46; died, July 14.

George Wilson Bass, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1890; aged 71; died, August 23, of arthritis.

Samuel Sal Murnick, Chicago; Loyola University School of Medicine, Chicago, 1922; aged 40; died, September 16, of organic heart disease.

Felix-Jasper Bray, Parsons, Tenn.; Vanderbilt University School of Medicine, Nashville, 1878; aged 80; died, August 29, of prostatitis.

Walter Gustavus Rundle, Lincoln, Neb.; Rush Medical College, Chicago, 1906; aged 58; died, September 10, of cerebral hemorrhage.

James M. Amiss, Silver Lake, Ind.; Medical College of Indiana, Indianapolis, 1880; aged 82; died, September 6, of hemiplegia.

Frank Songer, Hillsboro, Ind.; Medical College of Indiana, Indianapolis, 1891; aged 68; died, September 23, of chronic nephritis.

Walter Myers Gill, Dormont, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1888; aged 69; died, July 12.

Ralph Moore Peters, Minneapolis; Rush Medical College, Chicago, 1894; aged 62; died, August 12, of coronary thrombosis.

Eleanor Stallard Dailey, Omaha; Woman's Hospital Medical College, Chicago, 1878; aged 80; died, June 26.

Richard Gantz, Terre Haute, Ind. (licensed in Indiana in 1897); aged 89; died, September 7, of pneumonia.

Correspondence

THE INTRAVENOUS DRIP

To the Editor:—There appears to be some controversy as to priority in the use of the intravenous drip. I have been intensely interested in intravenous therapy during the past thirty years.

Dr. Rudolph Matas read a paper on "Continued Intravenous Drip" at a meeting of the American Surgical Association held at Rochester, Minn., in 1923, which was published in the transactions of the association for that year and in the *Annals of Surgery* (79:643 [May] 1924). In that paper he reported cases in which he applied the method as far back as April 1913 and even before that date. It was my pleasure to observe the use of the continuous intravenous drip under Dr. Matas's service while visiting the Touro Infirmary and Charity Hospitals, New Orleans, in January 1914. It has been in current use in these institutions since 1923, where it is usually designated as the "Matas drip."

Dr. G. A. Hendon of Louisville, Ky., has published a number of papers on the same procedure, under the title of "venoclysis." In a paper which he read at a meeting of the Southern Surgical Association in 1929 (*Transactions* 42:288, 1929) he says: "On May 12, 1924, I first employed the method," and again, "in June 1924, as a result of a paper on the continuous intravenous drip by Dr. Rudolph Matas, read before the American Surgical Association in June 1923. The paper was published in the *Annals of Surgery* for May 1924."

This acknowledgment from Dr. Hendon himself should suffice to settle the question of priority so far as he is concerned. The only difference is in the name "venoclysis," which he applied to the continued intravenous drip. This has been severely criticized by Cutting and others as a philologic barbarism, because it is a hybrid of Latin and Greek. Matas frequently referred to "phleboclysis" long before Hendon thought of "venoclysis," but even though "phleboclysis" is not so objectionable to philologic purists, it does not convey the notion of the continuance and duration of the procedure. The Greek "phleps" and "klysis" mean, literally, no more than a flushing out or washing of the vein, which is not strictly applicable to any intravenous injection. Although I am not so meticulous about words, I do believe that whoever attempts neologism, especially in scientific matters, should be, at heart, consistent and respectful of philologic rules.

In the *Louisville Courier Journal* of March 2, 1933, Hendon apparently claims to be the originator of the continued intravenous drip. Despite his admission that the practice of "venoclysis," as he calls it, was suggested to him by Matas's paper of 1924, his claim would appear somewhat belated.

In Germany, Friedmann of Langersdreer is recognized as the originator of the method, which he described for the first time at the meeting of Rhenira and Westphalian surgeons at Düsseldorf, Feb. 16, 1913. He then used salt solution for continuous instillation in the veins, from eight to twenty-three hours, reinforcing it with epinephrine, digitalis, and other drugs. This is an important historical event, because there has been some talk recently in Germany of celebrating the twenty-first anniversary of Friedmann's valuable innovation.

I believe there is no question that Friedmann is the first to have introduced the continued drip in Germany, just as I am confident that Matas was the first to use and publish a report of his experience with it, independently, in this country, without knowledge of Friedmann's work.

The records of Matas (as shown in his paper of 1924) go back to April 1913, therefore antedating the first publication of Friedmann's work in the *Zentralblatt für Chirurgie*, Dec. 6, 1913.

The first report ever made on intravenous infusion at the Charity Hospital of New Orleans, from June 1889 to June 1891, was published by Matas. This covered every case in which intravenous infusions had been resorted to in that institution during that period. The report appeared in two issues of the *New Orleans Medical and Surgical Journal* 19:1-22, 81-33, 1891. For this reason it is easy to understand that with this background of experience the value of the continued drip should have gradually suggested itself.

As to Cutting and his paper on the "Place of Phleboclysis in Surgery," which appeared in the *New Orleans Medical and Surgical Journal* for July 1933, it has nothing to suggest any discussion of history or questions of priority. It is a good review of the actual status of the question, with special stress on some debated new features, which had developed from 1923 to 1932, but there was no pretense at original discovery on the fundamentals.

W. FOREST DUTTON, M.D., Amarillo, Texas.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HYPERSENSITIVITY

To the Editor:—I had severe asthma in my teens. It completely subsided after a cautery of what was said to be a hypertrophied inferior turbinal. I have not recently been altogether free from trouble. I have put it down to a reflex nasal cause, as cauterization of the nose relieves me for a while. My nasal mucosa too is extraordinarily sensitive to dust, chill and so on. I have noticed that it registers by immediate flow of secretion and sneezing on the slightest exposure to cold of any part of my body on a cold night. On a recent occasion the rhinologist had considerable difficulty in cocaineizing my nose, as I sneezed out every cocaine plug he put in prior to cauterization. Recently I had occasion to take a dose of antitetanic serum after a minor accident. As I had taken antitetanic serum two years before, I anticipated trouble because of my asthmatic history. Desensitization was started with a drop of undiluted serum. It raised a wheal and was followed by a few urticarial patches. Two more intradermal instillations of a drop each gave similar patches confined to the ipsilateral arm. Next day I had a frightful, widespread eruption of urticarial patches all over the body, not easily amenable to injections of epinephrine, intravenous calcium gluconate, dextrose, spirit of ammonia and ephedrine by mouth and saline purgatives. The urticaria subsided slowly in the course of the day. My blood showed no eosinophilia. I have since taken graded doses of antitetanic serum up to 1 cc. after testing with drop doses of diluted serum. All the doses gave local reactions in the shape of more than usual pain and hot swelling for two days. I should be obliged to you for information on (1) whether it is possible to desensitize my nose against the extraordinary sensitiveness to cold and (2) whether my "desensitization" against serum will be permanent. If not, is there any method of permanent desensitization? Please omit name and address.

M.D., India.

ANSWER.—The inquirer has hyperesthetic rhinitis and asthma, both probably of allergic origin. The early onset of the asthma, the associated rhinitis and the sensitiveness to horse serum are the prominent factors that speak for an allergic cause. The repeated temporary relief of the asthma following the use of the cautery in the nose does not justify the stamping of the asthma as reflex. Cauterization of the tonsils, tonsillectomy, a nasal operation, an appendectomy, a herniotomy or any procedure that traumatizes tissue or produces a hemorrhage may result in temporary relief of any allergic manifestation. This is due to the nonspecific effect of the absorbed organic matter.

Physical allergy to cold does exist as a primary phenomenon without concomitant allergy to chemical substances such as foods, pollens and animal danders. It must be recognized, however, that physical factors usually operate as secondary causes. Thus, perhaps the majority of instances of hyperesthetic rhinitis have attacks precipitated by physical (heat or cold), chemical (vapors, fumes), mechanical (inorganic dust), infections and neurogenic factors. And yet in most of these cases an underlying chemical allergy is present, which, if removed, will no longer be influenced by the secondary causes.

1. Whether a secondary or a primary factor, it is possible to gain a tolerance to cold. One method consists of taking daily baths, beginning with a temperature well above the point at which symptoms are usually produced and diminishing it by about 1 degree Fahrenheit every two or three days. After

a fairly low temperature is reached, tolerance may be maintained by daily cold baths. Another plan that may be pursued consists of a hot bath or exposure to a therapeutic lamp followed by a rub down with ice, followed again by exposure to heat.

2. Desensitization against horse serum in a sensitive individual to a degree that will allow him to take the usual amount of therapeutic or prophylactic serum is extremely difficult and almost impossible. Whatever "desensitization" or hyposensitization is accomplished is not permanent. The rapid method of attempting to gain a tolerance to horse serum in the space of a few hours is to be condemned not only for its lack of success but because of its great danger. It is important in this connection to differentiate between the naturally horse-sensitive individual and the one who has acquired sensitiveness to serum by a previous injection. In the latter type the degree of sensitiveness is usually much milder than in the first. If there is a history of asthma or rhinitis when the individual is around horses he may be, but is not necessarily, sensitive to horse serum. It is particularly in the latter type that serious and fatal reactions occur from the administration of horse serum.

It is perfectly possible that horse dander may play a part in the causation of the inquirer's asthma and rhinitis. Such dander could have its origin in the horsehair of mattresses or furniture and in the dust of the street, boulevards and parks, in which horse manure, mixed with horsehair, is used frequently for fertilizing and protective purposes. A more detailed discussion of the problem of horse dander and horse serum may be found in S. M. Feinberg's *Allergy in General Practice* (Philadelphia, Lea & Febiger, 1934, pp. 72, 152 and 154).

If the inquirer has not already done so he should test himself with various allergens, including horse dander, and, if he is found sensitive to the latter, treatment with extracts of horse dander would probably be advisable.

APPENDICITIS OR PYELITIS WITH OTITIS MEDIA

To the Editor:—About three weeks ago I was called to see a girl, aged 6 years, who complained of severe pain over McBurney's point. There was distinct rigidity over the rectus muscle, a temperature of 103 F. by rectum and a differential count of 84 per cent polymorphonuclears with a total count of 17,500 white cells. A surgeon confirmed the diagnosis of acute appendicitis and recommended operative intervention. The parents hesitated and requested me to call in a medical man. By the time the latter arrived the temperature had dropped over 2 points, pain had subsided to a great extent and the patient evidently felt quite better. A diagnosis of pyelitis was made by the physician; when urine examination was made, pus cells were found in the urine. The temperature kept going down and the abdominal pain kept subsiding, when suddenly the patient began to complain of severe earache and within thirty-six hours the drum had to be lanced, relieving a great amount of pus. Since then the patient has been kept in bed. She complains of pain soon after eating and still shows pus in the urine, while the temperature ranges between 99 by rectum in the morning and 101 in the evening. The ear still discharges. A second count was made twenty-four hours after the first one. It showed a differential of 78 per cent polymorphonuclears, with a total of 14,500 white cells. The patient feels apparently well, is playful, eats well and sleeps well. She is kept in bed, is given plenty of fluids, and in the beginning of her illness when the urine was markedly acid the alkaline method was used; at the present time she is getting a combination of methenamine and acid sodium phosphate. She was also given the dye treatment. The pus still persists. Is there any special method of treating the pyelitis? Is the autogenous vaccine treatment indicated? What is the maximum limit of liquid consumption in similar cases for a child 6 years old? Is there any special diet to follow? Kindly omit name.

M.D., Connecticut.

ANSWER.—The symptoms enumerated are certainly suggestive of acute appendicitis, and in spite of the pyuria the patient may indeed have had a subacute appendicitis that subsided spontaneously. The fact that she still complains of pain after eating may be significant, more so of a residual appendiceal or other intestinal disturbance than of the urinary tract.

Pyelitis may be present, but the writer does not state the amount of pyuria. The fever may, however, be due to the residual ear infection alone or to a combination of this and the subsiding appendicitis. Infection in two or three areas would suggest the possibility of a low grade septicemia.

Hematuria is occasionally a confusing complication of appendicitis, but it fortunately does not occur frequently. A degree of pyuria may also occasionally be seen with acute appendicitis, and both hematuria and pyuria have been explained on the basis of an extension of the inflammation from a retroplaced appendix to the right ureter. Some years ago, G. L. Hunner called attention to the fact that acute attacks of appendicitis may sometimes be accompanied by pus and blood in the urine when the clinical picture is one of septicemia, and also that acute pyelitis may result from acute appendicitis (acute Pyelitis Due to Acute Appendicitis, *THE JOURNAL*, April 25, 1908, p. 1328).

As long as the ear infection is present, a small amount of pyuria might be expected to persist. If the degree of pyuria is significant (more than 10 to 15 pus cells to a high power microscopic field), further support for the diagnosis of infection of the urinary tract is in order. A catheter specimen of the urine should be examined for red blood cells, albumin and casts, as well as for pus. A urine culture, a blood culture and an estimation of blood urea should be made. A pyelogram and cystoscopic examination may be necessary, perhaps also a roentgenogram of the mastoid area on the affected side.

Bed rest should be continued. Cathartics should be avoided entirely or used with caution. The diet should be confined to liquids and soft foods as long as fever and pain after meals are present. If the diagnosis of pyelitis is confirmed, and if the offending organisms are of the *Escherichia* type, the use of the ketogenic diet may be indicated. (See *Queries and Minor Notes*, *THE JOURNAL*, Oct. 28, 1933, p. 1413, and May 19, 1934, p. 1702.)

LIPOID NEPHROSIS

To the Editor:—Will you kindly inform me of a successful method of treatment for lipid nephrosis that may have recently come to attention. A white boy, aged 5 years, in whom the onset occurred one and one-half years ago, was first hospitalized one year ago. The symptoms occurred at first only during intercurrent infections but became gradually more severe and persistent. He was treated with a high protein diet, urea hydrochloride and thyroid gland; he apparently improved. The edema and ascites disappeared but the urine continued to show large quantities of albumin and occasionally a few red blood cells. At home he did well until an acute infection of the upper respiratory tract brought a return of symptoms, more marked than ever. He has been in the hospital again for the past six months and the edema and ascites seem to resist any diuretic used but subside and increase more or less periodically independent of the medication. He has been relatively free from intercurrent infection during the past six months. The tonsils and infected teeth were removed during his previous stay. The red blood cells are increasing in numbers in the urine, probably indicating a complicating nephritis. Abdominal paracentesis has recently been required to relieve the ascites. The following diuretics were used: urea hydrochloride, ammonium nitrate, theobromine sodium salicylate and salyrgan.

M.D., New York.

ANSWER.—True lipid nephrosis is a relatively rare condition, especially in a child, and such a diagnosis demands certain definite criteria that distinguish lipid from other types of nephrosis. There are three types of nephrosis: 1. Acute nephrosis: This type may arise from chemical poisons (e. g., mercuric chloride), from jaundice, or from certain toxic and infectious processes. It is characterized by oliguria and retention of urea and by little else. Anemia, hypertension, hypercholesterolemia and alterations in serum proteins are absent. Albuminuria may be only slight, and little if any edema and hematuria are noted. 2. Lipoid nephrosis: In lipid nephrosis, hypertension, anemia and hematuria are absent but there is marked albuminuria and edema, a striking decrease in serum proteins and an increase in blood fats, especially in cholesterol, all in conjunction with good renal function. 3. Amyloid nephrosis: In this type of nephrosis, hypertension is also generally absent but there is marked albuminuria and edema, hypercholesterolemia and a decrease in serum proteins. Additional signs of renal insufficiency may be present; for example, a little hematuria, mild or moderate oliguria, and urea retention.

The treatment used so far in this case is quite in accord with the best practice. In addition to removal of foci of infection and to the use of the diet and diuretics mentioned, it is assumed that the patient's salt and water intake has been kept as low as possible, no extra salt being allowed, or the patient restricted to a salt-free diet and to not more than from 600 to 800 cc. of fluid daily. It would be well to have a roentgenogram and a special examination of the sinuses to rule out quiescent sinusitis, an infection sometimes missed in children and considered of more than ordinary importance in nephrotic children. The protein intake can be liberal, if renal function is adequate. As hematuria is present and is increasing, it is likely that the patient is suffering from a nephrotic type of nephritis and not from a true lipid nephrosis; therefore an estimation of the blood urea (or if this is not feasible in a child, of the salivary urea index) would seem advisable before allowing excess protein to be given or before considering the further use of salyrgan, perhaps in combination with other diuretics.

The action of diuretics is characterized at times by variability; a diuretic may fail at one period of nephrosis and succeed at another. If the further use of ammonium nitrate by mouth and salyrgan intravenously in acceptably large doses is unsuccessful, the use of intravenous dextrose (about 100 cc. of a 15 to 20 per cent solution) or repeated small transfusions may be helpful. The purine (xanthine or caffeine) diuretics have apparently been used. Digitalis might be tried if there is any evidence of cardiac insufficiency.

Recently, Hartmann has advocated the use of acacia in cases of lipid nephrosis not responding to other measures.

Diuretics in combinations may succeed, while they may fail when used individually. If considerable ascites is present, the child should not be permitted to lie too flat on the bed. Two or more pillows should be used, as "uremic convulsions," even in the absence of significant azotemia, have been noted in patients with nephrosis and extensive edema who were prone for long periods.

References:

- Binger, M. W., and Keith, N. M.: The Effect of Diuretics in Different Types of Edema, *THE JOURNAL*, Dec. 23, 1933, p. 2009.
Hartmann, A. F.: Use of Acacia in the Treatment of Edema, *abstr. THE JOURNAL*, Jan. 7, 1933, p. 68.

TRYPARSAMIDE AND OPTIC ATROPHY

To the Editor.—A man, aged 66, had a marked arteriosclerosis and a blood pressure of 170 systolic, 100 diastolic. The Kahn test for syphilis was four plus. He had had rather intensive treatment. The drug that he had recently had weekly for a number of weeks was probably tryparsamide. The knee jerks were absent and the Romberg slightly positive; the pupils reacted sluggishly to light. The spinal fluid was normal. The most alarming symptom was that for the past two months the patient's vision had been progressively failing. Ophthalmoscopic examination showed a beginning optic atrophy. Is the tryparsamide responsible for the beginning atrophy in the optic nerve? What is the prognosis in this case? What are the indications for treatment? The man is now being treated merely with bismuth compounds and iodides, as I am afraid to give him either arsphenamine or tryparsamide. Please omit name.

M.D., Illinois.

ANSWER.—L. L. Mayer and R. Dentin Smith are of the opinion that tryparsamide causes no increase in atrophy of the optic disk when syphilis has previously caused changes, that tryparsamide causes no optic atrophy in unaffected disks, and that the drug under careful supervision should have only beneficial effects on the optic nerve. N. K. Lazar (Effect of Tryparsamide on the Eye, *Arch. Ophthalm.* 11:240 [Feb.] 1934) concludes: "The definite loss of vision so soon after injection of tryparsamide leaves no doubt in my mind of a definite toxic effect of the drug in the visual apparatus of certain patients." Emory Hill in the discussion of this paper states there is no serious permanent damage to vision when the drug is stopped as soon as slight damage becomes apparent.

Cases of sudden blindness (twenty-four hours) have occurred following a single injection of a bismuth compound intramuscularly in cases of partial optic atrophy. Many authors have reported ill effects from the use of arsphenamine and neoarsphenamine in cases of partial optic atrophy. The question is unsettled. Satisfactory results have followed the use of the arsenicals unless the patients show decreasing peripheral fields or increasing pallor of the disks. Cases have been checked by the use of these drugs in the stage in which the patients first presented themselves. In cases showing untoward results from tryparsamide it is believed that the changes are due to the syphilis and not to the drug. With a negative serologic examination, most cases remain in the stages in which they are first seen. The indications for treatment are visual disturbances with normal fields, and treatment should be continued if the fields remain unchanged.

TREATMENT OF LATENT SYPHILIS

To the Editor.—The article in *THE JOURNAL*, April 21, page 1267, on the standard treatment procedure in early syphilis, will prove of great value to many physicians. I think that a similar summary of the treatment of late syphilis would be of great help to the general practitioner, who must treat many of these cases if they are to have any treatment. Kindly answer the following for me: Mrs. H., aged 34, came to me, Jan. 3, 1933, with a 4 plus Wassermann reaction. Her only complaint was that the tibial crests were sore and rough. During the first year I gave her twenty-six doses (most of them 0.6 Gm.) of neoarsphenamine, and forty-four 2 grain (0.13 Gm.) doses of bismuth salicylate in oil. At the end of the year the blood Wassermann reaction was 1 plus. Since April 1934 she has had ten doses of the bismuth compound and three doses of (0.45 Gm.) neoarsphenamine. Her veins are difficult to enter with a needle. Is there an efficient method of treatment that does not necessitate the frequent use of intravenous injections or does not use them at all. I would appreciate any suggestions regarding this case.

M.D., Kansas.

ANSWER.—The inquirer will find in at least three textbooks recently published adequate information in regard to the general principles of the treatment of late syphilis. The degree of individualization is such that it is difficult to summarize without excessive detail. The Cooperative Clinical Group has, however, published accounts of the treatment of latent syphilis, which are available through the United States Public Health Service, Bureau of Venereal Diseases.

The patient described stands at the moment more in need of adequate examination than in need of further treatment. It

is essential to determine the status of the nervous system by a complete spinal fluid examination, and of the cardiovascular mechanism by a careful physical examination, a teleroentgenogram, fluoroscopic visualization of the aorta and an electrocardiographic examination. The blood Wassermann reaction is, in some respects, the least important item in the case. The patient has received at least the average amount of treatment appropriate to a latent infection. If the soreness of the tibial crests was due to a periosteal or osteoperiosteal lesion, she must be regarded as having late bone syphilis and the heavy metal therapy should be continued for approximately another year. If her treatment is to be confined to intramuscular procedures, bismuth arsphenamine sulphionate once a week for forty injections, or a continuance of bismuth salicylate in courses of ten injections separated by intervals of from eight to twelve weeks during which the patient receives potassium iodide would be an average appropriate procedure in the absence of contraindications or evidence of more serious forms of involvement.

The fact that the patient is a woman must be kept in mind with particular reference to pregnancy, and if she becomes pregnant treatment with neoarsphenamine and a bismuth compound should be resumed for the protection of the child, in accordance with the principles applicable to this aspect of syphilis.

INTERMENSTRUAL PAIN AND OVULATION

To the Editor.—A woman, aged 25, married, never pregnant, complains of acute pain, which has recurred regularly every month, midway between her menses, for the four years of her married life. It is localized in the lower right abdominal quadrant. It is sudden in onset, endures for two or three hours and ceases as suddenly as it begins. A soreness remains at the site for two days. For two days preceding and following the pain she regularly notes an opaque leukorrhea, which occasionally shows flecks of blood. It is never present at other times. The patient has never been seriously ill; no history of pelvic inflammatory disease was obtained. Her menses began at 15 and were rather profuse, recurring at slightly irregular intervals, associated with cramps and occasional vomiting. The intermenstrual pain is not associated with vomiting. Examination of the external genitalia is negative. The uterus is of normal size, anteflexed and moderately retroverted, and is not fixed. There are no palpable masses or palpable abnormalities of the tubes or ovaries. The examination is attended by considerable tenderness on the right side of the pelvis. The patient is apprehensive of the pain and states that she would be perfectly well were it not for that. She is completely disabled at the time. No abnormalities have been found in the urine or blood. There is no fever. Will you kindly suggest the probable diagnosis and treatment in this case? Please omit name and address.

M.D., Iowa.

ANSWER.—The pain described is that which is termed "mittelschmerz" by the Germans and was called intermenstrual pain by Priestley. It recurs regularly at the same time in the intermenstrual cycle, but usually about midway between each two menstrual periods. The condition is not common and a diagnosis of intermenstrual pain should not be made unless the pain recurs at about the same time for at least a number of months. During periods of amenorrhea such as pregnancy and lactation, the attacks of pain are absent. The pain, which is not characteristic, is usually confined to one iliac fossa but sometimes to both. It usually lasts a few hours but may endure for days, although in the latter cases it is not steady. In about 50 per cent of the cases of intermenstrual pain there is a vaginal discharge present during the attacks of pain. The discharge may be watery, mucous, yellowish and occasionally bloody. In some cases in which the discharge is bloody or blood stained there is a local cause for the bleeding, such as a polyp or submucous fibroid. However, as C. G. Hartman (*Am. J. Obst. & Gynec.* 19:511 (April) 1930) points out, the bleeding associated with intermenstrual pain may be a pathologically accentuated expression of a phenomenon that occurs in some animals. Many individuals regard as menstruation the visible periodic bleeding of bitches. This designation is wrong, as evidenced by its time relation to ovulation. The bleeding precedes and accompanies ovulation and hence should be called "proestrous bleeding." A similar and homologous bleeding occurs at the cotyledons of the cow. The final proof of the homology is Hartman's discovery of the intermenstrual bleeding in the monkey, which frequently occurs in the middle of the menstrual cycle. It is usually microscopic, is always less than in the dog, and is in both species a concomitant of the congestion that accompanies the presence of a maturing follicle. Hartman wonders whether future study will not show that intermenstrual bleeding in the human female is physiologic and normal rather than abnormal.

Most of the women afflicted with intermenstrual pain are young, but the attacks of pain rarely make their appearance with the onset of puberty. The attacks may recur for many

years, even lasting throughout the entire reproductive period. A large proportion of these women are sterile. The menstrual periods are usually normal and, if dysmenorrhea is present, it is usually much less severe than the intermenstrual pain. Many, but by no means all of the women who suffer intermenstrual pain have pelvic disease.

The cause of the pain is undoubtedly the process of ovulation, which occurs at about the middle of the intermenstrual interval. Hence the pain is associated with the menstrual period that follows the pain and not the one which precedes it. It is difficult to say what factors are involved in the mechanism of production of the pain. Normal ovulation is not associated with pain.

The treatment of intermenstrual pain is unsatisfactory. In not one of the sixty-four instances collected from the literature by Kelly was the pain self limited (Kelly H. F.: *Medical Gynecology*, New York, D. Appleton & Co., 1908). Of course, if any abnormality in the pelvis is present, it should be corrected by medical, physical or surgical means. The pain itself must be treated empirically by means of rest in bed, local heat and mild analgesic drugs. In many instances, narcotics such as codeine and morphine must be given; but they must be used with great caution. Kelly states that removal of the ovary on the side where the attacks of pain always occurred brought about relief in only two out of four cases. Whether any of the new hormone preparations will bring about a cure is highly conjectural.

PROGRESSIVE FATIGUE AND HYPERTENSION

To the Editor:—A white man, aged 45, states that for three years he has been becoming more and more constantly tired. Aside from this his history is negative. Physical examination is negative except for a slight hyperactivity of the knee jerks and a blood pressure of 148 systolic, 110 diastolic. Urinalysis is negative except for a few epithelial cells and a few white cells. Hemoglobin is 85; the red cells number 4,800,000 and the white cells 7,800. The basal metabolic rate was -4 and -2.5 on two tests. The Wassermann reaction is negative. A trial of thyroid therapy gave no results. Please omit name. M.D., Illinois.

ANSWER.—The two positive observations in this case are progressive fatigue and early essential hypertension. As a rule, subjects in the early stage of essential hypertension do not become fatigued easily. Many are extremely resistant to abnormal degrees of mental and physical fatigue. States of exhaustion are more prone to occur among patients who have low blood pressure. It is likely that there is no endogenous element underlying the patient's complaint. It is more probable that exogenous factors, such as work, worry and mental stress and some constitutional inadequacy rather than any derangement in the body, are causing the state of fatigue. If low metabolic rates or advanced grades of focal infection are absent, and if organic disease is eliminated, the condition of patients may improve when assured that their physical functions and organs are not diseased, as this removes a factor of anxiety which accentuates fatigue. Adequate vacations, with changes in environment, more sleep, midday rest and week end periods of relaxation, combined with mild forms of physical exercise, bring about a feeling of well being. If this treatment does not prove efficacious, glycine might be given a trial for a period of two or three months. Reduction in the amount of tobacco used or elimination of other deleterious habits may be advised, although too drastic changes in habits should not be urged.

CALCIUM DEPOSITS IN BRONCHIAL TUBES

To the Editor:—I have a patient who has calcium formations in the bronchial tubes. For fifteen years she has coughed up calcium stones at intervals. The condition has been diagnosed as broncholithiasis. The suggested treatment was rest, tonics and codeine for the cough. The patient does not improve with this treatment and I am asking you for further information on the care and treatment of the disease. The climate here is damp and cold. Would a dry warm climate be beneficial to the patient? Please omit name and town. M.D., Missouri.

ANSWER.—Abnormal deposits of calcium occur in the tissues of the chest under much the same conditions as in other portions of the body. Abnormal calcification occurs at the site of hyalinized tissue in regions of old suppuration or hemorrhage and also in cases in which there is excessive mobilization of calcium in diseases of the bones. Metastases in malignant disease may become calcified. In the chest, extensive calcification of the pleura has followed empyema. A frequent site of localized calcification and perhaps that most frequently associated with expectoration of calculi is the glands at the hili of the lungs. Smaller calcified nodules are commonly seen in roentgenograms of the lung fields. Many of the lesions are associated with tuberculosis, but in a considerable number of the cases cited in the literature no tuberculosis was demon-

strable and after expectoration of calcareous masses the patients recovered and remained clinically well for years. In other instances a period of good health was followed by recurrence of the expectoration of calculi.

A calcareous mass may cause erosion of an adjacent bronchus, with subsequent expectoration of calcified fragments. These fragments may vary in diameter from 1 mm. to 1 cm. and are sometimes larger. Their composition is usually that found in calcium deposits elsewhere, approximately 85 per cent calcium phosphate and 15 per cent calcium carbonate. The expectorated masses have been called broncholiths, bronchial calculi and lung stones. In some instances a calculus becomes fixed in a bronchus, causing retention of secretions, formation of an abscess or local pulmonary inflammation.

In the case cited, some information as to the possible nature of the underlying process should be supplied by roentgenograms of the chest, which would perhaps reveal evidence of an old calcified pleura or of lesions at the hilus. Four cases have been reported by J. J. Lloyd (Broncholiths, *Am. J. M. Sc.* 179:694 [May] 1930), in one of which a calcified mass at the right hilus, demonstrated by a roentgenogram, was shown to have disappeared in later films taken after the expectoration of broncholiths.

The further course of the condition described in the query will depend to a considerable extent on the presence or absence of active clinical tuberculosis. The bronchoscope might be of value in diagnosis and possibly, as suggested by Chevalier Jackson, in treatment. A warm dry climate would be likely to favor recovery in the presence of an associated tuberculosis or in nontuberculous chronic bronchitis.

Among other references the following two articles may be consulted:

- Wells, H. G.: Calcification and Ossification, *Arch. Int. Med.* 7:721 (June 15) 1911.
Pritchard, J. S.: Calcareous Degeneration Found in the Thorax, *Arch. Int. Med.* 32:259 (Aug.) 1923.

TREATMENT OF STERILITY

To the Editor:—Can you give me suggestions regarding a case of sterility? A man, aged 24, has been married four years. As a boy, he had mumps with orchitis; there is no history of venereal infection. Condom specimens of semen show many inactive spermatozoa. The prolonged administration of emplants of orchic substance (Parke, Davis & Co.) produces improvement, but this is not maintained. The wife, aged 23, has fairly regular but scanty menstrual periods. The uterus is rather of the infantile type. There is no erosion of the cervix and no definite cervicitis. Postcoital semen removed from cervix shows a hostile reaction of the cervical secretions to the spermatozoa, no active spermatozoa being found. The cervix has been dilated. Small doses (0.1 cc.) of anterior pituitary-like principle from pregnancy urine have been given three times a week for two weeks during each intermenstrual period. Semen has been introduced into the uterine cavity through a cannula without results. I should appreciate any help you can give me. Kindly omit name. M.D., Georgia.

ANSWER.—Condom specimens are generally unsatisfactory. It is far better to have the husband ejaculate the semen into a small, clean, wide-mouthed jar or bottle at the time of the orgasm. A friction specimen is more satisfactory than a condom specimen. If no motile spermatozoa are seen after repeated examinations of specimens in containers and the semen obtained from the vagina and cervix after coitus, the husband should be investigated by a urologist to see whether the condition can be rectified. Underdevelopment of the uterus is frequently a cause of sterility.

In spite of the excellent results observed in animal experiments with the use of injections and implantations of pituitary substances, the results in human beings have not been highly satisfactory. However, the outlook for this type of therapy is encouraging.

No mention is made of a tubal patency test. This test should be performed before semen is injected into the uterine cavity because, if the uterine tubes are not permeable, not only will pregnancy fail to take place but infection may result. The tubal patency test should not be done unless it is demonstrated that the spermatozoa in the husband's semen are satisfactory.

If the spermatozoa are satisfactory and the tubes are patent, it may be advisable to perform a dilation and curettement on empirical grounds. Not infrequently, pregnancy follows this operation.

Semen should not be injected into the uterine cavity unless a large proportion of the spermatozoa are actively motile. Furthermore, in most instances the semen must be injected many times before fertilization takes place. The most favorable time for uterine insemination is during the middle ten days between menstrual periods, because ovulation occurs during these ten days in the vast majority of women.

EDEMA OF ANKLE DURING MENSTRUATION

To the Editor.—A woman, aged 28, had a miscarriage, Sept. 1, 1933. Since that time she has had severe pain in the right ankle. The pain starts one day before the menstrual period and lasts for about six days. The pain is severe enough to cause the patient to limp and is continuous, whether she is on her feet or resting. There is also swelling between the achilles tendon and the external and internal malleolus. There are no varicose veins present and the leg is apparently normal, the only swelling being between the achilles tendon and the malleolus. Between periods she has occasional twitching in this region. The pain and swelling have continued with each menstrual period since the miscarriage. The swelling is not of the edematous type. I have treated her for some time but have not been able to obtain any results. Will you kindly tell me the cause of this condition, and also the proper treatment? Please do not mention my name.

M D, Michigan

ANSWER.—Assuming that the patient had an uneventful recovery from her miscarriage, it is difficult to see any connection between the miscarriage and the present complaint. Likewise there is no apparent direct relationship between the menstrual periods and the pain and edema in the ankle. As is well known, menstruation does not simply consist of uterine bleeding but affects all parts of the body. This results in a number of other signs and symptoms, many of which are disagreeable and troublesome. Among them are pains in the pelvis, pain in the breasts, headaches, circulatory disturbances, lassitude, nervousness, bladder irritability, interference with the regularity of the bowel movements, overactivity of the skin, and skin eruptions. In other words, the process of menstruation involves the entire body and if for some reason the right ankle is a locus minoris resistentiae, it may present the features this patient experiences when a change takes place in the body each month. The edema and the pain are most likely of circulatory origin. Since the exact cause of the pain is unknown, no specific therapy can be recommended. The patient should be made as comfortable as possible by physical measures and mild analgesic drugs. Even though there is an association with the menses, the use of hormone preparations would be highly speculative. Most likely the symptoms will disappear spontaneously just as usually happens when similar disturbances arise in connection with the menstrual periods.

IDENTIFICATION OF SEMINAL STAINS

To the Editor.—A man was found unconscious with bullet wounds in the upper right part of the chest, the upper right part of the abdomen (the bullet coursing backward and downward toward the sacral region), and another through the scrotum. The undertaker, on examining the victim's clothes found, as he thought, stains due to a seminal discharge. The prosecuting attorney contends that this emission was due to the bullet wounds, in contradiction to testimony for the defense that the victim was having illicit relations with the murderer's wife just prior to the shooting, in spite of the fact that the victim's clothes were all buttoned up and evidence points toward his becoming unconscious immediately on being shot. The question is, Is it possible to be shot in the region of the pelvis or scrotum with resulting seminal discharge? Kindly omit name.

M D, Kentucky.

ANSWER.—That emission of semen by ejaculation can follow a gunshot wound of the pelvis seems unlikely. On the other hand, semen might run out through a bullet wound involving the seminal vesicles. Let it be noted that the seminal nature of a stain cannot be determined by inspection only—spermatozoa must be demonstrated microscopically and/or seminal protein demonstrated by a specific precipitin test before one can say that a given stain is due to semen. Finally, in the case in question, assuming that the stains are seminal, why might they not have been deposited some time before the episode that led to the fatal shooting?

MERCURY POISONING HAZARD

To the Editor.—Will you please give me your opinion as to whether a laboratory worker who is handling mercury continuously, about six hours a day, five days a week, would be subject to mercurial poisoning? The mercury is used in liquid form from a buret in testing the tensile strength of paper. The room is well ventilated and he does not touch much of the mercury with his hands. Kindly omit name if this appears in THE JOURNAL.

M D, Wisconsin.

ANSWER.—Mercury poisoning from the exposure described is possible. Traces of mercury vapors continually arise from the surface of the metallic mercury. Novy, years ago, established the fact that the mercury in manometers used in connection with the culturing of various organisms gave off sufficient vapors to alter or inhibit the growth of these fungi or bacteria. The presence of mercury poisoning in this paper tester would be favored by the presence of one or more of the following cardinal manifestations: salivation, gingivitis, dryness of the throat, blue discoloration of the gums, muscular tremors and erethismus. Mercury in the atmosphere may be demonstrated through the use of mercury test papers, which

may be applied in a manner as simple as that in which litmus paper is used for the determination of acids and alkalis. A good description of mercury poisoning may be found in a publication by Wade Wright (*J. Indust. Hyg.* 4:296 [Nov.] 1922).

PELVIC MEASUREMENTS

To the Editor.—Please give me the average or normal pelvic measurements, especially the intercristal, interspinous, intertrochanteric, and external and internal conjugate. With what measurements do you consider cesarean section advisable? Please omit name and address.

M.D., California.

ANSWER.—The average external pelvic measurements are: interspinous, 26 cm.; intercristal, 29 cm.; intertrochanteric, 31 cm.; external conjugate, 20.5 cm.; internal conjugate, 11 cm.; diagonal conjugate, from 12.5 to 13 cm.

Of these measurements the internal conjugate and diagonal conjugate are the only ones of real value, but even they may not be used alone in deciding the necessity for cesarean section. The internal examination and the roentgenographic evidence are necessary in making up one's mind to perform such an important operation.

Repeated emphasis must be put on the fallacy of the external pelvic measurements.

The size of the baby must also be considered and finally, except in extreme contraction, a sufficient test of labor should be given.

DIGESTION OF MEAT

To the Editor.—Kindly inform me through THE JOURNAL about the duration of digestion of meat, such as steak, in the stomach and in the small intestine, and the total time interval between ingestion and absorption. Please omit name.

M D, Chicago

ANSWER.—Observations on these phenomena are so fragmentary as to the materials ingested, the species of animal used and the methods of observation as to render it almost impossible to give a forthright answer to these questions. Several authorities have been consulted, both personally and through their writings, with the following results, which must be evaluated in the light of the foregoing.

Meat leaves the stomach in from one to two and one-half hours. It continues to undergo digestion in the small intestine for about three hours, depending on the amount ingested. By the end of this time it is leaving the ileum, beyond which little absorption occurs. The total time between ingestion and the absorption of meat therefore ranges from four to six hours.

BRUISES OF SHIN

To the Editor.—I have a patient who bruised her shin fourteen years ago. At times an ulcer forms over the tibia at the site of the injury. This is extremely painful. Hot, wet dressings and staying off the feet will allow it to heal. Is there anything that can be used on it? What is the best treatment for these bruises over the shin bone when they occur?

DeVERE RITCHIE, M.D., Harrisburg, Pa.

ANSWER.—The circulation of the skin of the lower half of the leg over the tibia is poor, and following any injury slow healing often results.

Avoidance of infection and phlebitis favors early healing. Varicose veins increase the tendency to ulceration.

With any wound or ulcer of the leg, supporting bandages and keeping off the feet for a few days are of great help in healing.

Narrow strips of adhesive plaster applied across the chronic ulcer promote epithelization underneath. They are changed about twice a week and covered with a little gauze to absorb any secretion.

If varicose veins are present, they may be treated by injection or excision if necessary.

Skin grafts after excision of the ulcer and the fibrous tissue are indicated when other measures fail. A Wassermann test should always be done.

APHTHAE RESISTENTIA

To the Editor.—Could you advise me of some new methods to try in treating a case of chronic aphthae, or periadenitis mucosa necrotica recurrens? The case I am treating is that of a woman about 25 years old. She has had the condition off and on for about fifteen years. At times the lesions are numerous and severe and occasionally involve the vagina. She states that one of her children, a brother, her father and a grandmother are all afflicted with this disease. She gives a definite history of rheumatic fever and St. Vitus dance. Please omit name and address.

M D., New York.

ANSWER.—As implied in the names, periadenitis mucosa necrotica recurrens, or aphthae resistentia, is a difficult disease to treat, clearing at times with or without treatment but nearly

always recurring. All authorities agree that it yields to arsenic more regularly than to any other drug. Ormsby has reported cases that cleared up with treatment with arsenphenamine, but this drug failed in other cases. Howard Fox mentioned prompt improvement with roentgen therapy. Sutton, who originally described the disease in this country, used hygienic measures, outdoor sleeping, light exercise, easily digested, nourishing food in plenty, cod liver oil, iron and arsenic with good effect; the latter drug is possibly responsible for most of the benefit. The disease is familial, as in the case under discussion, seems to have a nervous element in it, and the mild lesions resemble ordinary canker sores. Whether it has any relation to the latter disease, or whether the resemblance to tuberculids mentioned by Fordyce in his discussion of Howard Fox's case means anything, has not been determined.

TUMOR OF THE KNEE JOINT

To the Editor:—A boy, aged 5 years, was brought to me because of a fluctuating tumor, about the size of a small hen's egg, in the left popliteal space. Aspiration showed a clear, viscid fluid. It was treated by incision and drainage and swabbing out of the cavity with a strong tincture of iodine, and drainage. The wound closed without infection in about ten days and the cavity seemed to have been obliterated. Now after a period of three months the tumor has reappeared and is gradually increasing in size. Advice is requested as to the probable nature of the tumor and whether excision is indicated. Please omit name and address.

M.D., California.

ANSWER.—It may concern an outpouching or hernia of the knee joint itself or an inflammation in some bursa in this region. After puncture, rest and fixation may result in cure. It must be borne in mind that a cyst in the popliteal region often opens into the knee joint. In some of the cases, tuberculosis is at the bottom.

THYMIC DEATH

To the Editor:—Concerning the query on "Thymic Death" in *THE JOURNAL*, September 15, page 856, much confusion on this subject has arisen because of classifying any unexplained death in children as "thymic." Thus, if the "lungs were completely atelectatic," the diagnosis in the case in question is suggestive of massive atelectasis due to aspirated mucus rather than of "thymic death."

In consideration of the causes of "thymic death," such theories as death due to mechanical pressure on the trachea and blood vessels, hemorrhages into the pons and asphyxiation due to contracting uterine walls should be mentioned only from a historical point of view, as they are no longer accepted.

There is increasing evidence that the enlarged thymus, like all lymphoid tissues, is a part of the allergic constitution and that sudden death is due to allergic shock (Waldbott, G. L.: So-Called Thymic Death, *Am. J. Dis. Child.* 47: 41 [Jan.] 1934). This theory also conforms well with the familial occurrence of "thymic death." I have the records of four families in which "thymic death" occurred in more than one child.

Concerning roentgen treatment of the thymus, it is well to remember that death may occur in thoroughly irradiated babies, as my records show. This, however, does not speak against the fact that roentgen therapy of the gland is still the best method available.

GEORGE L. WALDBOTT, M.D., Detroit.

DEFORMITY OF RECTUM WITH PAIN AFTER REPEATED INFECTION

To the Editor:—I was much interested in your answer to M.D., Texas, in *Queries and Minor Notes* (*THE JOURNAL*, September 1, p. 699) concerning inflammation of the anal canal. Although I agree that the disease in question can hardly be called a neuralgia, I do not believe that the trouble is due to a deformity of the rectum. The history, symptoms and proctoscopic observations in this case are, in my opinion, very suggestive of gonococcal infection of the anal ducts. The latter are preformed structures of varying length which extend from the crypts of Morgagni into the wall of the anal canal. Their microscopic changes and clinical significance were described by Tucker and Hellwig in *Surgery, Gynecology and Obstetrics* (58:145 [Feb.] 1934). I agree with you that the condition will not be cured by conservative treatment. In my cases of chronic gonococcal infection of the anal ducts I have obtained lasting cures only after complete excision of the infected ducts.

CLAUDE C. TUCKER, M.D., Wichita, Kan.

IMMUNITY IN TULAREMIA AND UNDULANT FEVER

To the Editor:—In answer to the query by Stanley M. Gates (*THE JOURNAL*, September 15, p. 861) you stated that tularemia and undulant fever appear to be good examples of diseases that develop final immunity with each succeeding exacerbation. In reference to tularemia, there are no authenticated reported cases of reinfection. Occasionally an individual who has had the disease may again manifest some of the lesser phases of the infection, which may be regarded as reinfection, recurrence or second attack. These manifestations of tularemia are rare. Francis makes the statement that he has not heard of a frank out-and-out second attack of tularemia. The immunity in tularemia is regarded to be the most complete of any of the infectious diseases.

HARRY L. BAER, M.D., Pittsburgh.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 12; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 13. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science.* Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, Nov. 13. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock. *Homeopathic.* Fayetteville, Nov. 13. Sec., Dr. Allison A. Pringle, Eureka Springs.

CONNECTICUT: *Regular.* Hartford, Nov. 13-14. *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

KENTUCKY: Louisville, Dec. 4-6. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McLaughlin, State Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 3. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: *Basic Science.* Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Galveston, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas.

WEST VIRGINIA: Martinsburg, Oct. 29-31. State Health Commissioner, Dr. Arthur E. McClure, Charleston.

Maryland June Examination

Dr. Henry M. Fitzhugh, secretary, Board of Medical Examiners, reports the written examination held in Baltimore, June 19-22, 1934. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and sixty-three candidates were examined, 154 of whom passed and 9 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1933) 82.1,	(1934)	87.5
George Washington University School of Medicine....	(1933) 86.7, 87.4, (1934) 81.1		86.4
Georgetown University School of Medicine.....	(1932) 83.3, (1933) 77.1, 78, 81.7, 83.5, 84.3, 85.7, (1934) 78.2, 79.1, 79.2, 79.4, 80.4, 80.4, 81.3, 82, 82.2, 83, 83.3, 83.5, 83.6, 85, 85.7, 85.8, 86.2, 88.2, 90.3, 90.4		81.1
Howard University College of Medicine.....	(1933) 77, 80.2, 81.5, 83.5,		83.8
Tulane University of Louisiana School of Medicine....	(1933)		81.5
Johns Hopkins University School of Medicine.....	(1931) 81.2, (1932) 86.4, 88.5, (1934) 76.7, 78.3, 79.4, 79.7, 79.7, 80.3, 81.3, 82.1, 82.2, 82.6, 84.1, 84.3, 85.2, 85.6, 86, 86.2, 86.2, 86.7, 86.8, 86.8, 87.5, 87.5, 87.6, 88.2, 88.3, 88.3, 89, 89.4, 89.7, 89.8, 89.8, 90.1, 91.6, 92.5		80.4
Univ. of Md. School of Med. and College of P. and S. (1932)	(1933) 87.5, (1934) 80, 80, 81, 81.5, 81.6, 81.6, 82.1, 82.3, 82.7, 82.8, 83.3, 83.6, 84, 84.3, 84.5, 84.6, 84.8, 84.8, 84.8, 85.1, 85.2, 85.4, 85.4, 85.4, 86, 86.3, 86.3, 86.4, 87, 87.3, 87.4, 87.4, 87.5, 87.6, 87.6, 87.7, 87.8, 88.2, 88.3, 88.4, 88.5, 88.7, 89, 89.3, 89.3, 89.3, 89.4, 89.4, 89.7, 89.8, 90.2, 90.4, 90.5, 90.5, 91, 91, 91.1, 91.6, 92.4, 93		88.1
University of Michigan Medical School.....	(1931)		88
University of Nebraska College of Medicine.....	(1933)		89.6
Albany Medical College.....	(1932)		83.1
Jefferson Medical College.....	(1934)		89.5
University of Pennsylvania.....	(1931)		82.8
University of Pittsburgh.....	(1935)		82.4
University of Tennessee.....	(1930)		78.1
University of Virginia Department of Medicine.....	(1931)		87.3
McGill University Faculty of Medicine.....	(1928)		82.2
(1929) 86.2, (1930) 79			
Univ. de la Habana Facultad de Medicina y Farmacia.....	(1926)		80.4
Licentiate of the Royal College of Physicians of London			
and Member of the Royal Coll. of Surgs. of England.....	(1934)*		84.6
Université de Genève Faculté de Médecine.....	(1934)*		79.6

School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1934)	72 4,	
73.2, 74.7, 75.5,† 76.5,† 77 5 †			
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia	(1932)	64 4	
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1923) 512, (1931)*	63 4	

One physician was licensed at a special examination held June 5. The following school was represented:

School	PASSED	Year Grad
University of Manitoba Faculty of Medicine.....	(1921)	

Eighteen physicians were licensed by reciprocity and 7 physicians were licensed by endorsement from March 2 to August 2. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad with	Reciprocity
George Washington University School of Medicine.....	(1905) Dist Colum		
Georgetown University School of Medicine	(1929) New Jersey		
Rush Medical College.....	(1914) D C, (1929)	Illinois	
Indiana University School of Medicine	(1931)	Indiana	
Tulane University of Louisiana School of Medicine	(1932)	Louisiana	
Long Island College Hospital.....	(1928)	New York	
University of Buffalo School of Medicine	(1901)	New York	
Eclectic Medical College, Ohio	(1927)	Ohio	
Western Reserve University School of Medicine.....	(1926)	Ohio	
Jefferson Medical College of Philadelphia.....	(1931) N. Carolina,		
(1932) Pennsylvania			
Meharry Medical College.....	(1930)	Tennessee	
University of Texas School of Medicine	(1928)	Texas	
Medical College of Virginia.....	(1930)	Virginia	
Univ. of Va Dept. of Med.....	(1931), (1932), (1933)	Virginia	

School	LICENSED BY ENDORSEMENT	Year Endorsement of
College of Medical Evangelists.....	(1934) N. B. M. Ex.	
Johns Hopkins University School of Med (1929, 2),	(1931) N. B. M. Ex.	
Harvard University Medical School.....	(1928) N. B. M. Ex.	
Woman's Medical College of Pennsylvania	(1933) N. B. M. Ex.	
University of Toronto Faculty of Medicine.....	(1927) N. B. M. Ex.	
* Verification of graduation in process.		
† Deficient in one subject.		
‡ Deficient in three subjects		

Maine July Report

Dr. Adam P. Leighton Jr., secretary, Board of Registration of Medicine, reports the written examination held in Augusta, July 5-6, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. Five physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine	(1933) 82, (1934)	84	
Boston University School of Medicine	(1932) 85, (1933)	86	
Harvard University Medical School.....	(1932)	86	
Tufts College Medical School.....	(1931)	79	
Long Island College of Medicine.....	(1933)	87	
Jefferson Medical College of Philadelphia.....	(1934)	78, 79	
University of Toronto Faculty of Medicine.....	(1892) 77, (1931)	81	
McGill University Faculty of Medicine.....	(1928)	86	

School	LICENSED BY RECIPROCITY	Year Grad with	Reciprocity
George Washington University School of Medicine	(1931)	Maryland	
Georgetown University School of Medicine	(1932)	Maryland	
Johns Hopkins Univ. School of Med	(1926), (1928)	Maryland	
Washington University School of Medicine.....	(1931)	Missouri	

School	LICENSED BY ENDORSEMENT	Year Endorsement of
Yale University School of Medicine.....	(1932) N. B. M. Ex.	
Harvard University Medical School	(1929), (1932) N. B. M. Ex.	

Mississippi June Report

Dr. Felix J. Underwood, secretary, Mississippi State Board of Health, reports the written examination held in Jackson, June 26-27, 1934. The examination covered 12 subjects and included 96 questions. An average of 75 per cent was required to pass. Twenty-nine candidates were examined, 28 of whom passed and 1 failed. Thirteen physicians were licensed by reciprocity. The following schools were represented.

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1932)	89 5,	
(1934) 79.9, 80.7, 81.2, 82.3, 83.5, 83.6, 84.1, 87.7,			
87.8			
Rush Medical College.....	(1934)	84 3*	
University of Louisville School of Medicine.....	(1934)	85.4	
Louisiana State University Medical Center.....	(1934)	87.4*	
Tulane University of Louisiana School of Medicine.....	(1934)	79.5,	
83.8, 84.1, 85, 85.6, 87.4, 87.9			

University of Pennsylvania School of Medicine.....	(1934)	85.5
University of Tennessee College of Medicine	(1932) 89 8, (1934)	83 2
Vanderbilt University School of Medicine	(1931)	83 5,
(1934) 87.9, 88 5, 88 8		
Nongraduate †		77.7

School	FAILED	Year Grad.	Per Cent
Nongraduate †			41.2

School	LICENSED BY RECIPROCITY	Year Grad. with	Reciprocity
Emory University School of Medicine	(1929)	Georgia	
Northwestern University Medical School	(1931)	Alabama	
Rush Medical College	(1885)	Wisconsin	
School of Med. of the Div. of the Biological Sciences	(1933)	Oklahoma	
Tulane Univ. of La School of Med (1925), (1929), (1932)		Louisiana	
Meharry Medical College	(1932)	Tennessee	
University of Tennessee College of Medicine (1929),			
(1931), (1932), (1933) Tennessee			
Vanderbilt University School of Medicine	(1924)	Louisiana	

* This applicant has completed his medical course and will receive an M D degree and Mississippi license on completion of internship

† Permitted to come before the board for examination by special act of legislature.

Book Notices

Parasitism and Disease By Theobald Smith Published on the Louis Clark Vanuxem Foundation Cloth Price, \$2 Pp 196 Princeton, Princeton University Press, 1934

The director emeritus of the department of animal pathology of the Rockefeller Institute of Medical Research is abundantly qualified by long contact with research on parasitism and disease to make a critical presentation of this subject in the light of his long and varied experiences with the experimental analysis of the factors in disease and its prevention and control His discovery of the relation of the cattle tick to the Texas fever of cattle opened the relation of insect vectors to the transmission of disease of parasitic origin, a relation that was basic to the later analysis and solution of the causes of malaria, trypanosomiasis, leishmaniasis, typhus fever and other insect-borne afflictions of man and the domestic animals.

The lectures here expanded and modified in book form were delivered on the Louis Clark Vanuxem Foundation. The book lacks the illustrations that accompanied the lectures but retains the freedom from citation of authorities and documentation of sources which the platform demands Both of these features tend to disappoint the technical reader, though this is in part assuaged by the greater simplicity of presentation and a certain directness in criticisms and the statement of conclusions

The author's recognition that animal and human parasitic afflictions present a common series of problems for analysis requiring similar, if not identical, methods of attack, with solutions equally applicable in therapy, prevention and control alike in veterinary and human medicine, presents a point of view much needed in these days of subsidized organizations of antivivisectionists. A continuous campaign of education of the public by the medical profession and the nonprofessional press is much needed. Dr. Smith also makes no distinction between animal parasitology and bacteriology in his arrangement of subject matter and his topical discussions The neglect of parasitology in premedical and clinical medical instruction has given a bacteriologic slant to the practice of medicine which all too often limits diagnosis and therapy.

The book opens with a chapter on the derivation of the parasitic mode of life from the predatory one. This is followed by a discussion of the various patterns of life cycle, all of which involve four important stages; namely, adjustment and adaptation to invasion, to multiplication, to emigration or passive discharge, and to transfer to fresh hosts These four demands are met in various ways, each matched against the resisting powers of the host.

The second chapter deals with aberrant parasitisms, which are not regarded as insignificant accidents but rather as the most important factors in the evolution of both parasitism and disease. Aberrance is the adventurous element in the life of the parasite, which leads either to death or to new conquests. Establishment in new hosts paves the way for the formation of new races and varieties, for the new host modifies and molds the invader until a new equilibrium has been established. Aberrance of parasites is furthermore responsible for the

development of disease whenever they reach a more yielding host. Most epidemics or pandemics are probably due to strayed parasites. A study of epizootics among small experimental animals kept together in large numbers tends to show that such diseases are most virulent at the start and gradually change their characters, becoming less infectious, more chronic, non-fatal, and topographically altered as regards the incidence of lesions. The epidemic is probably the first sign of a straying of parasites from either near or more distantly related hosts to new hosts not previously infected, or from an immune group to a susceptible group of the same species or race.

The chapter on the host-parasite conflict analyzes the factors in the battle that ensues when the parasite grows or multiplies within the host. "This is the stage to which medical science has given most attention, and it is the one in which disease as well as cure from disease is generated." Here is found a discussion of racial susceptibility, endemicity, infantile susceptibility, bactericidal ferments and their sources, alexin and opsonin, and other antialien activities of the host and, on the other hand, of the toxins, aggressins, capsules and other envelopes of bacteria and of the cuticula of worms and the envelopes of their ova. The cuticula is nondigestible. The living cells of the parasite are protected from the digestive ferments of the host by an intracellular antidigestive mechanism, which death of the parasite disrupts. The patterns of host-parasite relations are modified by differences in host species, races and individuals, and by their environment, by variations in parasites induced by the environment of artificial cultures, by differences due to stages of adaptation in the evolution of the parasitic mode of life, and by differences due to naturally occurring or artificially induced aberrant parasitism. Moreover, there is no generally uniform order in which the various antialien activities are brought out by the reciprocal stimulation of host and parasite. All one can do is to catalogue these activities in the individual and utilize them in the comparative study of types of parasitism. The forces of the host tend in one direction, destroying or rendering harmless the parasite. The parasite has its mechanism set for multiplication or increase in size. Both involve processes of digestion and assimilation. The host, however, is not dependent on the products of such digestion, whereas the parasite is completely dependent. The host by simply checking the parasite's growth activities has protected itself sufficiently. The parasite, on the other hand, must be able to overcome the antialien forces of the host, in at least a circumscribed territory, by destructive or neutralizing processes while it increases in numbers or develops to maturity. The parasite's ammunition consists of a variable number of factors, such as metabolic products or toxins and such as are released by disintegration of some of the parasites, also special metabolic products of the host species which may be favorable to the multiplication and growth of parasites, enveloping protective substances, capsules of varying degrees of consistency and reproductive activities, and finally ectoplasms or limiting membranes of specific permeability or resistance to digestion. The host, on the other hand, has certain general lytic or digestive powers and the capacity to develop at varying rates antibodies that neutralize toxins and such as paralyze the growth activities of the parasite and envelop and immerse it.

Phagocytosis has played a part in the evolution of parasitism, because there has been interposed between the general antialien activities of the host and the vulnerable evolving parasite a new substance in the form of a protecting capsule or of a new state of the surface of the parasite. This demanded the formation of specific antibodies by the host and also the adaptation of certain normally phagocytic cell groups or the interment and gradual destruction of the parasite.

In the chapter on variation and mutation in parasitic organisms, the author states that the "work of the past generation has revealed a fundamental stability of the characters of micro-organisms with restricted variability" and is somewhat non-committal on the validity of the ultraviolet forms of the bacteria.

In his theoretical discussions he accepts natural selection, but throughout the book he is a thoroughgoing Lamarckian with regard to potency of environmental factors in the evolution of parasitism and host-parasite relations.

In the chapter on survival and host-to-host movement one finds a survey of this interesting aspect of parasitism, with a discussion of antepartum and postpartum transfer through the placenta and milk respectively; of the transfer of antibodies in the early colostrum of the cow in the first two days and the persistence of the protection for only several months; of the inheritance of parasites in insects by way of the ovum; of infection by droplet from the respiratory tract, by insect vectors, and by contamination; of the function of the carrier in the spread and maintenance of communicable diseases; and of the relation to human diseases of domesticated animals and others, such as rats and other rodents associated with man.

The chapters on epidemiology and on the utilization of discoveries contain a review of the relations of epidemics to civilization and an assessment of values of the achievements to date both for public health and sanitation and for personal hygiene.

This book should be read and digested not only by every public health administrator, physician and nurse but also by the medical practitioner. The layman seeking a general picture of the relation of communicable diseases to society will find the book readable and informing. The biologist will appreciate the comprehensive picture which it presents of disease in its relation to the organism and to the evolutionary process.

How to Use a Medical Library: A Guide to Research for Practitioners, Research Workers and Students. By Leslie T. Morton, Associate of the Library Association. Boards. Price, 2s. 6d. Pp. 70. London: John Bale, Sons & Danielsson, Ltd., 1934.

The author of this volume is assistant in the Library of the Royal College of Medicine. He is a firm believer in the idea that those who use libraries should prepare their own bibliographies. The author describes the development of various medical indexes and discusses uses of these indexes and the location of periodical literature, and then the compilation of medical bibliographies. He also describes the methods of using card catalogues in medical libraries. Two appendixes list the available indexes and abstracting journals and the medical libraries of Great Britain. There is also a bibliography of works on the consultation of medical literature.

Death Rates by Occupation Based on Data of the U. S. Census Bureau, 1930. Edited by Jessamine S. Whitney, Statistician, National Tuberculosis Association. Boards. Price, \$1. Pp. 32. New York: National Tuberculosis Association, 1934.

All who are interested in the trend of death rates by occupation or who have use for comparative data pertaining to the relative importance of certain specified causes of death in selected occupations will welcome these compilations. Although the tables do not contain data covering the entire United States, accurate figures are presented for a limited area. This volume may well serve as an introduction to a complete tabulation of census figures on a subject that is vital in any study of industrial hygiene and workmen's compensation. If death rates according to occupation can be used to some degree to indicate the relative risk in various industries and serve to stimulate more scientific and concerted efforts to reduce these hazards, the preparation of these data will have served a definite purpose in individual and community welfare.

Lumbalanästhesie in der Geburtshilfe und Gynäkologie mit besonderer Berücksichtigung der Biochemie des Liquors und der Blutliquorschanke. Von Dr. Ernst Preiszecker, Assistent der II. Univ.-Frauenklinik Wien (Prof. W. Welbel). Mit einem Vorwort von Prof. Dr. W. Welbel. Cloth. Price, 7.50 marks. Pp. 76, with 5 illustrations. Vienna: Wilhelm Mau-drich, 1934.

In this book the author reviews the history of spinal anesthesia, the biochemistry of the cerebrospinal fluid, the pharmacology of the drugs used for spinal anesthesia, the technic of lumbar puncture and spinal anesthesia, the use of this form of anesthesia in obstetrics and in gynecology, and the effect of spinal anesthesia on the intermediary metabolism. He advises against the use of morphine and other alkaloids preliminary to the use of spinal anesthesia because all alkaloids depress the respiratory center. He employed nupercaine in 1,200 cases and prefers the sitting posture for the insertion of the anesthetic. However, in pregnant women near or at term, the lateral position must be employed. The sensitiveness of gravid women to spinal anesthetics is definitely increased, because during gestation there is a greater tendency toward bleeding, an

increased permeability of the blood vessels, a more ready transfer of material from the cerebrospinal fluid into the general circulation, a diminished pulmonary capacity, and a sudden filling of the splanchnic vessels after extraction of the child. In spite of this the author believes that spinal anesthesia is highly suitable for obstetric operations, especially cesarean sections. However, pregnant women who have cardiac disease should never be given spinal anesthesia. The author maintains that spinal anesthesia cannot supplant twilight sleep because it is too risky. In the series of gynecologic cases reported, satisfactory anesthesia was induced in 91.8 per cent. To the rest, ether had to be given. This book should prove valuable to all who are interested in spinal anesthesia.

A Doctor Studies Crime. By Perry M. Lichtenstein, M.D., LL.B., Medical Assistant, District Attorney, County of New York. Cloth. Price, \$3. Pp. 263. New York: D. Van Nostrand Company, Inc., 1934.

The author of this volume was for over eighteen years resident physician of the Tombs in New York and for nearly three years medical assistant of the district attorney. His discussion of crime is therefore based on study of several hundred thousand people accused of criminal acts. His book is enlivened by many anecdotes of the great and near great criminals with whom he has had contact. The chapters of the book discuss the prison physician, narcotic addiction, the relationship of mental and moral defects and of insanity to crime, the uses of probation, the detention prison, court procedure and the penal institution. This is a first hand account of the work of the prison physician, which may be read with interest by every one interested in crime and its detection and also by those interested in prison reform.

Common Skin Diseases. By A. C. Roxburgh, M.A., M.D., B.Ch., Physician in Charge of the Skin Department and Lecturer on Diseases of the Skin, St. Bartholomew's Hospital. Second edition. Cloth. Price, 16s. Pp. 369, with 136 illustrations. London: H. K. Lewis & Company, Ltd., 1934.

This edition has been enlarged by the inclusion of chapters on congenital disorders of the skin, atrophies and scleroses, vesicular and bullous eruptions and erythrodermias. The addition of a goodly number of reproductions of clinical photographs and photomicrographs has enhanced the attractiveness of the book. The point of view of the general practitioner has been preserved by emphasis on differential diagnosis and by omission of those methods of treatment that ordinarily are to be had only in specialists' offices. It is unfortunate that the formulas are not given in the metric system as well as in the older one. Taken as a whole one must give praise to the printers for the excellence of the heavy paper used, for the attractive maroon-colored gold-stamped leather binding, and to the author for his careful, conservative and concise selection of material.

Odoratus Sexualis. By Dr. Iwan Bloch. A Scientific and Literary Study of Sexual Scents and Erotic Perfumes. Cloth. Price, \$5. Pp. 274. New York: American Anthropological Society, 1933.

Here is a reprint in English at a very high price of a rather obsolete essay on the relationship of odor to sex. It has long been understood that human beings possess odors which are quite distinctive and that perfumes of various types have been associated with sexual stimulation. The author discusses these matters from both ethnological and biologic points of view.

Código de deontología médica. Por Louis Alonso Muñozerro, presbítero, auditor fiscal del Supremo Tribunal de la Rota Española. Prólogo del Dr. A. Vallejo Nágera. Cloth. Pp. 250. Madrid: Ediciones Fax, 1934.

In this day of codes it is interesting to see what a really thoroughgoing code may be, for under this title, filling some 130 duodecimo pages, there is enunciated a code of medical ethics that leaves no aspect of the physician's life untouched. Three chapters are devoted respectively to the intellectual, moral and physical qualifications of the physician. His relationships to the sick, to society and to the profession are minutely analyzed. All matters pertaining to marriage, birth control, sterilization and artificial impregnation are treated from the strictly orthodox point of view, as might be expected. The author is a doctor of sacred theology and canon law; also a member of the Supreme Tribunal of the Spanish Rota.

One Hour of Medical History. Volume III. By Benjamin Spector, M.D., Director. Cloth. Price, \$2. Pp. 181, with illustrations. Boston: Tufts College Medical School, 1934.

The Tufts College Medical School has presented each year a pageant of the history of medicine. The first two have already been published in book form. With increasing experience the material becomes more finished. Students are chosen from the second, third and fourth years who make an earnest effort to bring to life the characters they impersonate. The present volume carries the reader and the listener from Imhotep to Roentgen. The book is nicely illustrated. The essays, while brief, are highly suggestive.

Anatomy of Animal Types for Students of Zoology. By E. A. Briggs, D.Sc., Assistant Professor of Zoology in the University of Sydney. Cloth. Price, 10/6. Pp. 250. Sydney, Australia: Angus & Robertson, Ltd., 1934.

Most of the textbooks about zoology are concerned with species not available in Australia. For this reason Prof. E. A. Briggs has prepared a manual of zoology especially for the Australian student, dealing with vertebrates and invertebrates that are used by the students in that country. His book will, of course, be useful to such students as a textbook and to those in other countries as a work of reference.

Biographical History of the Members of the McLean County Medical Society and Other Physicians Who Have Practiced Medicine in McLean County, 1854-1934. Paper. Pp. 79, with illustrations. Bloomington, Illinois: The Society, [n. d.].

On March 20, 1854, fourteen physicians assembled in Bloomington, Ill., to organize the McLean County Medical Society. On the fiftieth anniversary, in 1904, the society requested one of its charter members, Dr. C. R. Parke, then of Louisville, Ky., to write a history of the medical society to be included in a history then being prepared by the McLean County Historical Society. The brief history prepared by Dr. Parke is the opening chapter in this small volume. It is followed by the original constitution of the McLean County Medical Society and by the revised constitution, which went into effect Dec. 1, 1904. There is a list of all the presidents and secretaries and a brief bibliography of all the members from the organization of the society down to the present. The history closes with a brief account of several hospitals in Bloomington and of the eightieth anniversary and banquet of the McLean County Medical Society, held May 8, 1934.

Die Werke des Hippokrates: Die hippokratische Schriftensammlung in neuer deutscher Übersetzung. Herausgegeben von Dr. med. Richard Kasperer. Unter Mitwirkung von Prof. Dr. Georg Sticker, u. a. Tell 1: Sitten- und Ständelehre für Aerzte. Tell 2: Die Alt(bewährte) Heilkunst/Die Kunst. Die hippokratische Schriftensammlung in neuer deutscher Übersetzung. Boards. Price, 98.75 marks, per set. (Subskriptionspreis). Pp. 59; 59. Stuttgart & Leipzig: Hippokrates-Verlag G. m. b. H., 1934.

The author offers a new translation into German of the works of Hippocrates. It is to be published in parts with a hope of bringing physicians back to the hippocratic conception of diseases and its control.

Atlas of External Diseases of the Eye. By Humphrey Neame, F.R.C.S., Hon. Ophthalmic Surgeon, Royal London Ophthalmic Hospital. Cloth. Price, \$5. Pp. 110, with 51 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc. 1934.

This is an atlas containing fifty-one colored drawings of diseases of the lids and the eyeball. Accompanying each plate and opposite it is a brief discussion of the condition giving the signs, symptoms, diagnosis, etiology, pathology, prognosis and treatment of the conditions. Most of the plates are quite good and it is possible to make a diagnosis from the pictures alone. The book should be of value to the student and the general practitioner.

Les ordonnances du médecin praticien: 256 répertoires de thérapeutique clinique. Par MM. S. Abbateucci et al. Third edition. Paper. Price, 50 francs. Pp. 526. Paris: Masson & Cie, 1934.

This collection of highly practical brief articles on the non-surgical treatment of diseases, first suggested by Martinet, has been brought down to date in this revised edition by incorporation of recent progress. It is neither a treatise on therapeutics nor a mere formulary, but a collection of outlines of treatment

sketched by experts in their respective lines and made applicable to current clinical and social conditions. It is decidedly a book that the general practitioner who understands French would find a good investment.

Medicolegal

Medical Practice Acts: Injunction to Restrain Unlicensed Practice.—The state of Arizona, on the relation of the attorney general, filed a bill of complaint against A T Smith to enjoin him from practicing medicine and surgery without first having obtained a license to do so. The trial court sustained Smith's demurrer to the complaint and the state appealed to the Supreme Court of Arizona.

The complaint alleged that Smith was engaged in the practice of medicine and surgery without a license, that he was unskilful and uninformed in that practice, that he did not possess the moral and professional qualifications prescribed therefor, that his continuous and persistent practice constituted a public nuisance, detrimental to the public welfare and dangerous to the public health, and contrary to and against the public policy of the state. The regulation of the practice of medicine and surgery by the state has for its purpose, said the court, the protection of the public health, and the attorney general, as a legal adviser of the state, may properly institute and prosecute a suit against those who fail or refuse to comply with the requirements of the medical practice act.

When the defendant demurred to the complaint he admitted as true the facts pleaded therein. The difficult question in this case, said the Supreme Court, is whether, in the absence of specific statutory authority, a person may be enjoined from committing a crime for which the legislature has prescribed a punishment. The general rule is that the courts will not enjoin one from committing a crime. As an exception to this rule, however, it is generally held that an injunction will be granted to restrain acts constituting a public nuisance, if they affect the civil or property rights or privileges of the public, or affect the public health, whether such acts be denounced as crimes or not. Section 4693, Revised Code of Arizona, 1928, provides that "anything which is injurious to health is a public nuisance," and in the present case the state based its right to an injunction, in part, on the allegation that the acts of the defendant, because of his lack of training and education, constituted a public nuisance affecting the public health. It is obvious, observed the court, that one who knows little or nothing of the human body and its reactions is unable intelligently and wisely to diagnose or prognosticate human ills, or to adopt sanitary means to prevent their spread or to effect their cure. If in fact, continued the court, the defendant was unskilful and uninformed, as alleged in the complaint, and daily treated people for their ills, it was not only probable but very likely that he was injuring the health of those he treated rather than helping them. His acts were consequently injurious to health and a menace to life.

The court did not think, however, that the unlicensed practice of medicine and surgery was per se a nuisance, as seems to have been held in *Kentucky State Board of Dental Examiners v Payne*, 213 Ky 382, 281 S W 188, and in *State v Anderson*, 6 Tenn Civ App 1. In the opinion of the court, a license does not add to a person's qualifications. It only shows that the holder has complied with the law. His skill and ability as a practitioner would be the same before as after he secured the license. A person having a license from the proper authorities would be presumed to be qualified to practice, and, in a criminal prosecution for violating the law requiring a license before practicing, the absence of such a license would give rise to an un rebuttable presumption of disqualification. But, observed the court, in a proceeding for an injunction based on acts alleged to be injurious to health by reason of unskilfulness, ignorance and incompetence, the state must make out its case. In the present case, the complaint alleged that the acts of the defendant were injurious to health and constituted a public nuisance. These allegations were not only not denied but were admitted by the demurrer. The Supreme Court concluded therefore that the injunction should have been granted. The judgment of the

trial court was accordingly reversed and the cause remanded, with directions that a permanent injunction be issued restraining the defendant from the further practice of medicine and surgery without a license. Subsequently, however, on a rehearing of the appeal, the Supreme Court revised its order and directed the trial court to overrule Smith's demurrer and permit him to make further answer to the complaint—*State ex rel La Prade, Atty Gen, v Smith (Ariz)*, 29 P (2d) 718, 31 P (2d) 102.

Malpractice: Death Resulting from Chiropractic Treatment for Headache.—The defendant, a chiropractor, undertook to treat Mrs Thornton for a chronic headache by giving her so-called chiropractic adjustments daily. At the end of the fifth "adjustment" the patient complained of excruciating pains in her neck and head and the chiropractor called a non-sectarian practitioner. A blood vessel in the patient's brain seems to have been ruptured and the patient died about two weeks later. Attributing the death to malpractice on the part of the chiropractor, the plaintiff, her husband, sued the chiropractor. There was a judgment for the plaintiff and the chiropractor appealed to the Supreme Court of Florida.

For a plaintiff to recover in a malpractice suit, said the Supreme Court, he must show two things, namely, (1) that the defendant was unskilful or negligent and (2) that that want of care or skill resulted in injury to the plaintiff. The absence of either of these two conditions will defeat recovery. While an unfortunate result raises no presumption of negligent treatment, negligence may be inferred from circumstances. For the circumstances to raise a fair presumption of negligence, they must of necessity not only be consistent with the theory that the injury resulted from negligence but also be inconsistent with the theory that the injury resulted from any other cause which might just as reasonably and logically be established by the circumstances. Applying these general principles to the facts of this case, the court said:

The jury in the case decided that the treatment administered by the doctor [chiropractor] produced the patient's death, which was caused by a ruptured blood vessel in the brain. This conclusion was evidently arrived at from the evidence of physicians and surgeons, who said that the rupture was caused by violence, and from the testimony of the defendant himself that the "adjustment" to which he submitted the patient, if properly made, could not have caused the rupture. That the rupture was caused by the adjustment was evidenced by the fact that the patient went to the doctor's [chiropractor's] rooms for a treatment like that which she had before received, and, while under the treatment, suddenly suffered the shock which resulted in severe pain and subsequent unconsciousness.

The Supreme Court accordingly affirmed the judgment in favor of the plaintiff—*Foster v Thornton (Fla)*, 152 So 667.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, New York, Oct 30 31 Dr Arthur H Ring, 163 Hillside Avenue, Arlington, Mass, Secretary
- American Society of Tropical Medicine, San Antonio Texas, November 14 16 Dr Henry E Meleney, Vanderbilt University School of Medicine Nashville, Tenn Secretary
- Association of American Medical Colleges, Nashville, Tenn, Oct 29 31 Dr Ired C Zapffe, 5 South Wabash Avenue, Chicago, Secretary
- Central Association of Obstetricians and Gynecologists, New Orleans, Nov 1 3 Dr Ralph A Reis, 104 South Michigan Boulevard, Chicago, Secretary
- Central Society for Clinical Research, Chicago, Nov 2 3 Dr Lawrence D Thompson, 3720 Washington Boulevard, St Louis, Secretary
- Inter State Postgraduate Medical Association of North America, Philadelphia, November 5 9 Dr W B Peck, 27 East Stephenson Street, Freeport Ill, Managing Director
- Omaha Mid West Clinical Society, Omaha Oct 29 Nov 2 Dr Joseph D McCarthy, 107 South 17th Street Omaha Secretary
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif November 21 23 Dr Clarence A De Puy, 230 Grand Avenue, Oakland Secretary
- Puerto Rico, Medical Association of, Santurce, Dec 14 16 Dr Julio R Rolenson Box 3403 Santurce, Secretary
- Radiological Society of North America, Memphis Tenn, December 3 7 Dr Donald S Childs, 607 Medical Arts Building, Syracuse, N Y, Secretary
- Southern Medical Association, San Antonio Texas November 13 16 Mr C P Loranz Empire Building, Birmingham Ala Secretary
- Southern Surgical Association, Sea Island, Ga, Dec 11 13 Dr Robert L Payne, 142 York Street, Norfolk, Va, Secretary
- Western Surgical Association St Louis December 7 8 Dr Albert H Montgomery, 122 South Michigan Boulevard Chicago, Secretary

Current Medical Literature

AMERICAN

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American Journal of Medical Sciences, Philadelphia

ISS: 301-440 (Sept.) 1934

- Social Incidence of Rheumatic Heart Disease: Statistical Study in New Haven School Children. J. R. Paul, Elizabeth R. Harrison, R. Salinger and G. K. DeForest, New Haven, Conn.—p. 301.
- *Recurrences in Pneumococcus Pneumonia. M. Finland and A. W. Winkler, Boston.—p. 309.
- *Cytology of Pleural Effusions in Pneumonia Studied with Supravital Technic. T. F. M. Scott, Baltimore, and M. Finland, Boston.—p. 322.
- Occurrence of Myelocytes in Peripheral Blood in Lobar Pneumonia. D. J. Stephens, Rochester, N. Y.—p. 332.
- Evanescent Effect of Intratibial Injections of Bacillus Welchii Toxin in Rabbits. L. J. Goldwater, J. E. Connery and H. Heimann, New York.—p. 339.
- Lack of Effect of Liver Treatment on Circulating Reticulocytes in the Pigeon. H. Heimann, J. E. Connery and L. J. Goldwater, New York.—p. 343.
- Spontaneous Rupture of Heart Simulating Surgical Abdominal Disease. H. A. Salzmann, Philadelphia.—p. 347.
- *Enlargement of Heart Due to Abnormal Glycogen Storage: In von Gierke's Disease. W. Antopol, J. Heilbrunn and L. Tuchman, New York.—p. 354.
- Effect of Elevated Metabolism on Heart of Frizzle Fowl: II. Increased Ratio of Heart to Body Weight. E. P. Boas, New York, and W. Landauer, Storrs, Conn.—p. 359.
- Familial Cleidocranial Dysostosis. Julianna R. Tatum, Philadelphia.—p. 365.
- Sympathogonioma of Adrenal. H. L. Peters and B. Horn, Bridgeport, Conn.—p. 372.
- Treatment of Bichloride of Mercury Poisoning: Study of Forty-Six Cases. W. B. Porter and C. E. Simons, Richmond, Va.—p. 375.
- *Study of Auricular Fibrillation Following Operations for Goiter. A. C. Ernstone and B. E. Mulvey, Cleveland.—p. 382.
- Electrocardiographic Changes Produced by Injuries of Various Parts of Ventricles. H. Korey and L. N. Katz, Chicago.—p. 387.
- Arteriovenous Fistula of Renal Vessels. E. W. Hollingsworth, Hines, Ill.—p. 399.
- Large Doses of Tuberculin in Testing Guinea-Pigs Inoculated for Diagnostic Purposes. T. B. Magath, Rochester, Minn.—p. 403.
- So-Called "Primary" Tuberculosis of Muscle. H. Milch, New York.—p. 410.

Recurrences in Pneumococcal Pneumonia.—Finland and Winkler present a study of fifty-seven cases of recurrent attacks of pneumonia associated in each instance with serologically identified pneumococci. An analysis of the major features of the early attacks and of the recurrence fails to indicate any marked change in the local or type specific susceptibility. The distribution of types of pneumococci and of the sites of the pulmonary lesion, in both the early and the late attacks, was similar to that usually observed in pneumococcal pneumonia. A larger number of cases had more extensive and "atypical" lesions during the recurrent attack. Specific serum therapy in the first attack in general had no marked effect on the character of the recurrence. Early recurrences with the same type, however, are more frequent among the cases treated with serum.

Cytology of Pleural Effusions in Pneumonia.—Scott and Finland used the supravital technic described by Forkner (a modification of the methods of Simpson and Sabin and their associates) to study the cytology of fifty-three pleural fluids obtained from thirty-two patients having pneumococcal lobar pneumonia. The cellular content of the infected fluids consisted almost exclusively of polymorphonuclear neutrophils in various stages of degeneration. In uninfected fluids the predominating cells, in the beginning, were active polymorphonuclear neutrophils, but these decreased in number during the first week, at which time monocytes and macrophages appeared in the fluid. Later in the disease, after crisis had taken place, lymphocytes began to appear in these sterile fluids. Moderate to marked eosinophilia was noted in three cases.

This occurred during the third week or later after the onset of the pneumonia.

Enlargement of Heart Due to Abnormal Glycogen Storage.—Antopol and his co-workers report a case of glycogenesis confirmed by necropsy. They state that deposits of glycogen may occur in the liver, kidneys, brain, heart, blood vessels, muscles and organs of internal secretion. The clinical picture depends on the sites of deposition and on the extent to which the vital processes of the affected tissues are interfered with. So far three main symptom groups are known, due to preponderance in the liver and the kidneys, in the heart and the blood vessels or in the brain. The first is the best known and possibly the largest group—the hepatonephromegaly glycogenica of von Gierke. The second group—that with cardiac hypertrophy—gives a clinical picture which, in the absence of proper chemical and histologic studies, may be confounded with the so-called idiopathic hypertrophy of the heart, as pointed out by Pompe. It is possible that many of the cases formerly classified as idiopathic hypertrophy belong to the von Gierke type of disease with enlarged heart and that rhabdomyomas are localized collections of fibers rich in glycogen, due possibly to focal disturbance in the metabolism of glycogen. In many cases of the so-called idiopathic hypertrophy vacuoles have been noted in the cardiac muscle but were not explained, and their association with large livers and enlarged kidneys is frequent. The third group, i. e., with cerebral symptoms due to glycogen deposits in the brain and spinal cord (Kimmelstiel) makes necessary a review of all poorly understood cerebral conditions in children in order to determine whether some of them are not related to the effect of abnormal glycogen storage.

Auricular Fibrillation After Goiter Operations.—According to Ernstone and Mulvey, sixteen (7 per cent) of 213 patients having hyperthyroidism had auricular fibrillation during the preoperative period, while postoperative auricular fibrillation developed in thirty-one (16 per cent) of the 197 who had normal rhythm before operation. The arrhythmia was present before operation in two of 192 patients who had adenomatous goiter without hyperthyroidism and developed after operation in four. The age of the patient, type of goiter and duration of hyperthyroidism appear to be the most important factors predisposing to the development of postoperative auricular fibrillation. The degree of elevation of the basal metabolic rate is of little significance. The immediate increase in the rate of metabolism following operation probably is the essential factor responsible for the initiation of the arrhythmia. Postoperative auricular fibrillation is more common in thyrotoxic patients having an adenomatous goiter than in those with hyperplastic goiter. This difference cannot be explained entirely by differences in the ages of the patients belonging to the two groups. The long duration of thyroid enlargement in the majority of patients having adenomatous goiter may favor the gradual development of myocardial damage, possibly as the result of repeated or prolonged periods of low grade, unrecognized hyperthyroidism. Postoperative auricular fibrillation generally begins during the first sixty hours after operation. It rarely causes circulatory embarrassment, and normal rhythm is reestablished spontaneously within forty-eight hours.

American Journal of Ophthalmology, St. Louis

17: 683-786 (Aug.) 1934

- Principles of Modern Surgery in Ophthalmology. J. M. Wheeler, New York.—p. 683.
- Infantile Glaucoma. J. F. Hardesty, St. Louis.—p. 689.
- Progressive Exophthalmos in Thyroid Disease: Report of Malignant Case. M. Goldenburg, Chicago.—p. 692.
- Operative Treatment of Cataracts. A. B. Bruner, Cleveland.—p. 699.
- Tangent Rule as a Diagnostic Instrument. R. K. Simpson, Randolph Field, Texas.—p. 705.
- Low Fusion Convergence as a Factor in Reading Disability. T. II. Eames, West Somerville, Mass.—p. 709.
- Kinetic Veloniscopy. P. Good, Aurora, Ill.—p. 711.
- A View into the Ophthalmology of Galen. B. Chance, Philadelphia.—p. 718.
- Symmetric Incomplete Annular Scotoma of Tobacco Origin Without Enlargement of the Blind Spot. E. Krinsky, Brooklyn.—p. 722.
- Microphakia and Spherophakia with Glaucoma. T. M. Shapira, Chicago.—p. 726.
- Effect of Diet and Vitamins on Trachoma. C. E. Rice, R. Sory, J. E. Smith, P. E. Faed and A. A. Drake, Rolla, Mo.—p. 735.
- Vasomotor System in Retinal and Cerebral Vascular Lesions. D. Kravitz, Brooklyn.—p. 741.

American Journal of Physiology, Baltimore

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- Intestinal Villi and Their Circulation in Relation to Absorption and Secretion of Fluid. H. S. Wells and R. G. Johnson, Nashville, Tenn. —p. 387.
- Changes of Carbohydrate Metabolism of Heart Following Coronary Occlusion. H. E. Himwich, W. Goldfarb and L. I. Nahum, New Haven, Conn.—p. 403.
- Nutritional Significance of Vitamin A Throughout Life Cycle. Esther L. Batchelder, New York.—p. 430.
- "Fat Metabolism Hormone" and Hyperglycemia. B. Harrow, I. M. Chamelin and A. Mazur, New York.—p. 436.
- Studies on Nervous System in Deficiency Diseases: Experimental Black Tongue. H. M. Zimmerman, G. R. Cowgill, W. W. Bunnell and Margaret Dann, New Haven, Conn.—p. 440.
- What Constitutes Lethal Reduction of Temperature? T. K. Jackson and A. Alonge, Burlington, Vt.—p. 447.
- Studies on Action of Alkali Iodides. J. J. Westra.—p. 450.
- Permeability of Blood Capillaries to Lipoids. A. Marble, Madeleine E. Field, C. K. Drinker and Rachel M. Smith, Boston.—p. 467.
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- Spiral Propulsion of Bolus in Intestine. P. E. Reid, A. C. Ivy and J. P. Quigley, Chicago.—p. 483.
- Clearance of Creatine in Dog and Man. R. F. Pitts, New York.—p. 532.
- Influence of Neutral Sodium Salt Solutions on Chemical Stimulation. I. Chao, Chicago.—p. 550.
- Cold Stimulation and Influence of Neutral Sodium Salt Solutions on Cold Stimulation. I. Chao, Chicago.—p. 561.
- Composition of Edema Fluid and Lymph in Edema and Elephantiasis Resulting from Lymphatic Obstruction. C. K. Drinker, Madeleine E. Field, J. W. Helm and O. C. Leigh Jr., Boston.—p. 572.
- Effect of Histamine on Jejunal Secretion. A. L. Berndt and I. S. Ravdin, Philadelphia.—p. 587.

Annals of Otol., Rhinol. and Laryngology, St. Louis

43: 643-944 (Sept.) 1934

- Effects of Ionization on Mucosa of Frontal Sinuses of Dogs. B. J. McMahon, St. Louis.—p. 643.
- Meningitis Secondary to Otitic or Sinus Infection. Comprehensive Study of Meningitis Secondary to Otitic or Sinus Infection. Josephine B. Neal, H. W. Jackson and E. Appelbaum, New York.—p. 658.
- Id. Bacteriology of Meningitis Following Otitis Media and Related Infections. Anna W. Williams, New York.—p. 667.
- Id. Pathways of Infection in Suppurative Meningitis. A. A. Eggston, New York.—p. 672.
- Id. Present Status of Treatment of Meningitis. J. G. Dwyer, New York.—p. 689.
- Id. Forced Drainage for Treatment of Meningitis Secondary to Ear and Sinus Infections. L. S. Kubie, New York.—p. 692.
- Pathology and Routes of Infection in Labyrinthitis Secondary to Middle Ear Otitis. L. W. Dean and Dorothy Wolff, St. Louis.—p. 702.
- Differential Diagnosis in Labyrinthitis Secondary to Otitic Infections. S. J. Kopetzky, New York.—p. 718.
- Operation for Removal of Carcinoma of Fauical Tonsil and Contiguous Parts. D. Macpherson, New York.—p. 727.
- Hereditary Hemorrhagic Telangiectasia. K. M. Houser, Philadelphia.—p. 731.
- Jacobson's Organ (Organon Vomeronasale, Jacobsoni). Its Anatomy, Gross, Microscopic and Comparative, with Some Observations as Well on Its Function. S. J. Pearlman, Chicago.—p. 739.
- *Tonsillectomy in the Tuberculous. Incidence and Pathology of Tuberculosis of Tonsils in Adults. H. Newhart, S. S. Cohen and Charlotte C. Van Winkle, Minneapolis.—p. 769.
- Infections of Temporal Bone with Secondary Manifestations. M. F. Jones, New York.—p. 779.
- Parapharyngeal Space. Anatomic and Clinical Study. C. Hall, Los Angeles.—p. 793.
- Efficiency of Antroscopic Examination of Maxillary Sinus. E. Simon, Albany, N. Y.—p. 813.
- Pathology of Chronic Sinusitis in Children. W. Spielberg, New York.—p. 826.
- *Etiologic Factors in Formation of Cholesteatoma. K. M. Day, Pittsburgh.—p. 837.
- Lymphogranulomatosis and Its Significance in Diagnosis of Diseases of Waldeyer's Ring. I. M. Sobol, Nieshin, the Ukraine, U. S. S. R.—p. 851.

Tonsillectomy in Tuberculous Adults.—Newhart and his associates found that the incidence of tuberculosis of the tonsils in 112 tuberculous adults was 42 per cent. If the twelve cases without pulmonary tuberculosis were eliminated, the incidence would increase to 48 per cent. Serial sections of the excised tonsils would materially increase the incidence. This was demonstrated by a study of twenty pairs of tonsils, in four of which tuberculosis was found. These had previously been reported negative by the usual microscopic study. In a control series of 100 routine tonsillectomies, the incidence was 1 per cent, the positive case being found in a patient who had previously been treated for active pulmonary tuberculosis. Tuberculosis of the tonsil is a "latent" lesion, in that there is rarely enough destruction of the tonsillar substance to cause "gross" or ulcerative lesions. The tubercles in the tonsil are

usually in close proximity to the cryptal epithelium. The tubercles are primarily epithelioid in type, with giant cells nearly always present. Caseation is found in about half the cases and is not marked. The tonsils, in the authors' opinion, become infected by tubercle-laden sputum secondary to the open tuberculous pulmonary lesion. No case of primary tonsillar tuberculosis could be demonstrated in their series. Tonsillectomy in the tuberculous, when the patients are carefully selected and prepared, safeguarded by a proper operative technique and given the postoperative care demanded by their condition, presents no special hazard that would justify failure to perform tonsillectomy when indicated.

Etiologic Factors in Formation of Cholesteatoma.—Day believes that the primary and major factor in the development and growth of cholesteatoma is the presence of moisture. The surface epithelium of the body does not tolerate moisture well, and the continued contact of moisture causes irritation and desquamation of epithelium. The squamous stratified epithelium, which grows into the tympanic cavity and gives rise to cholesteatoma, is surface epithelium. The desquamation of epithelium and formation of cholesteatoma are primarily due to the constant presence of moisture bathing the epithelium. The author states that only anhydrous solutions should be employed in the presence of cholesteatoma. Conservative treatment should be tried only in the absence of symptoms or signs of extension beyond the confines of the middle ear and mastoid. Cures can be obtained only if there is complete epidermization of the walls of the cavities. The presence of moisture will prevent cures and cause recurrences. This is especially true if there are granulations or if an open eustachian tube is present. Conservative treatment is rarely successful in young children because of tubal secretion. The early recognition and proper treatment of chronic otitic suppuration with cholesteatoma should obviate the need of radical surgery and prevent the serious complications that occur so commonly at present.

Archives of Dermatology and Syphilology, Chicago

30: 337-488 (Sept.) 1934

- Dermatophytes. Natural Grouping Based on Form of Spores and Accessory Organs. C. W. Emmons, New York.—p. 337.
- Sarcoma Idiopathicum Multiplex Haemorrhagicum (Kaposi). Variations from Usual Clinical Picture. J. R. Webster, Chicago.—p. 363.
- Louis Adolphus Duhring. Great American Dermatologist. P. E. Bechet, New York.—p. 369.
- *Cutaneous Rheumatic Nodules. W. A. Rosenberg, Chicago.—p. 377.
- *Tungii Blastomycosis and Coccidioidal Granuloma. Rhoda W. Benham, New York.—p. 385.
- Cutaneous Leishmaniasis: Report of Two Cases. F. W. Roberts, New Haven, Conn.—p. 401.
- Glossitis Rhombica Mediana. Report of Case with Results of Treatment. A. B. Abshier, New York.—p. 409.
- Darier's Disease with Fatal Radium Dermatitis. J. González Urueña, Mexico City, Mexico.—p. 412.
- Arsphenamine Dermatitis Resembling Pityriasis Rosea. S. Feldman and I. M. Lashinsky, New York.—p. 415.
- American Distribution of Deaths from Cancer of Skin, Mouth and Breast. W. F. Petersen, Chicago.—p. 425.
- Clinical Spectroscopy. Study of Biopsy Material from Patients Who Had Received Intravenous Injections of Silver Arsphenamine. L. E. Gaul and A. H. Staud, New York.—p. 433.

Cutaneous Rheumatic Nodules.—Rosenberg presents two cases of cutaneous rheumatic nodules with biopsies that occurred in adults. Histologic examination of a biopsy specimen of one of the cases showed that the epidermis was slightly thickened and the layer of keratohyalin well developed. Between the prickle cells were single cells, which were swollen with clear cytoplasm and pyknotic nuclei. The papillary layer of the cutis appeared loosened; the lymph vessels were dilated and the fibrocytes were swollen. There was slight acanthosis, and at the height of the tips of the rete pegs the cutis showed loose accumulations of small round cells, histiocytes and occasional plasma cells, which centered about capillaries with swollen endothelial cells. In the reticular layer of the cutis the edema and the perivascular infiltration were more marked, and the connective tissue trabeculae were often separated by rows of round cells which radiated from the cellular adventitia of the capillaries and the precapillary and postcapillary blood vessels. These vessels showed a slight thickening of the wall caused by a swelling and increase in the number of endothelial cells. The adventitial cells were swollen and more numerous than normal. There were similar infiltrations about the sweat

glands, which, however, were less marked than those about the blood vessels. In the subcutaneous fat tissue corresponding to the center of the infiltrated area was a small artery, the endothelial cells of which were so swollen that they resembled the epithelial lining of a gland. Sheets of desquamated endothelial cells with fibrin, leukocytes and round cells filled the lumen. The media stained pale, the muscle fibers were poorly differentiated and the nuclei were shrunken; the adventitia contained round cells and leukocytes, and similar cells were found between the adjacent fat cells. The small cutaneous nerves were surrounded by several rows of lymphocytes.

Fungi of Blastomycosis and Coccidioid Granuloma.—Benham describes three types of mycotic infection—cryptococcosis, blastomycosis and coccidioid granuloma. Each is a distinct disease etiologically. The infections may be diagnosed by the characteristic picture of the fungus in the lesions and this diagnosis may be confirmed by culture. The differential characteristics of the three fungi—*Cryptococcus hominis*, *Blastomyces dermatitidis* and *Coccidioides immitis*—are given for the sake of clearness. The author states that in addition to these three fungi there are at least seven others that may cause systemic infections with granulomatous lesions and appear in the infected tissue as rounded cells more or less resembling yeasts. *Torula histolytica*, *Glenospora gammeli*, *Monosporium tulaneense*, *Endomyces capsulatus*, *Geotrichum* (*Blastomycoides*) *dermatitidis*, *Scopulariopsis americana* and probably other strains reported under various names seem indistinguishable from one or another of the three types described. For the recognition and identification of these fungi it is necessary to observe their morphologic characteristics both in the tissue of the host and in culture, their cultural characteristics, and, in the case of the first type, their serologic reactions.

Archives of Ophthalmology, Chicago

12: 307-472 (Sept.) 1934

- Nature of Elementary and Initial Bodies of Trachoma. P. Thygeson, Iowa City.—p. 307.
Retinoblastoma: Report of Case with Complete Observations at Necropsy. M. Jaffe, New York.—p. 319.
*Operation to Control Glaucoma: Preliminary Report: H. Row, Indianapolis.—p. 325.
Diagnosis of Diseases of Eye: Value of History and Spontaneous Statements of Patient. H. G. A. Gjessing, Drammen, Norway.—p. 330.
Tubular Vision. R. C. Hamill, Chicago.—p. 345.
Experimental Studies on Swelling of Vitreous Gel and on Intra-Ocular Pressure. M. Cohen, J. M. Newell and J. A. Killian, New York.—p. 352.
Metastatic Carcinoma of Retina: Report of Case with Pathologic Observations. J. W. Smoleroff and S. A. Agatston, New York.—p. 359.
*Pressure on Optic Nerve by Carcinoma of Maxillary Sinus Extending into Cranial Cavity. I. Finkelman and S. Wick, Elgin, Ill.—p. 366.
Ligated Suture. P. C. Jameson, Brooklyn.—p. 377.
Nature of Photophobia. J. E. Lebensohn, with clinical assistance of J. Bellows, Chicago.—p. 380.
Amblyopia: Classification: Report of Cases. S. V. Abraham, Los Angeles.—p. 391.

Operation to Control Glaucoma.—After testing experimentally the possibility of establishing a fistulous tract from the anterior chamber through the suprachoroidal space and out through the sclera, for the control of intra-ocular hypertension, Row performed the horsehair insertion operation in a case of glaucoma secondary to the extraction of a cataract, in which the iris had become incarcerated in the incision, and in a case of bilateral absolute glaucoma, with constant and severe temporal headache. In this case both eyes had been operated on, the right eye once, by cyclodialysis, and the left eye twice, first by cyclodialysis, followed later by Elliot's operation, in an attempt to reduce the tension and thereby relieve the headache. Insertion of the horsehair was possible only after introducing a grooved spatula in the cyclodialysis tract. For this purpose a Knapp iris repositr was used, which acted as a guide to the hair as it was fed into the groove with a pair of tissue forceps. The possibility that sympathetic ophthalmia might be induced by this operation must not be overlooked. The fact that the operation opens a natural line of cleavage between the sclerotic and the choroid makes it incomparable to the violent, lacerating type of injury, perforating usually all three coats of the eye, which so frequently precedes the establishment of sympathetic ophthalmia. The author recommends

a trial of the horsehair inclusion procedure in cases of primary bilateral absolute glaucoma. To his knowledge there is no other nonmutilating operation that offers any degree of success in such cases. Disregarding the consideration of sympathetic ophthalmia and assuming that by this procedure a sinus tract is opened from the anterior chamber back through the supra-choroidal space and thence into the deep orbital tissues, well covered and protected by Tenon's capsule, the possibility of late infection, as in other operations establishing a fistulous tract, is practically eliminated.

Carcinoma of Maxillary Sinus Extending into Cranial Cavity.—Finkelman and Wick report a case of a transitional cell carcinoma of the maxillary sinus extending into the cranial cavity. The development of the signs and symptoms in this case was at first due to the tumor near its origin. Later, with extension of the tumor into the cranial cavity, the patient complained of failing vision (optic atrophy and choked disk). The mental symptoms were probably a result of increased intracranial pressure. Neuropathologic examination of the brain and eye revealed arteriosclerotic changes in the brain, optic atrophy and disappearance of the ganglion cell layer of the retina.

Journal of Clinical Investigation, New York

13: 725-832 (Sept.) 1934

- Effect of Coronary Occlusion on Initial Phase of Ventricular Complex in Precordial Leads. S. Bellet and C. G. Johnston, Philadelphia.—p. 725.
Influence of Protein Intake on Urea Clearance in Normal Man. W. Goldring, L. Razinsky, M. Greenblatt and S. Cohen, New York.—p. 743.
Effects on Renal Activity of Oral Administration of Phlorhizin in Man. W. Goldring, with technical assistance of Catherine Welsh, New York.—p. 749.
Renal Excretion of Xylose. R. Dominguez and Elizabeth Pomerene, Cleveland.—p. 753.
*Characteristics of Synovial Fluid in Gonococcal Arthritis. W. K. Myers, C. S. Keefer and W. F. Holmes Jr., Boston.—p. 767.
Urinary Excretion of Iodine: I. Loss of Iodine in Urine Following Thyroidectomy. G. M. Curtis and F. J. Phillips, Columbus, Ohio.—p. 777.
Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris: IX. Postoperative Parathyroid Function: Clinical Observations and Serum Calcium and Phosphorus Studies. D. R. Gilligan, D. D. Berlin, M. C. Volk, B. Stern and H. L. Blumgart, Boston.—p. 789.
*Observations on Treatment of Pellagra. T. D. Spies, Cleveland.—p. 807.
Radiation of Heat from Human Body: IV. Emission, Reflection and Transmission of Infra-Red Radiation by Human Skin. J. D. Hardy and C. Muschenheim, New York.—p. 817.

The Synovial Fluid in Gonococcal Arthritis.—In studying the synovial fluids from forty cases of gonococcal arthritis, Myers and his associates found that: 1. When the joints became involved as a result of a gonococcal infection, the synovial fluid was either infected or noninfected. In either case the fluid had the characteristics of an exudate as judged by both the total protein and cell content. 2. The total synovial fluid cell count was increased in both types of fluid, but, as a rule, it was somewhat higher in the infected fluids. There were, however, wide variations. 3. The differential cell count was of greater importance than the total cell count in the two groups of cases. In practically all, the polymorphonuclear cells predominated. In the noninfected fluids, the clasmatocytes, monocytes and lymphocytes were present in much larger numbers than in the infected fluids. 4. The nonprotein nitrogen content of the synovial fluid was the same as that of the blood regardless of the presence of organisms or of a high cell count. 5. The sugar content of the synovial fluid varied with the level of the blood sugar, the number of leukocytes and the presence of bacteria. Of these factors the first two were of greater importance than the third. 6. The results of gonococcus complement fixation tests on the synovial fluid and blood were in agreement. 7. The bacteriologic, cytologic and serologic tests were of the greatest value in providing information of diagnostic value. 8. The chemical examination of the fluid revealed no information of diagnostic importance. 9. While the prognosis, as far as complete recovery was concerned, was poor, the presence of micro-organisms and a high leukocyte count were more often followed by chronic disease of the joints than when there was a low leukocyte count and a sterile fluid.

Treatment of Pellagra.—Spies used autoclaved yeast, desiccated hog stomach and parenteral liver extract in the treatment of pellagra. When the patient's diet was restricted to large amounts of either autoclaved yeast or desiccated hog stomach, the oral lesions of pellagra healed rapidly. This suggests that there may be some etiologic relationship between pellagra and pernicious anemia. The evidence is too meager at the present time to justify the designation of vitamin G as the specific substance capable of curing pellagra. The oral manifestations of sixteen pellagra patients responded dramatically following the parenteral administration of massive doses of liver extract. The author suggests the use of large doses of liver extract, either intravenously or intramuscularly, whenever a patient severely affected has difficulty in ingesting or assimilating sufficient quantities of a highly nutritious diet.

Journal of Nervous and Mental Disease, New York

80: 253-376 (Sept.) 1934

- *Acute Aseptic Meningitis. H. R. Viets, Boston, and J. W. Watts, Philadelphia.—p. 253.
- Concerning Intraspinal Dermoids and Epidermoids: Report of Case. S. W. Gross, Cleveland.—p. 274.
- *Treatment of Muscular Dystrophy with Gelatin. L. Stone, Topeka, Kan., and M. M. Abeles, New York.—p. 285.
- Physical Dynamics of Encephalography. P. G. Schube, Boston.—p. 291.

Acute Aseptic Meningitis.—Patients having acute aseptic meningitis, described by Viets and Watts in 1929, have been reexamined and found to conform with Wallgren's description. Contrary to their opinion expressed in 1929, they now believe that the changes in the cerebrospinal fluid are not exclusively lymphocytic, although essentially so. Clots, also, may be found in the fluid. The most important point in differential diagnosis between this disease and tuberculous meningitis is the constantly normal sugar and chloride content of the cerebrospinal fluid in acute aseptic meningitis, contrary to the observations in tuberculosis. The disease should be considered a clinical entity, because no definite relationship has been shown to exist between it and any other diseases.

Treatment of Muscular Dystrophy with Gelatin.—Stone and Abeles used sheet gelatin in treating fifteen cases of muscular dystrophy and other similar disorders, as it is cheap and contains from 15 to 20 per cent of glycine. The gelatin, 100 Gm., was emulsified in orange or pineapple juice and given to the patient as a daily ration, to be taken at his convenience during twenty-four hours. The cases treated were of long standing, probably much less amenable to any form of therapy than incipient cases. Nine exhibited subjective sensory phenomena. Of these, five showed muscular dystrophy, one myasthenia gravis, one amyotrophic lateral sclerosis(?), one progressive muscular atrophy(?) and one chronic anterior poliomyelitis. Nine patients felt subjectively stronger to varying degrees. Eight showed an increase in muscular strength, omitting the myasthenic patient, who may have had a spontaneous remission. The changes varied in degree: they were all slight and two were altogether questionable. One myasthenic patient continued a downward course begun previously. Of the patients who improved objectively, five had muscular dystrophy, one had amyotrophic lateral sclerosis, one had progressive muscular atrophy(?) and one had chronic anterior poliomyelitis. The patient with amyotrophic lateral sclerosis (an advanced case) died six weeks after the discontinuance of treatment, his death being probably of bulbar origin. The authors believe the clinical phenomena sufficient to indicate that the substance has some therapeutic potency, which is possibly more marked in incipient cases. The therapeutic effect is probably due to the glycine content. The gelatin is bulky and unpalatable, and the results do not indicate superiority over pure glycine. Nevertheless, it might be the subject of further experiment in an effort to provide an inexpensive source of glycine. Beyond gastric discomfort and muscular dysesthesia there were no ill effects that could be attributed to the gelatin. The presence of sensory phenomena and even slight motor improvement in cases other than primary muscular dystrophy suggests that there may be similarities, perhaps identities, between the primary disorders of muscle metabolism and those of neurogenic origin, and that some aspects of the latter disorders may therefore be influenced favorably by glycine.

Kentucky Medical Journal, Bowling Green

32: 443-500 (Sept.) 1934

- Report of Malpractice Suit. L. R. Curtis, Louisville.—p. 483.
- Some Impressions of English Surgery Gained on Recent Visit. F. W. Rankin, Lexington.—p. 486.
- Relation of Diet to Dental Caries. T. J. Marshall, Paducah.—p. 490.
- Subtertian Malaria: Case Cured with Plasmochin. J. O. Nall, Princeton.—p. 492.
- Insulin Treatment in Promotion of Gain in Weight. F. M. Stites, Louisville.—p. 493.
- Why Like Begets Like. C. W. Reynolds, Covington.—p. 495.
- Diaphragmatic Paralysis as Aid in Gastric Surgery. L. W. Frank, Louisville.—p. 497.

Maine Medical Journal, Portland

25: 175-202 (Sept.) 1934

- Diseases of the Musical Profession. S. H. Kagan, Augusta.—p. 181.

Military Surgeon, Washington, D. C.

75: 113-196 (Sept.) 1934

- Shell Fragment in Lung: Removal After Fifteen Years. H. Lilienthal.—p. 140.
- *The Postmortem Roentgenogram. A. Bowen.—p. 145.
- Technic for Subtotal Gastrectomy. F. H. Bowman.—p. 150.

Postmortem Roentgenograms.—Bowen points out that the postmortem roentgenogram is of great assistance when necropsy is not possible or desirable. In accident cases it will often reveal the cause of death and the extent of the injury. In cases of sudden death with thoracic symptoms it is often revealing, and in ordinary fatal medical and surgical cases it will demonstrate the terminal condition and give additional information as to the cause of death. In terminal accidents, such as spontaneous pneumothorax, hemorrhage from the heart, the lung or an aneurysm, pulmonary embolism or infarct, massive atelectasis or acute dilatation, a postmortem roentgenogram will show the condition. In a certain number of cases it will reveal as much as a necropsy examination and may be substituted for one. When late antemortem roentgenograms have been secured, they of course serve the same intent and purposes as the postmortem roentgenogram. Postmortem roentgenograms offer an important and instructive instrument for adding to the knowledge of the clinician, pathologist and roentgenologist.

New Jersey Medical Society Journal, Trenton

31: 439-496 (Aug.) 1934

- Adult Tuberculosis in Children and Its Treatment by Compression Therapy. S. B. English and M. Gross, Glen Gardner.—p. 445.
- Suppurative Ilii in Children. G. H. Taylor, East Orange.—p. 458.
- Lesions of Oral Mucosae. J. J. Eller and C. R. Rein, New York.—p. 461.
- Roentgen Ray as an Aid in Obstetrics. L. J. Gelber, Newark.—p. 467.
- Amebic Dysentery and the General Practitioner in New Jersey. M. Kraemer and M. Asher, Newark.—p. 469.
- Urogenital Tuberculosis. S. L. Wang, New York.—p. 472.
- Philosophy of Medical Service and Its Present-Day Applications. F. E. Elliott, Brooklyn.—p. 476.
- West Coast Experiments in Providing Medical Service. S. A. Brumm, Philadelphia.—p. 478.
- The Physician and Medical Economics. E. W. Sprague, Newark.—p. 483.

New York State Journal of Medicine, New York

34: 707-750 (Aug. 15) 1934

- Recent Advances in Treatment of Epidemic Encephalitis. Josephine B. Neal, New York.—p. 707.
- Five-Year Clinical Study of Prophylactic Value of Antirachitic Agents: Analysis of Nine Hundred and Forty-Eight Cases. A. G. De Sanctis and J. D. Craig, New York.—p. 712.
- Bone Tumors and Allied Conditions. J. M. Hitzrot, New York.—p. 715.
- Treatment of Acute Gonorrheal Urethritis in the Male. A. M. Crance, Geneva.—p. 725.
- Treatment of Chronic Gonorrhea in the Male. E. M. Watson, Buffalo.—p. 728.
- Gonorrhea in the Female. R. N. Ritchie, Rochester.—p. 731.
- Minor Complaints of Pregnancy. C. J. Marshall, Binghamton.—p. 737.
- Physical Therapy Department in a Hospital. F. E. Bauer, New York.—p. 741.

Ohio State Medical Journal, Columbus

30: 545-616 (Sept. 1) 1934

- Toxemias of Early Pregnancy. W. D. Fullerton, Cleveland.—p. 565.
- Diverticulosis: Diverticula of Alimentary Canal, Especially of Sigmoid Colon and Their Manifestations. E. H. Chapin, Columbus.—p. 569.
- Electrocardiogram as Aid to Surgeon in Wounds of Heart. J. G. Brody, Youngstown.—p. 574.
- Significance of Blood in Cerebrospinal Fluid. S. W. Gross, Cleveland.—p. 577.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

9: 201-266 (Aug.) 1934

- Congenital Lung Cyst: Five Cases. G. B. Fleming.—p. 201.
Klippel-Feil Syndrome: Congenital Webbed Neck. H. S. Mitchell.—p. 213.
*Congenital Absence of Abdominal Muscles. L. G. Housden.—p. 219.
Glissonian Rickets. C. E. Kellett.—p. 233.
After History of Cases of Pleurisy with Serous Effusion in Children. D. W. Smithers.—p. 245.
Bone and Vegetable Broth. R. A. McCance, W. Sheldon and E. M. Widdowson.—p. 251.
*Acid Metabolism in Rheumatic Children. W. W. Payne.—p. 259.

Congenital Absence of Abdominal Muscles.—Housden reports a case of congenital absence of the abdominal muscles, presents the salient points of the thirty-three cases recorded previously and discusses the various views on the etiology of the condition. From this review he believes that the absence of the abdominal muscles is due to the atrophy of muscles formed previously, by pressure from an enormously dilated bladder and ureters, such pressure being probably increased by secondary ascites. The cause of the dilatation and hypertrophy of the bladder is considered to be an organic obstruction in the urethra, due no doubt to a neuromuscular incoordination (an achalasia of the vesico-urethral orifice) or to a definite organic obstruction.

Acid Metabolism in Rheumatic Children.—In an effort to determine whether there was a difference in the acid-base balance of the blood in the normal and the rheumatic child, Payne examined the urinary output of 200 rheumatic, asthmatic and normal children, respectively. The asthmatic group was chosen because at the time it was postulated that an element of alkalosis entered into the asthmatic syndrome. The observations show that the rheumatic child in a quiescent interval excretes more acid in its urine than does either an asthmatic or a normal child. Part of this excess of acid is due to organic acids. This excess production of acid is insufficient to disturb the equilibrium of the blood.

British Medical Journal, London

2: 291-338 (Aug. 18) 1934

- Treatment of Lupus Vulgaris. S. Lomholt.—p. 291.
Eyes as Cause of Headache. A. Griffith.—p. 296.
Headaches in Relation to Ocular Conditions. W. Harris.—p. 298.
Reflex Asthma: Its Pathology and Treatment Including Review of Three Hundred and Thirty-Seven Cases. H. H. Moll.—p. 299.
Treatment of Bacterial Food Poisoning. G. R. McRobert.—p. 304.

Medical Journal of Australia, Sydney

2: 139-178 (Aug. 4) 1934

- Toxic Goiter. A. H. A. Court.—p. 139.
Id. G. Bell.—p. 144.
*Parasympathetic Nerve Supply to Distal Colon. H. C. Trumble.—p. 149.
The Fetish of Catgut. J. C. B. Allen.—p. 150.

2: 179-208 (Aug. 11) 1934

- Causation and Treatment of Arthritis and Allied Conditions. H. Pern.—p. 179.
Paralytic Ileus. K. Ross.—p. 186.
Bacterial Flora of Mouths of Australian Venomous Snakes in Captivity. F. Eleanor Williams, Mavis Freeman and Eileen Kennedy.—p. 190.
Radon in Treatment of Cervical Carcinoma. W. G. Cusack.—p. 193.

Parasympathetic Nerve Supply to Distal Colon.—Trumble agrees with Telford and Stopford that nerve bundles do ascend in the hypogastric nerves from the pelvic nerves, but he maintains that these nerves do not represent the sole or main pathway for fibers of the pelvic nerves passing to the distal colon (excluding the rectum) and are merely the uppermost (probably) of a series of nerves supplying the intestine segmentally. They may be called the pelvic colonic nerves. The ascending pelvic colonic nerves do not enter the sympathetic perivascular plexuses, as a rule, but pass across these and enter the mesenteric border of the intestine direct and not in company with the vessels entering the intestine. They do, however, communicate with the perivascular plexuses. Often the uppermost nerves from the two sides do not unite but pass, one on each side of the inferior mesenteric artery and nerve plexus, to reach the colon.

Annales de Dermatologie et de Syphiligraphie, Paris

5: 649-744 (July) 1934

- *Presence of Anticerebral Reagin in Cerebrospinal Fluid of Patients Having Dementia Paralytica and Tabes. R. Demanche.—p. 649.
*Urinary Elimination of Chlorides in Bullous and Vesicular Disorders of Skin. R. Zorn and P. Popchrisstoff.—p. 667.

Anticerebral Reagin in Cerebrospinal Fluid.—Demanche has made more than 1,000 comparative fixation reactions with an extract of brain and an extract of cardiac muscle, both on the cerebrospinal fluid and on the serum of patients suffering from various diseases. The myocardial antigen was an alcoholic extract of powdered heart previously extracted with ether and with 0.3 per cent cholesterol added. The cerebral antigen was an extract of human cerebral gray matter treated in the fresh pulp state without preliminary ether extraction in order to preserve the cerebral lipoids. The dry extract of both was 10.5 Gm. per liter. Their cholesterol content was 3.52 Gm. per liter for the cerebral extract and 4.16 Gm. per liter for the heart. The addition of cholesterol largely compensated the latter for the natural abundance of cholesterol in the nervous tissue. It was determined that the antigen had no anticomplementary power and that a similar testing of complement was applicable for both. The technic of the reactions was that of the author's modification of the Wassermann test. In order to study the results, the patients were divided into five groups: dementia paralytica, tabes, cerebrospinal syphilis comprising the different forms of secondary or tertiary meningo-encephalitis, nonsyphilitic disorders of the central nervous system, and generalized syphilis of different stages without characteristic nervous lesions. Analysis of the results indicated that the cerebrospinal fluid of patients having dementia paralytica and tabes possesses almost exclusively a special property of reacting in vitro with cerebral extracts. This reactivity is absent in all the other fluids and usually in the blood serum. Thus the group of parasyphilosis differs from other forms of nervous syphilis, and generally the cerebrospinal fluid from the blood serum. The author believes that the existence of these special anticerebral reagins confirms the doctrine of the local origin of the cerebrospinal reagins and brings a new argument in favor of the antigenic power of the organic lipoids and of the specificity of the cerebral lipoids. It also furnishes a supplementary procedure for the biologic diagnosis of parasyphilosis.

Elimination of Chlorides in Disorders of Skin.—Zorn and Popchrisstoff investigated the chloride metabolism in a number of patients with bullous and vesicular skin conditions. The amount of chloride usually ingested was 6.5 Gm. a day, though sometimes a diet containing from 10 to 12 Gm. was used. In every case it was felt that the chloride intake could be estimated within 0.5 Gm. limits. The method of Charpentier-Volhardt was used for determining the amount of chlorides in the urine. The results obtained from all patients in whom any doubt existed as to chloride intake, completeness of urine collections or other factors were discarded. In the one case of pemphigus satisfactorily studied there was a considerable chloride retention. They did not feel, however, that this was a cardinal etiologic phenomenon. In papulovesicular eczema an important chloride retention was observed in the majority of cases. By following these patients from day to day it seemed that this retention was accompanied by a juiciness of the affected cutaneous regions. They believe that the retained chlorides serve to form edema and the histologic sponginess that signifies eczema. In these cases of eczema in which it is not proper to speak of renal lesions, the formation of the edema practically coincides with the reestablishment of the elimination of chloride.

Medicina Ibero, Madrid

2: 265-296 (Aug. 25) 1934

- *Value of Vernes Test: Relation to Fixation of Complement Tests of Matefy, Daranyi and Fahreus. F. Díez Melchor.—p. 265.
Interlobular Pleurisy Opened into Bronchus: Case. L. Eizaguirre.—p. 276.

The Vernes Test.—Díez Melchor concludes that the fixation of the complement and the flocculation tests are the biologic methods most frequently resorted to for the diagnosis of the various forms of tuberculosis. The Vernes test is not specific, because it gives positive results in syphilis and in infections, and it gave negative results to the author in 16.94 per cent of the cases of proved tuberculosis. It has no diagnostic value.

The diagnosis of absence of tuberculosis based on the negative results of the test is more exact than that of its presence based on its positive results. The Vernes test has no relation to the anatomoclinical form of tuberculosis or to the extension of the lesions, but only to the degree of activity of the lesions. Hence its prognostic value. The highest figures of positive results of the test are given by the caseous and fibrocaceous forms in their period of evolution. The lowest figures of positive results and the large percentage of negative results of the test are given by the fibrous forms. The fixation of the complement is the only specific test for the diagnosis of tuberculosis. The results of the other reactions studied by the author (Matefy, Daranyi and Fahreus tests) were similar to those given by the Vernes test. These reactions are of physical nature showing only the presence of colloidal instability of the serum. The results of the Matefy and Daranyi tests absolutely lack diagnostic and prognostic value. The velocity of the sedimentation bears a close prognostic relation to the Vernes sero-reaction.

Archiv für Gynäkologie, Berlin

157: 275-428 (July 20) 1934. Partial Index

- Passage of Active Substance of Ergot into Milk of Nursing Mothers. P. I. Fomina.—p. 275.
 Intestinal Motility During Puerperium. G. Halter and S. Simon.—p. 286.
 *Uterovaginal Tamponade in Atonic Hemorrhages of Uterus. J. Kiss.—p. 315.
 Criticism of Kielland's Operation for Prolapse. E. Weinzierl.—p. 332.
 Atmocautic Uterine Sterilization. L. Paullig.—p. 355.
 Pneumonia in the New-Born. C. Müller and W. Bayer.—p. 372.
 Experimental Studies on Detoxicating Function of Decidua. B. Szendi.—p. 389.
 Luteinizing Granulosa Cell Tumor with Amenorrhea. R. Benda and E. J. Kraus.—p. 400.
 *Special Position of Tubular Ovarian Blastomas (Arrhenoblastomas) as Regards Morphology and Hormone Function. H. O. Kleine.—p. 410.

Uterovaginal Tamponade in Atonic Hemorrhages of Uterus.—Kiss reports the experiences with Dührssen's uterovaginal tamponade in Hungary during the years 1931 and 1932. His report is based on 149 cases. This number amounts to 0.24 per cent of the total number of births. In general practice the method was resorted to in 0.03 per cent of the cases. The tamponade was nearly always made in the uterus and the vagina; once it was made only in the uterus and twice only in the vagina. In deciding on the tamponade, it was less the quantity of blood lost but rather the condition of the woman that was the determining factor. Tamponade was resorted to immediately in the clinics in only 5.7 per cent of the cases; in all other cases, less radical methods of hemostasis had been tried first; in private practice, tamponade was done at once in 28.08 per cent of the cases. The higher incidence of primary tamponade in the latter cases was due to the fact that there was no time left for trials with less radical methods. As to inspection of the uterus and removal of retained membranes, the author is of the opinion that it is advisable in institutions, where the intervention can be made with complete asepsis. Hemorrhages following placenta praevia were treated with tamponade in only 4 per cent of the cases. The mortality rate due to fatal hemorrhage amounted to 12.2 per cent in the material studied by the author. The danger of infection often credited to uterovaginal tamponade should be ascribed to previous intra-uterine interventions.

Special Position of Arrhenoblastomas.—Kleine points out that thirty-five cases of arrhenoblastomas of tubular structure have been reported thus far. Among the four cases that he observed was one in which there were dermoid cystomas in the other ovary. The growth of these tumors had begun at the hilus. Leydig's interstitial cells were demonstrable in all tumors. All patients exhibited more or less characteristic signs of virilism (psychic changes, altered body contours and changes in the hair growth and in the voice). In one patient the rete ovarii of the other ovary was considerably enlarged but was free from tumor cells. The development of a post-operative hyperthyroidism in one of the patients indicates the possibility of a pluriglandular disturbance. Reasoning along the lines suggested by R. Meyer, the author thinks that the parent tissues of the arrhenoblastomas are the rete ovarii, the medullary strands and the so-called extraglandular interstitial cells. These three epithelial formations represent-heterosexual cell complexes of the ovary, which are present in small amounts in every

ovary. The hypoplasia of the isosexual gonadal parenchyma seems to promote the development of the heterosexual tissues. The observations of other authors (R. Meyer) on younger women with arrhenoblastoma, in whom signs of virilism appeared simultaneously with the growth of the tumor, disappeared after extirpation and reappeared in case of relapse, prove a causal, incretory connection between these tumors and virilism. The author shows that three problems have yet to be solved: (1) the significance of the rete testis and of Leydig's interstitial cells for the development of the secondary male sex characters, (2) the problem whether arrhenoblastomas form a testicular incretion, and (3) whether there are relations between arrhenoblastomas and the suprarenal system.

Deutsches Archiv für klinische Medizin, Berlin

176: 455-566 (July 9) 1934. Partial Index

- *Progressive Muscular Dystrophy: Its Heredity and Its Treatment with Glycine. S. Kostakow.—p. 467.
 Investigations on Oxalic Acid Metabolism. A. Athanasou and H. Reinwein.—p. 475.
 *Localization of Cardiac Infarct by Means of Electrocardiogram. Jette Katz.—p. 480.
 Intestinal Myiasis as Cause of Ulcerous Colitis Ending in Cure. G.-D. Koehler.—p. 491.
 Microscopic Picture of Surface of Living Tongue. N. Henning and H. Becker.—p. 496.
 Cause of Reduced Resistance of Diabetic Organism Against Infection. H. Horster.—p. 502.
 Diagnosis of Bronchial Tumors. L. Hies and J. Faltischek.—p. 510.
 Influence of Nutrition on Metabolism During Work: Effects of Various Types of Protein. F. Bruman and O. Baumgartner.—p. 519.
 Glycine Deficiency and Glycine Therapy in Progressive Muscular Dystrophy. W. Linneweh and F. Linneweh.—p. 526.
 Determining Function of Liver by Tolerance Test with Insulin, Dextrose and Water: Blood Sugar Curves in Impairment of Liver. O. Gsell.—p. 532.

Progressive Muscular Dystrophy: Heredity and Treatment with Glycine.—Kostakow publishes a genealogical table with fifty-five members in three generations which reveals that fifteen of the descendants developed progressive muscular dystrophy and that all fifteen were boys. The girls remained healthy but transferred the disease to their sons. The six daughters of the first generation passed the disorder on to one or two of their sons, in all to 88 per cent of the males of the second generation. Seven women of the second generation, although themselves free from the disease, passed it on to six out of eight boys of the third generation. The children of the men, who had remained free from the disease, remained free from it through three generations. Thus progressive muscular dystrophy has a mode of heredity, in which the women transmit the disease although they themselves remain free from its symptoms; that is, the heredity is sex limited and recessive. A study of the cases of the successive generations revealed homology and homochronicity but no progressivity. The author discusses the value of glycine in the treatment of progressive muscular dystrophy. His observations were made in sixteen cases (fourteen from the genealogical table and two others). A tabular report of the results of the treatment indicates that the degree of improvement and the responsiveness of the disorder are dependent on the length and the progressiveness of the disorder but not on the age of the patient. The author gained the impression that the degree of improvement is proportional to the extent to which the muscles are still capable of reacting and inversely proportional to the progressiveness and the duration of the disorder. He rejects the statement that children with progressive muscular dystrophy are not at all or only slightly influenced by glycine, for his observations on seven children who improved greatly disprove this. He admits, however, that glycine is ineffective in cases with myasthenic components or with degenerative atrophies in syringomyelia, in spinal forms and in bulbar paralysis. Glycine treatment is indicated in pure myopathy and, to a certain extent, in cases in which on the basis of the clinical and electrical behavior serious impairment of the peripheral neuron can be excluded. He emphasizes that active patients require much larger quantities of glycine than do patients who rest.

Localization of Cardiac Infarct by Means of Electrocardiogram.—Katz points out that studies by Herrick, Smith, Pardee and others have made an electrocardiographic diagnosis of cardiac infarct possible. According to whether the characteristic sign, the reversion of the T wave, is found in the first

or in the third lead, Parkinson and Bedford differentiated two types of changes, T_1 and T_2 . Later it was proved by Barnes and Whitten that this differentiation is of practical significance in that it permits an exact localization of the cardiac infarct. If the left coronary artery is occluded, the infarct is, as a rule, in the region of the apex of the heart, in the anterior wall of the left ventricle and in the anterior portion of the ventricular septum. The electrocardiogram reveals in these cases a reversion of the T wave in the first lead (type T_1). However, if a branch of the right coronary artery is obstructed, an infarct is nearly always in the posterior wall of the left ventricle and in the posterior third of the ventricular septum, and the electrocardiogram shows the characteristic changes, particularly the deep and pointed T wave in the second and third leads (type T_2). These observations have been corroborated by several investigators. The author observed in recent months two cases in which the localization that had been based on electrocardiography was corroborated by the necropsy. She gives detailed descriptions of these cases. One of them is especially noteworthy because the right ventricle was involved in the infarct formation, and this is rather a rare occurrence.

Klinische Wochenschrift, Berlin

13: 1137-1168 (Aug. 11) 1934. Partial Index

- Serous Inflammation. H. Eppinger, J. Faltitschek, H. Kaunitz and H. Popper.—p. 1137.
*Significance of Ammonia Content of Blood for Estimation of Liver Function. J. Monguió and F. Krause.—p. 1142.
Microdemonstration of Several Volatile Amines and Their Influence on Permeability of Animal Membranes. A. von Wacek.—p. 1147.
*Experiences on Stability of Ergot Preparations. E. Rothlin.—p. 1148.
Etiology of Essential Hypertension and Eclampsia. M. Scheps.—p. 1151.
*Simple Roentgenologic Method for Exact Demonstration of Subnormal Length of One Leg. P. Bamberger and P. Zeitter.—p. 1153.

Ammonia Content of Blood in Estimation of Liver Diseases.—Monguió and Krause say that ammonia is produced in various functions of the organism. They give their attention mainly to the ammonia that is formed in the intestine and in the intermediate metabolism and enters the blood and then the liver, where the ammonium salts are changed into urea. Urea formation from the ammonium salts is one of the most important functions of the liver, for it prevents a sudden flooding of the organism with intoxicating ammonium ions. The amount of ammonium ions in the blood and in the tissue fluids must therefore present an indicator for the capacity of the liver to form urea. The authors found that the normal value of blood ammonia in human subjects varies between 0.028 and 0.06 mg. per hundred cubic centimeters of blood. They report their studies on normal dogs, on dogs with ligated choledochus and on dogs with Eck's fistula. They believe that their studies brought the experimental proof of Thannhauser's theory, who, like Fischler, considered poisoning due to the consumption of large amounts of meat an alkalotic condition produced by a flooding of the organism with ammonium ions. The aspects of chronic meat poisoning that developed in the dog with Eck's fistula, as well as the symptoms that developed after administration of urea and urease, justify the conclusion that a hyperammonemia is the cause of the vomiting and of the soporose state. For clinical and dietary procedures, these studies are important in that they indicate that in disturbances in which the parenchyma of the liver is impaired the protein intake should be curtailed as much as possible, while the carbohydrate intake is increased. Thus a method of treatment, which formerly had been adopted more or less intuitively, has now been given an experimental foundation.

Stability of Ergot Preparations.—Rothlin demonstrates that the stability of ergot preparations is rather limited. He sees the cause of this in the high sensitivity of the specifically active ergot alkaloids to air, light, alkaline reaction and high temperature. But in addition to these there must be still other as yet unknown factors, for even extracts that have been prepared and stored in the same manner show a different rapidity of disintegration. Tests revealed that even some of the pure extracts of ergot alkaloids have an insufficient stability. Ergotamine tartrate, however, was an exception, for it proved stable in controls extending over a period of twelve years. The histamine contained in ergot extract was found to disintegrate almost as rapidly as the alkaloids.

Roentgenologic Demonstration of Subnormal Length of Leg.—Bamberger and Zeitter point out that a difference in the length of the two legs is frequently the cause of an abnormal position of the pelvis and of the development of scoliosis. An exact determination of the difference in length is therefore highly important in orthopedic prophylaxis. The methods so far available lacked in exactness because it is difficult to feel through the skin the measuring points on the skeleton, and also because asymmetrical posture and restlessness on the part of the patient falsified the results. This induced the authors to devise a new method, which employs two wooden bars, one meter in length and marked with millimeter graduations. Each of these bars has two metal sliding pieces. The slides have a clamp that serves for the attachment of the roentgen cassette and a securely fastened small metal indicator that projects from 3 to 4 cm. at a right angle over the edge of the measuring bars. The two bars are placed parallel on the roentgen table and to each slide is fastened a roentgen cassette (9:12 cm.). The indicators should be approximately in the middle of the long side of the cassette. The patient is placed in such a manner that the hip joints are above the middle of the upper cassettes and the ankle joints on the two lower ones. It is advisable to make the distances of the slides the same on the two bars, since this prevents mistakes and also unnecessary calculations. The roentgen tube is at a distance of 1.5 meters and approximately above the knee joints. The four joints and the four slide indicators are photographed at one exposure, and the distance between the articular spaces (or other points on the femur or tibia) and their respective metal indicators are measured on the photographs. The sum of these distances left and right, respectively, reveals the difference in the length of the two extremities.

Zeitschrift für klinische Medizin, Berlin

127: 111-242 (July 24) 1934. Partial Index

- *Biologically Active Substance in Tomatoes with Histamine-Like Action: Therapeutic Significance of Juices of Fresh Vegetables. F. Gleichmann.—p. 111.
*Clinical and Practical Significance of Determination of Diameter of Erythrocytes with Aid of Diffraction Method, with Especial Consideration of Diagnosis of Pernicious Anemia. H. R. Keller.—p. 132.
Trauma and Hypertension. W. Beiglbock.—p. 144.
Renal Rickets. R. Meier and E. Thoenes.—p. 149.
Gastric Hemorrhages and Anoxia of Cardiac Muscle. R. Aschenbrenner.—p. 160.
Diabetes and Hepatitis. H. Unger.—p. 166.
Clinical Contribution and Diagnosis of Myocardial Disturbances on Basis of Electrocardiographic Investigation. C. A. Bau.—p. 172.
Change of ST Interval in Electrocardiogram in Case of Postoperative Tetany. H. Marzahn.—p. 182.

Histamine-Like Action of Substance in Tomatoes.—The observation of certain circulatory manifestations in patients receiving a diet with large amounts of vegetable juices induced Gleichmann to search for substances with circulatory action in various vegetables. Traces of such substances were detected in carrots, potatoes and cabbage, but tomatoes contained substances with circulatory and secretory action in unusually high concentration. The author relates extensive experiments, which prove that tomatoes, ripe as well as green and fresh as well as canned, contain substances of intense biologic action. These substances are filtrable through a Berkefeld filter, have a high degree of thermostability and are resistant against digestion with hydrochloric acid pepsin. They have a tonicizing effect on the intestine, uterus, gallbladder and gastric muscles of guinea-pigs. Tests on dogs revealed that the biologically active substances contained in tomatoes promote the secretory action of the stomach by increasing the quantity as well as the acidity of the gastric juice. The substances increase also the secretion of pancreatic juice, but their effect on the secretion of bile is not quite clear. They produce a temporary reduction in blood pressure in atropinized as well as nonatropinized cats and rabbits. The diuresis is slightly increased by the tomato extract. Other problems, such as the decrease in blood pressure following intake of large amounts of the tomato extract into the gastro-intestinal tract, are still under investigation. Intracutaneous injections with the extract in human subjects reveals a tendency to wheal formation. The author is of the opinion that at least a part of the biologically active substances contained in tomatoes probably belong to the group of the histamine-like substances, but he considers it inadvisable to

identify them completely with histamine as long as the chemical proof has not been furnished. In a discussion of the clinical significance of the high content of tomatoes in histamine-like substances, he points out that the effects produced by diets providing large amounts of vegetable juices is probably largely due to their influence on the circulation, the vascular system and particularly the capillary apparatus. The efficacy of such diets in lupus, for instance, may be due to an improved blood perfusion. Moreover, the capillaries and precapillaries in a region of granulation and inflammation may be especially susceptible to small amounts of histamine-like substances. In this connection it is pointed out that under the influence of a vegetable diet abnormal capillary pictures frequently become more normal. The exclusion of the capillary obstructions effects an improvement in the regulation of the entire circulation, but particularly in the skin. This would also explain the efficacy of vegetable diets in capillomotor disturbances, hypertension, migraine-like conditions, angiospastic angina pectoris, Quincke's edema and eczemas and other skin disorders, which are caused by capillary disturbances.

Determination of Diameter of Erythrocytes by Diffraction.—Keller points out that, although the enlargement of the mean diameter of the erythrocytes has been known for a long time as one of the most characteristic and persisting symptoms of pernicious anemia, it was of little practical significance because of the lack of a simple method. This deficiency was overcome when Pijper rediscovered the diffraction method. The author reviews the principle of Pijper's method, mentions several other investigators who employed diffraction, and finally describes his own observations in experiments with Bock's simplified and improved apparatus. In order to determine the normal limits of the diameter of erythrocytes, he examined 1,158 specimens and found that the normal diameter varies between 7.30 and 7.76 microns. He considers 7.60 microns the normal mean. The diameter showed no differences in the two sexes. In twenty patients with pernicious anemia, eighty-six specimens were examined, and it was found that even in case of considerable remission the mean diameter never went below the upper limits of normality. The author emphasizes that diffraction is simpler than the determination of the color index, and also probably more reliable. It proved helpful in the determination of the efficacy of a treatment. Macrocytoses not caused by pernicious anemia were detected in twenty-five cases of tuberculosis. However, the erythrocytic diameter reached only in one case the extent it has in an untreated case of pernicious anemia, and it was always possible to differentiate these macrocytoses from pernicious anemia by other methods. In cases of secondary anemia the mean diameter was either normal or below normal. Leukocytosis up to 150,000 did not interfere with the diffraction method, but when the leukocytosis reached 400,000 it became impossible.

Klinicheskaya Meditsina, Moscow

12:953-1078 (May 26) 1934. Partial Index

Rule of Resultant State and Its Significance in Physiology and in Pathology. S. M. Leytes.—p. 954.

Tonsil Problem and Radiation Therapy. M. I. Karlin.—p. 976.

*Treatment of Cerebrospinal Meningitis by Spinal Punctures and Fractional Insufflation of Air. I. I. Matovetskiy.—p. 1011.

Cerebrospinal Meningitis in Young Children. V. Balaban and P. Krichevskaya.—p. 1014.

Climacteric Arthroses. G. G. Gambarov.—p. 1027.

*Rheumatic Infection of the Kidney. V. G. Palilov.—p. 1031.

Treatment of Cerebrospinal Meningitis by Spinal Punctures and Insufflation of Air.—Matovetskiy reports the results obtained in fifteen cases of acute epidemic cerebrospinal meningitis treated by the method of repeated spinal punctures followed by insufflation of air. From 25 to 30 cc. of the cerebrospinal fluid is removed and with the aid of a sterile syringe utilizing the same needle, from 10 to 15 cc. of air is slowly introduced. This procedure is repeated after two or three minutes. In young children smaller amounts are removed and correspondingly smaller amounts of air are introduced. The puncture is repeated every other day, daily in severe cases, and is kept up until the fluid becomes clear and on examination shows a normal albumin content and normal morphologic elements. During the introduction of air, patients complain of a backache and a pain along the vertebral column. The headache becomes aggravated. This, however, is followed from

two to three hours later by a fall in temperature, remission of headache and an improvement in the general state. Of the fifteen patients thus treated, eleven got well and showed no sequels in a follow-up study from one to two years later. Of the four fatal cases, one was admitted with symptoms of vagus involvement, one exhibited a meningococcic bacteremia, two had a positive Queckenstedt sign, and the last exhibited xanthochromia of the spinal fluid. Results were always better when the treatment was instituted early. The author theorizes that the beneficial effect of insufflation of air is due to the washing out and forcing out of the infected fluid. The air, as it becomes warmer, rises into the subarachnoid space and displaces the fluid, which now may be removed by the secondary aspiration. The treatment may have the important effect of preventing formation of adhesions in the subarachnoid and spinal spaces. These adhesions may lead to a secondary hydrocephalus and to formation of encapsulated foci. The latter explain fatal exacerbations in apparently recovered patients.

Rheumatic Infection of the Kidney.—In histopathologic studies of seventy-five cases of rheumatic infection, Palilov found the existence of a diffuse glomerulonephritis in 16.2 per cent. He considers this alteration a specific manifestation of the rheumatic infection constituting, by its clinical course, a distinct cardiorenal type. Among rheumatic disorders of the kidney, the diffuse vascular alterations in the form of glomerulonephritis predominate over focal infections. The renal tissue is affected from the inception of the rheumatic process along with other organs and systems. The cardiorenal form occurs with greater frequency in older patients, those past 35, while the cardiac type without renal involvement is more frequent in younger patients. Renal involvement takes place in both the benign and the malignant types of rheumatic infection. It is apparently an identical process in the two. The course of the renal involvement is in most cases chronic, with a tendency to exacerbations in the form of acute glomerulonephritis. The chronic infection may be of a progressive character leading ultimately to renal insufficiency and uremic coma. Involvement of the kidneys aggravates the general course of the disease. The mortality in the author's material was 24.4 per cent during the first year for the cardiorenal type, as contrasted with 9.5 per cent for the cardiac type. The arterial blood pressure was found to be higher than in the cardiac form, but seldom as high as in nonrheumatic renal disease. The characteristic tendency to hypotonia is likewise manifested in the cardiorenal form of the rheumatic infection.

Bibliotek for Læger, Copenhagen

126:327-382 (Aug.) 1934

*Cytologic Review of Different Forms of Goiter, Compared with Clinical Cases. S. Franck.—p. 327.

Cytologic Review of Goiter.—Franck tabulates ninety-eight cases, consisting of forty-nine of exophthalmic goiter (thirty-three with preoperative iodine treatment), five of toxic and forty-four of simple colloid goiter, treated operatively from 1929 to 1931. In the cases of exophthalmic goiter there was constant marked enlargement of the Golgi apparatus, a phenomenon found only in milder degree in some instances of simple goiter. The possibility is suggested that anomalies in the relation between the thyroid gland and the pituitary body may be an important factor in the etiology of exophthalmic goiter.

Ugeskrift for Læger, Copenhagen

96:913-936 (Aug. 23) 1934

Attempt at Modification of Intestinal Flora in Rats and Men: Acidophilus Milk. Orla-Jensen and O. Winther.—p. 913.

*Experimental Investigation of Amidopyrine as Cause of Agranulocytosis: Six New Fatal Cases. P. Plum.—p. 916.

Agranulocytosis Originating After Small Dose of Amidopyrine, with Recovery. O. Knudsen.—p. 923.

Amidopyrine as Cause of Agranulocytosis.—Plum says that amidopyrine has up till now apparently caused agranulocytosis only in patients over the age of 20. He considers it necessary henceforth to refrain from prescribing amidopyrine and preparations containing this substance for adults, except in certain cases, such as inoperable cancer. The fatal cases reported occurred after therapeutic use of amidopyrine.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 17

CHICAGO, ILLINOIS

OCTOBER 27, 1934

A STUDY OF VACCINATION IN FIVE HUNDRED NEW-BORN INFANTS

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More interest in early vaccination of infants has developed in recent years than ever before because of more concern for public health and preventive medicine, and the desirability of having as many as possible in the general population immune to the various preventable diseases. For the most part compulsory vaccination in the United States applies only to children before they enter the public schools. This allows vaccination in the majority of children to be deferred until school age, whereas it has long been established, although not so widely carried out, that infants, even new-born infants, bear vaccinia well, with a moderate local and insignificant constitutional disturbance, such as a febrile reaction, an altered well being and an unfavorable effect on nutrition. Statistical tabulations¹ of vaccinal encephalomyelitis are uniform in disclosing that its occurrence is lowest among infants vaccinated in the early months of life. This fact has undoubtedly stimulated interest in early vaccination.

HISTORICAL NOTES

Up to Jenner's time, smallpox was widely prevalent, devastating epidemics were frequent, and smallpox mortality was very high, especially among infants, in whom the disease exacted the highest toll. The method of prevention employed then was inoculation of matter from smallpox pustules into the skin of healthy subjects. The dangers of such a procedure² were very great and the outcome was uncertain, for smallpox generally resulted. If mild, the subject recovered with resulting immunity, but he first had smallpox none the less and was capable of and did at times actually spread smallpox to his contacts.

There were three cases recorded by Jenner³ in 1798 in which infants had been inoculated with cowpox. They were 6, 11 and 18 months of age and vaccinated with humanized lymph; i. e., arm to arm transfer of

virus. Two were successful, but Robert F. Jenner, aged 11 months, "did not receive the infection," although three older children inoculated with the same lymph, taken from the arm of William Pead, aged 8 years, had successful vaccinations.

Lack of appreciation and proper evaluation of Jenner's discovery in England in no wise deterred other countries from prompt adoption of this boon to mankind. Frobelius⁴ reported that the empress of Russia in 1801, after correspondence with Jenner, obtained from him humanized cowpox lymph, which under her patronage was employed at once in the foundling hospitals of Moscow and of St. Petersburg, in the latter it was used continuously in arm to arm inoculation until 1867, a period of sixty-six years, when it was supplanted by animal lymph obtained first from cows. In the St. Petersburg Foundling Hospital in 1801 and for many years thereafter, babies from 7 to 8 days old were regularly vaccinated with the Jenner lymph in six cuts in each arm. By 1817, 34,677 children had been vaccinated there without a fatality. The chief physician reported that the only observation worth mentioning was that there were children who were very slightly susceptible to vaccination and that it was necessary to inoculate some of them as often as twelve times to be successful.

Compulsory registration at the hospital afforded unique opportunity for observation of the foundlings up to 25 years of age. In the forty years 1826-1866 there were seventeen smallpox epidemics in St. Petersburg. Among an average of 15,000 living foundlings, all of whom had been vaccinated as required by decree of the czar before leaving the hospital, there were only thirty-six of them to have smallpox, and only one fatality, an infant aged 1 year. In 1867, 1,043 former inmates of the hospital were revaccinated, 13 per cent with good result and 9.9 per cent with irregular takes, and 88.6 per cent were reported as without result.⁵

The contention that arm to arm inoculation caused degeneration of vaccinal virus does not seem to have been borne out in the St. Petersburg Foundling Hospital. In 1867 the unsuccessful vaccinations there among 4,000 infants and children of the neighborhood were less than 1 per cent (0.8 per cent). Transfer of human disease was a disadvantage, erysipelas occurring in from 1.5 to 3.5 per cent among the inoculated, as well as a certain number of cases of syphilis. Vaccination alone was not responsible for erysipelas, for it occurred in some babies before inoculation and in others after recovery from vaccination.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

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Owing to lack of space, this article is abbreviated as it appears in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

¹ Great Britain Ministry of Health, Report of the Committee on Vaccination, 1928.

² Bohn, H. Handbuch der Vakzination, Leipzig, 1875.

³ Jenner, Edward. An Inquiry into the Causes and Effects of Variolae Vaccinae, London, 1798.

⁴ Fröbelius, W. Eine geschichtliche Notiz ueber die Vaccination in St. Petersburgs Findelhaue, St. Petersburgs med. Ztschr. 16:1-28, 1869.

⁵ Compare Dearing, W. P., and Rosenau, M. J. Duration of Immunity Following Vaccination Against Smallpox. J. A. M. A. 102:1998 (June 16) 1934.

These historical memoranda of Fröbelius⁴ are so closely related to our subject that they have been summarized.

Studies conducted to ascertain the possibility of intra-uterine vaccination have been almost uniform in revealing the consistent resistance of new-born infants to successful vaccination. The percentage of takes in new-born infants is revealed variously between 32.2 per cent and 100 per cent, averaging perhaps from 60 to 70 per cent.¹⁶

SOME OF THE OTHER LITERATURE ON VACCINATION

Bohn's² *Handbuch der Vakzination* is a classic presentation of the subject up to 1875, giving in addition a history of smallpox and vaccination prior to its publication. One of his conclusions is applicable at the present day: "We know a variety of things about vaccination, but not much, and a considerable part of these things quite inexact." ("Wir wissen Vielerei von der Vaccination, aber nicht viel, und darunter Vieles recht ungenau," page 355.)

In 1907 Pirquet's¹⁸ clinical studies on vaccination appeared and advanced the knowledge of this readily induced, artificial, virus disease. He lamented the fact

that the strength of smallpox protection is closely related to that of skin protection to revaccination; complete immunity or insusceptibility to revaccination is a temporary state.

What tissues or organs²⁰ are concerned in antibody production and protection cannot be positively stated, but protection against variola and revaccination specifically concerns the skin, probably the reticulo-endothelial tissues and possibly others. Vaccinations by other methods than the cutaneous do not take advantage of skin cell susceptibility and probable capacity for antibody production.

Jelinek²¹ revaccinated nineteen infants from one to three months after successful vaccination, five of whom reacted with frank pustule formation, areola and glandular swelling.

In the city of Paris in 1930, 78 per cent of 42,137 living new-born infants were vaccinated in the obstetric departments of Parisian hospitals.²² Successful inoculations amounted to about 67 per cent.

LIMITATIONS OF OUR STUDY

Our study of vaccination in new-born infants was undertaken in 1932 in the nurseries of the Gallinger

TABLE 1.—Some Previously Reported Vaccinations of New-Born Infants

Year of Publication	Author	No. of New-Born Infants	Ages	Virus Used	Technic of Vaccination	Percentage of 1st Vaccinations Successful	Comment
1879	Gast...	16	2 to 3 days	Human lymph diluted	6 to 12 skin cuts, both arms	100	Severe technic, virulent virus, small group
1882	Behm....	33	1 to 7 days	Human lymph undiluted	12 skin cuts, 6 in each arm	76	
1889	Ablass	120	Birth to 3 days	Human and animal, undiluted lymph	3 to 10 skin cuts and scratch	47	Successful; animal lymph 20%; human lymph 80%; severe technic
1889	Wolff	57	8 hrs. to 6 days	42 human, 15 animal lymph	5 to 8 skin cuts 0.5 cm. long	100	Severe skin trauma and thorough rubbing
1901	Palm..	43	1 to 3 days	Calf lymph (diluted?)	4 skin cuts	86	
1915	Franz and Kühner.	200	1 to 3 days	Calf lymph diluted	2 to 4 skin cuts; Borer	70	
1921	Mensching	684	1 to 3 days	Calf lymph diluted	4 skin cuts, each 0.5 cm.	72	
1932	Schlossmann and Herzberg-Kremmer	36	Days to weeks	Calf lymph diluted	2 skin cuts, each 0.7 cm.	58	Very slight skin trauma, intentionally
1933	Jelinek .	22	9 days to 9 wks.	Calf lymph diluted	Several skin cuts	77	Somewhat older infants
1934	Isaac	808	1 hour or less	Calf lymph diluted	Multiple acupuncture	32.2	Slight skin trauma

that much which had been known by the older vaccinators had been lost to the present generation and was not even to be found in modern textbooks.

When one attempts to formulate proper concepts of the duration of immunity to vaccination and to smallpox,¹⁹ in the light of what has been said, one almost is forced to abandon the attempt. It may be possible to state cautiously and undogmatically certain facts which relate to the subject:

Skin reaction to revaccination indicates the individual's degree of protection; in the early months following first vaccination he may be completely insusceptible; he may show varying alterations in skin reactivity, particularly after the first revaccination, the early appearance of these, the rapidity of the cycle, and the intensity of the reaction being indications of his state of immu-

nity. The strength of smallpox protection is closely related to that of skin protection to revaccination; complete immunity or insusceptibility to revaccination is a temporary state.

What tissues or organs²⁰ are concerned in antibody production and protection cannot be positively stated, but protection against variola and revaccination specifically concerns the skin, probably the reticulo-endothelial tissues and possibly others. Vaccinations by other methods than the cutaneous do not take advantage of skin cell susceptibility and probable capacity for antibody production.

Jelinek²¹ revaccinated nineteen infants from one to three months after successful vaccination, five of whom reacted with frank pustule formation, areola and glandular swelling.

In the city of Paris in 1930, 78 per cent of 42,137 living new-born infants were vaccinated in the obstetric departments of Parisian hospitals.²² Successful inoculations amounted to about 67 per cent.

LIMITATIONS OF OUR STUDY

Our study of vaccination in new-born infants was undertaken in 1932 in the nurseries of the Gallinger

Municipal Hospital and was hampered by the many limitations of an active maternity service, which made it necessary for us to cease observation of the babies as soon as the mothers were able to go home, on the average when the baby was from 9 to 10 days old. The majority were Negro babies, whose mothers shifted their dwelling places frequently, so that it was generally impossible to follow them in their homes. Seventy-three of these babies were revaccinated in the outpatient department of the Children's Hospital on almost the same day but were not seen again for a week or more, so that the terms immune and nonimmune used in the tables may not be exact, as sufficient opportunity for observation had not been available to employ these terms accurately. But it is to be borne in mind that these were first revaccinations, which if successful are usually not greatly different from first vaccinations. None the less, there may have been early or accelerated reactions that were not observed and therefore not recorded.

16. Isaac, Leabelle: Smallpox Vaccination of the New-Born: Report on 808 Attempts, *Am. J. Obst. & Gynec.* 27: 580 (April) 1934.

18. Pirquet, Clemens: Klinische Studien über Vakzination und vakzinale Allergie, Leipzig and Vienna, 1907.

19. Pirquet.²¹ Kirsch, O.: Revaccinationsstudien, insbesondere über die Dauer des Impfschutzes (der Hautimmunität) bei der Intracutanimpfung, *Ztschr. f. Kinderh.* 49: 1-30, 1930. Alison, A.: Sur la revaccination chez les enfants, *Arch. gén. de méd.* 7: 657, 1881. Serrière: On the Loss of Vaccinal Immunity in Infants of Less Than 10 Years, *J. de méd. et de chir.* 80: 542, 1909. Sergeant, A., and Trens, F.: De la perte d'immunité vaccinale, *Bull. Acad. de méd., Paris* 107: 625 (May 3) 1932.

20. Lereboullet, P.: La splénomégalie vaccinale du nourrisson, *Vie méd.* 13: 193 (Feb. 25) 1932.

21. Jelinek, O.: Zur Frühvakzination im Säuglingsalter, *Arch. f. Kinderh.* 99: 95-101, 1933.

22. Camus, Lucien: Rapport général annuel sur les vaccinations, *Bull. Acad. de méd., Paris* 106: 403, 1931.

VIRUS EMPLOYED

The vaccine virus used was such as may be obtained from commercial biologic laboratories, diluted calf lymph.²³ Special pains were taken to keep it cold. The boxes of capillary tubes were placed in vacuum bottles to which was added a bit of dry ice, well packed, shipped by parcel post special delivery and received by us the following morning. The vacuum bottles were refrigerated at once at a temperature between 4 and 5 C. A day's supply was taken from this temperature in a well wrapped vacuum bottle to the nursery and promptly used.

METHODS OF VACCINATING

The site selected for inoculation of the new-born infant was just below the head of the fibula on the left leg. With the first thirty-eight babies we practiced ten pressures through a drop of virus with the needle held tangentially to the skin surface²⁴ so that the point broke through the horny layer while the skin was drawn tense, without rubbing. Only twelve results (31.6 per cent) were successful (table 2). Twenty pressures of the needle with slight rubbing was successful in twenty-seven babies (22.2 per cent) and doubtful in four. Thirty-nine received thirty pressures and moderate rubbing of the site with the flat of the needle; in fourteen (36 per cent) this was successful and in eight doubtful. Fifty-seven babies received thirty pressures and marked rubbing of the lymph into the site; in forty-three (75.4 per cent) it was successful and in one doubtful. Fifty babies received thirty pressures and moderate to severe trauma by rubbing with the needle; in thirty (60 per cent) it was successful. It was now clear that the percentage of successful vaccinations with the virus lymph that we were using was increased by rubbing the lymph into the traumatized epidermis. Severe traumatization by thirty strong needle pressures and rubbing of the lymph into the skin with the flat

TABLE 2.—Methods of Vaccinating*

Method			Vaccinator	New-Born Infants	Successful	Unsuccessful	Doubtful	Percentage Successful
Numbers	Skin Pressures	Skin Trauma						
138	10	Very slight	H. H. D.	38	12	26	.	31.6
378 400	20	Slight	H. H. D.	27	6	17	4	22.2
405 443	30	Moderate	H. H. D.	39	14	17	8	36
444 500	30	Marked	H. H. D.	57	43	13	1	75.4
39-88	30	Varied	Both	50	30	20	.	60
89 377	30	Severe	M. M. N.	289	260	26	3	90

* More takes result when the virus is rubbed into traumatized skin. New born babies are very resistant to successful vaccination.

of the needle backward and forward, and in the same way in a direction at right angles to the first, were therefore carried out in the next 289 consecutive vaccinations.

23. The virus employed in this study was supplied to us gratis by Dr. John F. Anderson, director of E. R. Squibb & Sons' Biological Laboratories. Serials 1 to 377 were vaccinated in 1932 with the same lot, 48784; vaccinating was begun again after an interval of ten months and other lot numbers were used but prepared in the same manner. Dr. Anderson states: "After the pulp is taken from the animal (calf) it is ground into a smooth emulsion and diluted with three parts of sterile 50 per cent glycerin solution. After this has been thoroughly mixed by further grinding, it is passed through a fine mesh wire sieve to remove the gross particles of tissues. . . . Each batch of vaccine, after this dilution, is tested on rabbits before being filled into the capillary tubes for distribution. The test made is that described some years ago from the National Institute of Health and is performed by vaccinating rabbits with vaccine diluted one part of vaccine in 1,000 parts of physiological salt solution and one part in 3,000 parts of physiological salt solution. It is required that both of these dilutions of the vaccine from every lot must show good takes or otherwise the vaccine is not considered satisfactory for distribution and is disposed of."

24. Leake, J. P.: Questions and Answers on Smallpox and Vaccination, Pub. Health Rep. 42: 221 (Jan. 28) 1927.

At the conclusion of the vaccination there was a slight serous ooze at the site of inoculation. Two hundred and sixty (90 per cent) of these babies had successful takes.

As has already been pointed out, successful vaccination of new-born infants depends on several factors. Potency of the virus is one of these. The lymph from

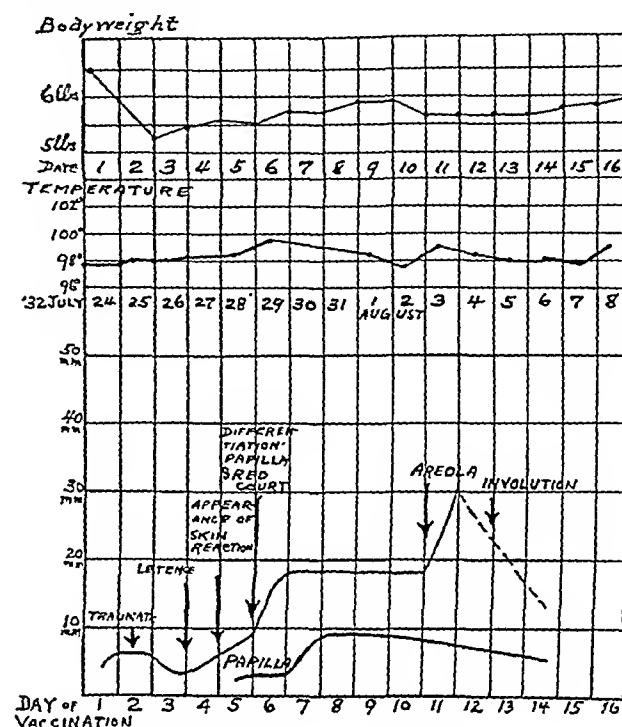


Fig. 1.—Vaccination on day of birth. Curves of skin reaction, weight and temperature.

a vaccination vesicle inoculated into the individual contains the most potent virus. Next to this humanized lymph in potency is undiluted calf lymph. Until recent years the European studies of vaccination in new-born infants were made with humanized lymph, then with undiluted animal lymph, and in the present century diluted calf lymph. When the stronger lymphs were used, successful vaccinations were obtainable with relatively little trauma, but as a matter of fact from two to twelve skin cuts were generally employed. When the lymph is less potent, in order to get generally successful results in new-born infants, the technic of vaccination must include severe traumatization of the skin. This we learned by experience. Primary vaccination is without value unless a take occurs. We therefore worked to secure takes and found that more takes resulted by increasing the skin trauma. It has been pointed out by Pirquet²⁵ and later by Schlossmann and Herzberg-Kremmer²⁶ that severe trauma is not desirable from other points of view. When one wishes to ascertain the effect of antiviral antibodies in the baby which have been received from the mother, or when one wishes to observe the altered reactivity or degree of immunity from a former vaccination, it is easy to see that a potent virus vigorously applied to the skin will break through these slight barriers and result in successful vaccination. Our problem was to develop a method that would successfully vaccinate new-born infants, and we worked toward that end. The vigorous technic developed had some disadvantage. Marked differences in new-born susceptibility were found, as had

been found since Jenner's time, and has been described. Pustules 20 mm. or more in diameter developed in 10 per cent of our takes. Not all these resulted from vigorous technic, but the majority of them occurred in this way.

THE SKIN REACTION

The papilla usually made its appearance on the fourth day, next most frequently on the fifth day, the day of inoculation being counted as the first day, next the third

TABLE 3—*Skin Reaction*

Vaccination Days	Day of Appearance (Papule, Vesicle, or Pustule)	Diameter of Pustule				Number	Per Cent
		4 Mm. or Less	5 to 9 Mm.	10 to 19 Mm.	20 Mm. and Over		
Third....	52	1				1	0.27
Fourth....	167	2		1	1	4	1
Fifth.. ..	103	10	6	4	5	30	8
Sixth.. ..	29	18	19	17	7	59	17.8
Seventh..	19	22	27	27	8	94	27.1
Eighth..	2	25	34	19	6	66	21.4
Ninth.. ..	1	7	25	23	10	65	17.4
Tenth.. ..	1	6	17	8	1	28	7.5
Eleventh..	.	.	1	4		5	1.3
Fourteenth	.	1	1			2	0.53
Number	370	102	126	108	78	374	100
Per cent		27.3	33.7	29	10.1	100	

day, with diminishing numbers on the sixth and seventh days, rarely later (table 3). The maximum size of the pustules was attained on the seventh day most often, next on the eighth, ninth and sixth days; the fifth and tenth days had about the same numbers, with very few on the eleventh and fourth days. The limitation of opportunity for observation, because of the babies being taken home, interfered with the complete records in this regard. Some of the pustules undoubtedly increased in size after the babies left the hospital. Furthermore, their stay was too short for us to observe areola forma-

ciable depth and no appreciable involvement of the papillary layer of the skin or deeper.

CONSTITUTIONAL REACTION

Fever was almost entirely absent. When present it was insignificant and transitory, and we could never attribute it with certainty to vaccinia.

The vaccinated new-born infants behaved in practically the same way as the other babies in the nursery who were not vaccinated. Their appetites were good, their bowel functions normal, and their gain in weight quite comparable to unvaccinated controls.

Suppurative²⁵ parotitis which bore no relation to vaccination occurred in one of the 500 babies.²⁶ There were no other fatalities in the group and no significant accidents or complications.

REVACCINATIONS

In order to ascertain whether immunity developed promptly, six babies who were successfully vaccinated at the ages of from 7 hours to 9 days were revaccinated when from 4 to 7 weeks old (table 4). The technic employed was the most severe in this group and in the group of revaccinations to follow, of any that we used; the virus, the vaccinator and the time were all the same. Examination of the babies a week later showed no lesion whatever in four and moderately large pustules in two; nine controls of the same age who had never been successfully vaccinated all had well developed pustules at the end of a week. From this we conclude that four (66⅔ per cent) of the six babies had active, acquired immunity at from 4 to 6 weeks of age. As mentioned, hourly observation might have shown an early or accelerated reaction, but we think this most unlikely as it was their first revaccination and Pirquet states that complete insusceptibility is often present in the early months after the first vaccination. Ablass²⁷ revaccinated an

TABLE 4—*Active, Acquired Immunity Established in the Early Weeks of Life in 67 Per Cent*

No of Infant	No of New Born Infants	First Vaccination		First Revaccination		Second Revaccination		Indication of Immunity
		Ages	Result	Ages	Result	Ages	Result	
378	1	8 hours	0	9 days	Scar 5 × 5 mm	7 weeks	Pustule 15 × 15 mm.	Nonimmune
408	1	13 hours	0	8 days	Scar 12 × 12 mm	1 month	0	Immune
429	1	16 hours	0	8 days	Scar 8 × 7 mm	5 weeks	0	Immune -
446	1	23 hours	0	8 days	Scar 5 × 3 mm	4 weeks	Two pustules	Nonimmune
							14 × 8 mm., 10 × 10 mm	
485	1	50 hours	0	6 days	Scar 7 × 7 mm	4 weeks	0	Immune
438	1	7 hours	Papule 8 × 6 mm, no induration	6 weeks	0	..	..	Immune
Totals	6		5 unsuccessful, 1 successful		5 successful, 1 unsuccessful			2 33% nonimmune 4 67% immune
398, 399, 411, 413, 433, 435, 455, 464, 468	9	1¾ hours to 28 hours	0	6 days to 9 days	0	1 to 2 months	Pustules 15 × 12 mm. to 20 × 20 mm.	These are controls: same virus, same method, same time; all had takes

tion in many of the babies, and we feel that discussion of this important phase of the skin reaction must necessarily be omitted. Measurements of maximum size of the pustules, while inaccurate, are perhaps not far from the truth; 61 per cent were under 9 mm. in diameter; 29 per cent were between 10 and 19 mm. in diameter; 27.3 per cent were only 4 mm. or less in diameter, and 10.1 per cent were 20 mm. or more across

THE CICATRICES

Examination at from 13 to 16 months of age of fifty-two babies successfully vaccinated at birth showed in each instance a soft, superficial scar with scarcely appre-

infant thirty-eight days after successful vaccination at birth and fourteen days after complete healing. He used undiluted humanized lymph, but the result was negative. Furthermore, this is what one would expect from Welch's observations already noted: Two babies born in the Philadelphia smallpox hospital of mothers suffering with varioloid were vaccinated successfully at birth; one spent three weeks and the other four weeks in the smallpox hospital with their mothers and failed to develop this disease.

²⁵ Elterich, T. O. Purulent Parotitis in the New Born, *J. Pediat* 3:761 (Nov.) 1933
²⁷ Ablass, Rudolf. Die Impfung Neugeborener, Inaug. Diss., Greifswald, 1889

Fifty-two babies successfully vaccinated at birth were revaccinated first at from 13 to 16 months of age by our severest technic (table 5). At the end of a week thirty-six showed nothing whatever in some cases and a few small papules in others, while sixteen showed well developed pustules: in fourteen between 10 and 20 mm. in diameter, in one 8 by 7 mm., and in one 30 by

TABLE 5.—*Immunity to Vaccinia Found in 69.2 per Cent of Babies 13 to 16 Months Old, Who Had Been Successfully Vaccinated at an Average Age of 24 Hours*

Age When First Vaccinated	Result of Primary Vaccination	Age When Revaccinated	Result of Revaccination	Immunity
Minimum, 3½ hours; maximum, 125 hours	All had successful "takes"	Minimum, 13 months; maximum, 16 months	Successful, 16; unsucessful, 36	Nonimmune, 30.8%; immune, 69.2%
Average age, 24 hours	Successful	Average age, 14½ months	Total number, 52	Immune, 69.2%

TABLE 6.—*Questionnaires Returned by Mothers of Vaccinated New-Born Infants*

Questions	Yes	No	No Answer	Total	Yes, per Cent
1. Is your baby vaccinated by us at birth getting on well?	138	8	..	166	95
2. Did the vaccination get along all right?	156	9	1	166	94
3. Would you want us to vaccinate another baby in the same way?	138	20	8	166	83
4. What kind of a scar was left?	Small	Moderate	Large	None	No Answer
	88	3	37	16	2

25 mm. From this we conclude that on their first revaccination when between 13 and 16 months of age, thirty-six (69.2 per cent) of fifty-two babies showed complete or almost complete immunity and sixteen (30.8 per cent) were nonimmune or at least had insufficient protection.

ATTITUDE OF THE MOTHERS

One hundred and sixty-six of the mothers answered and returned questionnaires relating to their babies who had been vaccinated by us at birth (table 6); 95 per cent stated that their babies were well; 5 per cent of them had died of other causes; 94 per cent stated that the vaccination had gotten along well; 138 (83 per cent) stated that they would want us to vaccinate another baby in the same way if one should arrive, whereas twenty (12 per cent) said no and eight (4.8 per cent) made no answer. Eighty-eight mothers regarded the resulting scar as small, fifty-seven as large, and three as moderate in size.

COMMENT

In 289 consecutive vaccinations of new-born infants with the best adaptation of technic of inoculation to our virus that we could develop, 10 per cent of the infants were resistant to success of their first vaccinations. There is certainly a resistance in new-born infants beyond that of older infants and children. Vaccinators from Jenner's time to the present have almost consistently found this to be true.

Passive immunity, as demonstrated by the presence of humoral antibodies for the first two or three months of life in a certain number of infants, all too inadequately explains this resistance.

In line with the idea that young, growing tissue may account in part at least for resistance to vaccination manifested by new-born infants is what one finds on analysis of Mensching's¹² results in the vaccination of 684 new-born infants. Eighty-two of them were premature. Of the successful inoculations, 72 per cent were full term babies, in contrast to 63 per cent of successful results in premature infants. In other words, premature infants offered considerably greater resistance to vaccination than babies born at term; their tissues were younger and growth was more active.

There appear to be notable differences in potency of vaccinia virus, and there are no definite standards by which potency may be judged. The standard enforced by the National Institute of Health²³ is doubtless adequate for practical purposes, but it scarcely measures potency so that lymphs in different parts of the world may be compared. Hence it is difficult to make comparisons of successful vaccinations reported by different workers. The size of the skin reaction and rapidity of its appearance depend on the quantities and strains of inoculated virus. Pirquet¹⁸ has shown also that dilution of virus lymph retards the skin reaction by a day or two.

The technic of inoculation is closely related to the quantity of virus introduced. But there is another fac-

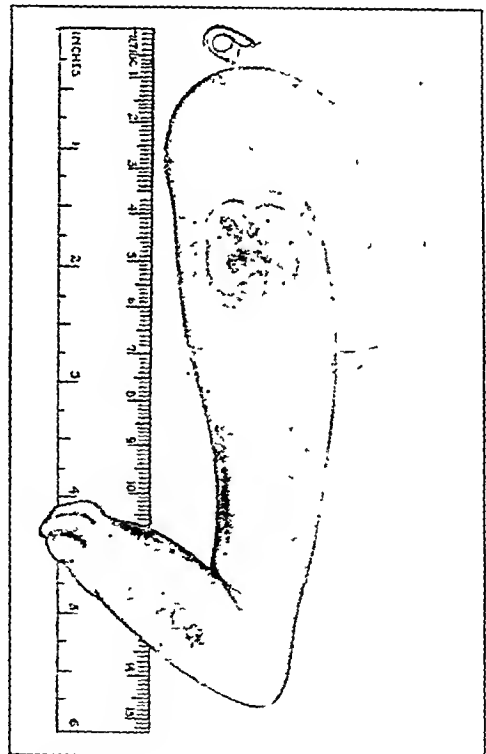


Fig. 7.—Size of pustule: 10.1 per cent of the takes

tor in technic besides the quantity of virus introduced. This is the factor of skin trauma, the real damage to cells susceptible to reception and the multiplication within them of vaccinia virus. The most successful method employed by us injured epidermal cells into which the virus was rubbed in addition. The papillary layer and the upper subcutaneous tissues must have been traumatized by the severe rubbing with the flat of the needle after pressures with its point which broke through the horny layer and cut into the epidermis. A serous ooze was present at the end of the procedure.

Well refrigerated virus the relative potency of which has been learned by experience with it, and adoption of a suitable technic of vaccination for the particular virus in use, will give a proportion of takes amounting to 90 per cent or more, even in resistant new-born infants. Repetition of vaccination of first failures generally results in takes, although repeated revaccination may be necessary. Both physician and patient abandon

observers have stated the same thing, while Franz and Kuhner,¹² among a few others, state that the skin changes are essentially similar to those of older children.

SUMMARY

1. Smallpox vaccination of new-born infants is a safe procedure with negligible complications, with insignificant influence on growth and nutrition, and almost always without fever.
2. The skin reaction tends to be smaller and slighter in extent and leaves behind small, superficial scars when Leake's method is used.
3. Adjustment between potency of virus and inoculation technic may insure at least 90 per cent of successful results on first vaccination.
4. Since Jenner's time, vaccination of new-born infants has been practiced successfully.
5. New-born infants are highly resistant to successful results, possibly because of the resistance of growing, young tissues; but other factors mentioned may have an effect, as well as still others at present unknown.
6. Our study shows that active, acquired immunity may develop promptly and may persist well over a year, probably longer.
7. Observations on foundlings in St. Petersburg (Russia), vaccinated shortly after birth and continued until they were 25 years of age revealed among many

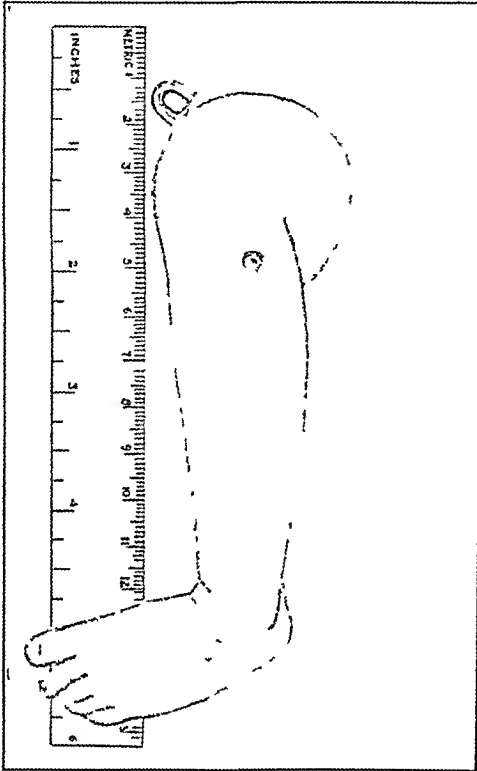


Fig 8—Size of pustule 27.3 per cent of the takes

too readily the effort. Variability in individual susceptibility is difficult or impossible to gage

What change if any may result in our technic and what results from the use of purer virus grown on tissue mediums remain to be seen.

In reporting our results, we stated that sufficient time for observation of the complete course of vaccination had not been possible because of the babies leaving the hospital, and for this reason facts with regard to full areola development could not be given. We had an opportunity in exceptional cases (fig. 1) to observe the skin reaction well into involution and even healing. From these observations we have a strong impression, but no more than an impression, that the areola formation, even at its peak, is relatively slight, by comparison with that of older children (figs. 2 and 3). The figures given for the size of pustules convey a similar impression (figs. 7, 8 and 9). Gast¹⁵ reported in 1879 the same thing in vaccinations of sixteen new-born infants. His protocols, however, in each case showed observation of the skin reaction after an interval of a week following inoculation. This was insufficient for exact observation on this point. Ablass,²⁷ on the other hand observed his cases generally through completion of the local process or longer and states with emphasis that in new-born infants it is extremely moderate by comparison with older children, and particularly that the areola in new-born infants was relatively slight. Other

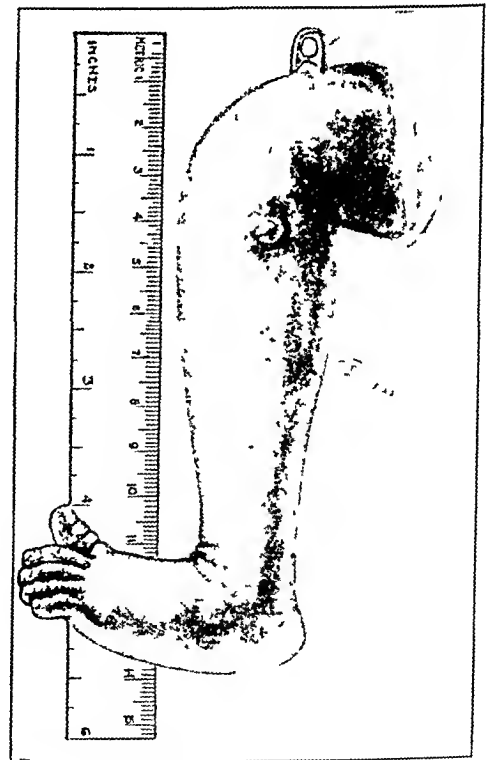


Fig 9—Size of pustule 33.4 per cent of the takes

thousands of individuals a very slight morbidity in the presence of seventeen epidemics of smallpox during the forty years 1826-1866.

8. Vaccination at birth is a practicable means of increasing protection against smallpox in a large group of society in which it is most needed, who are prone to do without this protection for themselves and the community until forced to obtain it at school age.

9. For those who will procure vaccination between 3 and 6 months of age, when it is more easily performed with success, it need not be done at birth.

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ABSTRACT OF DISCUSSION

DR. J. A. DOULL, Cleveland: The authors have made the interesting observation that the relative resistance of new-born infants to vaccinia, which has long been recognized, can be broken down merely by increasing the amount of trauma. With safety and the apparent effectiveness of this procedure established, the question naturally arises as to its importance in public health. At present the most common practice in the United States is vaccination at the time of school entrance. Vaccination at this age carries with it certain more or less remote hazards, which can be to a great extent obviated if vaccination is carried out in infancy. Vaccination as early as the first day, however, or even in the first week of life has another angle, which may cause a good deal of embarrassment not only to the physician performing it but to the public health profession. The first day and the first week are the time of greatest mortality from other causes, and death may be attributed, erroneously, to vaccination. This should be recognized by the physician when he applies smallpox vaccination as early as that period. A good deal of public health effort has gone into the achievement of immunization against diphtheria and against smallpox at 6 months of age. I agree with the authors that this is the policy which should be emphasized not only by public health authorities but by pediatricians. There is, however, I believe, a field for the authors' technic and it is this: In the presence of a smallpox epidemic it is well for physicians to recognize the fact that successful vaccination may be carried out in the new-born. As was emphasized, there is a group of people, perhaps the colored population of the South may be mentioned, which is exceedingly difficult to follow during the first year of life, and it may be that in this group the method will have a practical application.

DR. FRANK P. GENGENBACH, Denver: Last fall there occurred a small outbreak of smallpox in the Colorado General Hospital in Denver, starting with a case that had come in for another purpose. As a result, the rule went forth that every child and every patient in that institution must be vaccinated, and this included new-born infants. This vaccination was continued from Oct. 19, 1933, to May 10, 1934, when it was felt that the outbreak had been successfully controlled. Practically all the new-born were vaccinated on the second day. The total number vaccinated was 184. One premature infant required revaccination. There were about twenty-five infants that required revaccination, apparently because a particular supply of virus had lost its potency. However, these were all revaccinated, and all the infants left with good scars and without complications. In the meantime, through the efforts of the Visiting Nurses' Association and the prenatal clinics in Denver, the mothers were gradually educated to the idea of having their new-born babies vaccinated at the Denver General Hospital, which is the county hospital, the Colorado General being the state hospital. As the mothers found that no bad effects followed, they were quite willing to give this permission. As a result, they now have practically 100 per cent cooperation. From May 1, 1933, to Dec. 31, 1933, 452 new-born babies were vaccinated, all successfully, and from Jan. 1, 1934, to May 31, 1934, there were 307 new-born babies vaccinated, a total of 759.

DR. J. P. LEAKE, Washington, D. C.: I feel that the best service can be done to the new-born infant and its mother by vaccinating very early in life. The difficulty later, after it has passed out of the hands of the medical profession for anything except exceptional circumstances, is too great to let that opportunity slip. I should like to emphasize, too, what the authors said regarding the necessity of going into the literature and observing carefully primary vaccinations, preferably on the tenth and fifteenth days after vaccination, and secondary revaccination on the second or possibly the eighth day as the minimum. This observation and this vaccination, if research is to be made on the subject, cannot be left to the interns who are not thoroughly familiar with vaccination from

day to day and hour to hour in all its phases, and with the various literature. All are doubtless aware of the danger from tetanus, particularly in the use of vaccine shields. I might also add that any one who applies a dressing primarily at time of vaccination, attached to the skin, has just as little defense in case tetanus supervenes as one who does not use tetanus antitoxin in case of a trivial wound.

DR. H. H. DONNALLY, Washington, D. C.: I understood Dr. Gengenbach to say that he had had 100 per cent of successes, excepting a group of twenty-five babies vaccinated with a batch of bad virus and one premature infant whose first vaccination was unsuccessful. That is remarkable for so large a number. Ablass, Behm, Palm, Franz and Kuhner, Mensching, Schlossmann and Hertzberg-Kremmer, and a few others found in the literature, as well as ourselves, had difficulty in getting takes in new-born infants even though some of these authors used arm-to-arm inoculation, the humanized virus, which is the most virulent and produces the greatest number of successes. Next in virulence is the undiluted calf lymph, and finally diluted calf lymph. It would have been interesting in connection with this report of successes, if Dr. Gengenbach had told the technic and virus used, and who did the work, as well as whether the takes resulted from one inoculation or whether repeated inoculations were necessary. If a series of inoculations are given, it is possible to achieve success even though one vaccinates an infant as often as twelve times, which has been done. I think that this fact might emphasize the point that one should not give up when failing with one, two or three attempts, but keep on, and finally a successful inoculation may be obtained, which alone gives protection.

SPECIFIC DIAGNOSIS AND TREATMENT OF ALLERGIC DISEASES OF THE SKIN

PRESENT STATUS

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If one should inquire which of the existing medical specialties would profit especially through a deeper knowledge of allergic disease, one would necessarily think first of dermatology. Some may suspect an ironical sense in this statement because of the fact that the sharpest criticism of the common diagnostic procedure used by allergists has come from dermatologists. However, the statement is not so intended, and it is really based on the fact that every recognized category of allergic disease affects the skin.

Thus, among the diseases of the skin the familial allergy (hay fever-asthma group) is represented by atopic eczema. This is sometimes proved to be due to allergens of the same type as those causing the other atopic diseases; the second category is epidermal allergy or contact dermatitis, a form of allergic sensitivity that is not familial and affects only the skin; the third form is the cutaneous manifestation of infectious allergy (type of tuberculin sensitiveness). Besides these there are the unclassified serum sickness and the similar condition caused by drugs; also the skin manifestations of "physical allergy."

The formulation of the problems of allergy, as well as the practical diagnosis and treatment of allergic diseases, requires the tentative classification of these conditions, and Dr. Sulzberger and I have attempted to present in tabular form the corresponding classification of three allergic conditions of the skin. This classification has been prepared from a practical point of view

rather than a scientific one and it is incomplete, because it does not include the pathologic differences, which are illustrated in the exhibit of Dr. Sulzberger and Dr. Wise.

It is impossible in this short space to discuss the table in detail and I shall emphasize only the following points of comparison between the first two categories: 1. In atopic eczema the excitants are antigens, i. e., produce antibodies (reagins), whereas in contact dermatitis they are nonantigens; i. e., no antibodies can be demonstrated. 2. The skin test in the inherited atopic eczema is made with aqueous extracts with the scratch method or by intracutaneous injection, whereas that in contact dermatitis is best made with an original raw material by surface contact (the patch test). This original material, if it is a fluid, may have to be diluted. It is not necessary to use an extract of the solid materials. One has no choice in the selection of the technic of skin testing in these two categories, because the patch test with aqueous extracts regularly results negatively in the familial allergies while the intracutaneous and scratch tests are often negative with the extracts in contact dermatitis. 3. Finally, in the case of the vegetable oils, the treatment of contact dermatitis by desensitization,

From the foregoing brief discussion alone, it is plain that, in order intelligently to test and treat one of these two conditions, the physician must first determine, if possible, to which group his patient belongs. This he may attempt to do by consideration of the distribution and character of the lesions, especially of typical early lesions, by the history of the case, and by inquiry as to the family history of inherited allergy. This decision is sometimes difficult or even impossible and in such a case the physician must make the tests with the suspected materials both with the aqueous extracts in the abraded skin and with the raw materials in the patch test.

It must be admitted that the specific diagnosis and treatment of atopic eczema has been in many cases disappointing. Indeed, one has the impression from pediatricians experienced in allergy, that this is rather an understatement of the facts. The general opinion seems to be that even the transferable positive skin reactions do not give reliable information regarding the excitant of the condition.

However, this experience is not different from that commonly encountered in the study of bronchial asthma and to some extent also in hay fever subjects.

*Classification of Three Common Types of Allergic Skin Diseases as Regards Specific Etiologic Diagnosis and Treatment**

	Nature of Excitants	Nature of Skin Test Material	Technic of Test	Reaction Time	Nature of Positive Reaction	Specific Treatment
Atopic dermatoses (familial occurrence)	Water soluble antigens, food proteins and inhaled substances	Aqueous extract or dried extract	Intracutaneous scratch, or indirect	5 to 10 minutes 20 to 30 minutes	Wheal and erythema, reaginic	Avoidance, if practicable; if not desensitization may be tried
Contact dermatitis (nonfamilial)	Thus far nonantigenic substances, often simple chemicals and vegetable oils	Original material, suspected substance or extracted vegetable oil	Surface contact or patch test	Usually several hours to several days	Erythematous or vesicular dermatitis, no antibodies	Avoidance, if practicable; in the case of vegetable oils, desensitization usually successful after 3-4 injections
Fungous dermatitis (eczematous dermatophytids)	Products of hyphomycetes and molds	Filtrate of broth culture	Intracutaneous or patch	Usually several hours to several days	Inflammatory papule and eczematous dermatitis, no antibodies	Desensitization is often successful but often tedious

* According to A. F. Coca and M. B. Sulzberger.

when avoidance is impossible, is usually successful; this stands in marked contrast to the experience, up to the present time, in the similar treatment of contact dermatitis due to excitants other than the vegetable oils. In atopic eczema due to a food, on the other hand, I am informed that the results of injections have been disappointing.

The differences I have just mentioned may be illustrated in the following two cases of sensitivity:

Patient A has suffered for years from a dermatitis affecting the cubital areas, the popliteal spaces and the skin behind the ears. The intracutaneous and scratch tests with aqueous extracts of wheat flour are positive; patch tests with the flour are negative, the dermatitis disappears when the patient stops eating foods containing wheat derivatives, and it recurs when wheat is returned to the diet. The result that follows attempts to desensitize this kind of case is usually unsatisfactory.

Patient B suffers from an eczematous eruption during the late summer. Patch tests with ragweed leaf or the extracted oil are positive and there is no wheal reaction to intracutaneous tests with ragweed protein. The proper treatment in this case is by the injection of a solution of the extracted oil of the plant. This treatment is successful in most instances.

The pessimistic expression of opinion as to the difficulties attending the specific diagnosis and treatment of atopic eczema are somewhat relieved by two recent progressive suggestions. Charles Mallory Williams has reported two instances of atopic dermatitis which cleared up after the surgical eradication of purulent infection of internal organs. These cases suggest that, like some cases of bronchial asthma, atopic eczema may sometimes be of infectious origin and not due to a sensitivity to a specific excitant mediated by reagins.

The second suggestion was made last year by M. B. Sulzberger.¹ It consists in the idea that atopic eczema may sometimes be due to specific sensitivity to inhaled substances. Dr. Sulzberger allows me to state that in a forthcoming paper he will describe just such a case, in which sensitiveness is shown to inhaled particles of silk though not to surface contact with silk.

The practical value of these two suggestions has yet to be tested in a group of suitable cases, and the treatment of the atopic category remains for the present in an unsatisfactory state.

On the other hand, the practical handling of a certain number of cases of the second category (contact dermatitis from plants) and of the allergic manifestations of

1. Sulzberger, M. B., in discussion on Walzer, Abraham, and Grobstein, Max: *J. Allergy* 4: 554 (Sept.) 1933.

fungous infections (the third category) has been distinctly improved through two different influences.

The diagnosis of contact dermatitis has been facilitated by the recent greater employment of Jadassohn's surface or patch test, and the proper manner of applying specific treatment of this condition has been indicated through the demonstration that the excitant of contact dermatitis in ragweed pollen is not the antigenic atopen that excites hay fever but an oily substance.² This oil has since been found to be as abundant in the ragweed leaf as it is in the pollen.

I have pursued this question with the cooperation of several clinicians in different parts of the country, some of whom will make individual reports of their cases. Most of these observers have obtained a high percentage of satisfactory results, which have been particularly impressive in those instances in which exposure was continuous during the treatment or after the lesions were healed. The weekly intramuscular injection of 0.5 cc. of a 1 per cent solution of the extracted oily substance dissolved in sterile almond oil has in a number of cases brought quick healing, and protection on subsequent natural exposure.

Some cases have been complicated by a multiplicity of excitants and in some instances the failure of treatment may have been due to the physician having overlooked an additional unsuspected excitant. If exposure is continuous, it is easy to determine how long the interval between the injections can be made without danger of recurrence of the lesions. This period in one case was about five weeks.

The second suggestion comes out of the finding by M. B. Sulzberger³ that the allergic excitant of *Monilia* (*Oidium*) is specifically different from that of the trichophyton group and has materially broadened the range of effectiveness of the desensitization treatment of some cases of obstinate fungous infection, for which there seems to be no other means of relief.

I have treated three patients according to Sulzberger's plan, all of which were much more sensitive by skin test to *oidiomycin* than to trichophytin. One of the three, a traveling salesman with large lesions on both forearms and elsewhere on the body, was unable to take the injections regularly and during the few months of his treatment his skin sensitivity remained stationary and his local condition remained unchanged. This case was later seen to be one of psoriasis.

Both of the other patients are completely free of their lesions, which had persisted in one for about two years and in the other for five years. Both had used various local treatments without benefit. In one, the condition began with an infection of the left thumb nail and spread to the skin of other fingers. After the injections with a mixture of trichophytin and *oidiomycin* were begun all local treatment was discontinued. After two months of weekly injections the condition was decidedly improved and two months later the treatment could be stopped entirely. There has been no recurrence in the succeeding five months.

In the third case the sensitivity increased markedly and the injection was followed quickly by an extension of the areas involved (both forearms and ears) with a decided reddening of the lesions and a lessening of the scaliness. The solution was diluted 1:100 and the interval before the next and also the following injection

was increased to nine and ten days respectively. By the fifth month the skin sensitivity had diminished so that the strength of the solution could be increased more than 300 times. The lesions were improving but the patient discontinued the treatment. Three months later all the lesions had disappeared and they have not recurred during the succeeding four months.

CONCLUSION

It may be fairly stated that the recent researches on the allergic diseases of the skin have materially extended the understanding of them and have definitely improved the specific methods of their diagnosis and treatment.

ACNEFORM ERUPTIONS OF THE FACE

ETIOLOGIC IMPORTANCE OF SPECIFIC FOODS

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CHICAGO

The etiologic importance of various articles in the diet in acne vulgaris has been a matter of dispute for a long time. The appearance of papular and papulopustular eruption on the usual areas of acne due to certain medicaments, especially iodide, is a well accepted clinical observation.

In a recent summary of the treatment of acne vulgaris, Wise and Sulzberger¹ state that, while clinical experience tends to show that a diet high in carbohydrates and sweets seems to make some acne cases worse, there is not an iota of scientific evidence that there is any disturbance of carbohydrate metabolism in acne. In many thousands of acne cases that have been examined by careful investigators, the average blood sugar and average sugar tolerance are in most instances normal. The latest substantiation of this opinion is the recent paper of Strickler and Adams.² They conclude that while a diet rich in sugar or the carbohydrates may be inimical for certain patients with acne vulgaris, laboratory examinations do not substantiate any actual changes in the blood sugar.

Urbach and Schmidt³ state that the cloak of darkness covering the principal question whether a patient with acne or with seborrhea is harmed more by excess of fat or carbohydrate has not yet been lifted. All in all, the evidence of the literature is that there is little real scientific foundation for the causation of ordinary acne vulgaris by the general classifications of foods.

A series of thirty-two cases has been studied in which there was a recurrent papular and papulopustular eruption of the body involving the usual areas in which acne vulgaris is ordinarily found. Some patients also had deep scars in these areas. These acneform eruptions have been found in these instances to be due to a specific food or foods; my opinion is still reserved as to the definite place of diet in ordinary acne vulgaris. This type of eruption varies from the ordinary acne in that there are no comedones and no seborrhea of the face or scalp, and in that it had not responded to the

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Read before the Section on Dermatology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Wise, Fred, and Sulzberger, M. B.: *Role of General Practitioner in the Modern Treatment of Acne Vulgaris*, Practical Medicine Year Book, Dermatology and Syphilology 7, 1933.

2. Strickler, Albert, and Adams, P. D.: *Blood Sugar Metabolism in Certain Dermatoses, with Special Reference to Acne Vulgaris*, Arch. Dermat. & Syph. 26:1 (July) 1932.

3. Urbach, Erich, and Schmidt, F. R.: *Skin Diseases and Nutrition*, Vienna, Wilhelm Maudrich, 1932, p. 117.

2. Brown, Aaron; Milford, E. L., and Coca, A. F.: *J. Allergy* 2: 391 (July) 1931.

3. Sulzberger, M. B.: *J. Immunol.* 23: 73 (July) 1932.

usual acne therapy. The roentgen therapy may have caused these ordinary acne manifestations to have disappeared and the etiology of the residual eruption which persisted was determined to be either a single or a multiple food sensitization. A recent paper⁴ was published illustrating the preliminary studies of this type of eruption, in which one case was described in detail. Nine other cases of similar type are now being studied and as yet the rôle of a specific food or foods has not been ascertained; it is well recognized that other factors may at times be responsible.

In general aspects, these patients presented about the same history. Their ages ranged from 17 to 36; twenty were females and seven were married. The longest duration in any one patient was seventeen years. All the patients gave a history of receiving from twelve to thirty roentgen treatments with only temporary benefits. Four presented definite evidence of radiodermatitis on the face; i.e., localized areas of telangiectasia and atrophy were present on the cheeks. They had received the usual local treatment of lotions. Many had been placed on a low carbohydrate diet and others had had some general dietotherapy. A series of cases are now being studied which seem to fall in this group and have had no roentgen or ultraviolet treatment. It is still my experience that up to a certain limit roentgen therapy cannot be dispensed with in treatment of severe acne vulgaris.

All patients were in excellent general health. Endocrine studies, especially as to possible thyroid and ovarian disturbances in the female, were of little practical importance. Some did have a menstrual exaggeration, but this disappeared entirely in the series as the patient's eruption became less and less noticeable. Thyroid administration in cases in which it was indicated did not improve perceptibly the acneform eruption. The usual blood counts did not reveal any obvious anemia or blood alterations. The ordinary foci of infection, such as the teeth and tonsils, were investigated and did not show any clinical importance. Ordinary laboratory procedures showed no abnormal deviation.

The usual skin food tests were performed in a small number. As their importance in eliminating the causative foods was practically negligible, they were not continued because of the added expense and time to the patients. All patients were observed in private practice. The Prausnitz-Küstner method of passive transfer will be used at the first opportunity.

The sudden recurrences suggested that specific food or foods sensitization might be the etiologic agents. Rowe⁵ has stated that a patient who had had severe attacks of urticaria had been put on eliminating diets. Elimination diets relieved all her urticaria symptoms, including a severe, long standing acne on her face. He found that in this particular patient grapes and cantaloup caused her facial eruption to reappear. Unger⁶ has observed a somewhat similar case due to eggs. In general, few allergic symptoms have been present in this series. The precipitating cause of the sensitization to these foods and to localization in these areas is only conjecture at this time.

Wise and Sulzberger¹ are of the opinion that the ill effects of a relatively high intake of sweets and starches

may be due not so much to the actual high total carbohydrate intake but rather to an idiosyncrasy in reaction toward certain specific items in the carbohydrate diet. They particularly mention chocolate in any form and white bread. However, they stress that the etiologic agent in a person eating bread the eruption on the face may be due to so-called baking improvers that contain a high percentage of potassium bromate. The bromate in the baking process becomes reduced to bromide.

Theoretically, any food may cause such an acneform eruption; in this series the six most common were chocolate, milk, wheat, oranges, tomatoes and nuts. Some cases presented multiple food sensitization; in others, certain combinations produced new lesions. The causative food allergens were largely determined by using so-called elimination diets or "nonallergic" trial diets. As stated, the usual cutaneous food tests were of little or no value in the detection of the etiologic ingestant or ingestants.

The detective method of finding the causative foods was to place the patient on a nonallergic diet for one week, using as a basis the elimination or trial diets of Rowe.⁷ Only a minimum number of foods should be selected. In regard to a strictly balanced diet, I agree with Feinberg,⁸ who says he sees no need for a strictly balanced trial diet since the first diet is only used for a period of a week or two. Caloric requirements should be fulfilled, of course, especially in those who may be somewhat underweight, but slight deficiencies in minerals and vitamins for the periods involved need not cause concern. If a vitamin or mineral deficiency is feared, these materials can be added in concentrated form. If no lesions appear in a week's time, one can add a new food every two days, adding at first the least allergic ones. If the offending food was added, new lesions usually appeared in from two to six hours. Occasionally it took from twelve to twenty-four hours in some patients. This method had to be altered to fit the individual, and the diet has to be changed to meet the dietary demands of the patient, especially when a careful history showed that certain foods have not caused any new lesions as far as the patient has been able to detect. It simmered down to an individual study in each case. With a thorough knowledge of diet, one can use Rowe's elimination diets or those of Dale and Thornburg⁹ or those of Hopkins and Kesten.¹⁰ Rowe's diets with some variations were used in this series. That the constituents of certain foods have to be thoroughly known is strikingly illustrated in what is called rye bread. Lespinasse¹¹ has surveyed the rye bread in Chicago and finds that there is no such thing as rye bread. She found that rye bread in Chicago contains anywhere from 10 to 60 per cent of wheat. Other foods may be the cause of similar trouble.

Treatment of these cases consists naturally in the elimination of the causative foods when possible. There are four accepted methods of treating these food idiosyncrasies. These are well summarized by Urbach.³ The first has already been mentioned; that is, omitting the food. The second method consists in forbidding all animal and vegetable proteins for two weeks, as it is

7. Rowe, A. H.: Food Allergy: Its Manifestations, Diagnosis and Treatment, J. A. M. A. **91**:1623 (Nov. 24) 1928.

8. Feinberg, S. M.: Allergy in General Practice, Philadelphia, Lea & Febiger, 1934.

9. Dale, Jane, and Thornburg, H. D.: Diets for the Identification of Food Allergies, J. A. M. A. **93**:505 (Aug. 17) 1929.

10. Hopkins, J. G., and Kesten, B.: Specific Sensitivity in Eczema, Tr. Internat. Dermatol. Conference, 1931.

11. Lespinasse, Victoire: The Wheat Contents in Rye Bread, to be published.

4. White, Cleveland: Food Sensitization Dermatoses, Especial Consideration of the Primary Type of Acneform Distribution, J. Allergy **4**:151 (Jan.) 1933.

5. Rowe, A. H.: Food Allergy, Philadelphia, Lea & Febiger, 1931, p. 113.

6. Unger, Leon: Personal communication to the author.

stated that this method is beneficial only in cases of food idiosyncrasy of short duration. Naturally, this has been of no help in these cases. The third method is active desensitization by very gradually increasing the amount of allergen, by either the oral or the intracutaneous method. Oral administration with small doses of the offending food has been quite helpful in certain cases. Active desensitization by intradermal injections has not been used because of the technical difficulties and lack of assurance that it would produce a cure. The fourth method is based on the principle of skeptophylaxis, which usually induces complete desensitization if the method is carried out for three or four weeks. With the term skeptophylaxis Lambert, Ancel and Bouin¹² designated the following phenomenon: If an individual, from three quarters to one hour preceding the ingestion of fairly large amounts of an anaphylactic producing drug, food or peptone is given minimal amounts of the same drug, it is possible to prevent the occurrence of an anaphylactic reaction otherwise certain to occur. The mechanism of skeptophylaxis may be explained on the basis of what Besredka and Otto called antianaphylaxis. Nonspecific methods, as the use of the peptones in treating nutritive allergic dermatoses, have also been used.

This brings up the question of using specific peptone therapy, which was first brought into practical usage by Luithlen.¹³ He termed these partially broken down peptones propeptan. Neither the use of his and Urbach's¹⁴ specific food propeptans nor the use of ordinary peptone has been of any value in this type of food sensitization. Oral peptone therapy in my opinion has been of marked benefit in some eczematoid allergic dermatoses, as suggested by Miller.¹⁵

In patients who are not sensitive to certain fish livers or corn oil, viosterol can be used to raise the patient's threshold at times to certain foods. Yeast has been used by practically all; in several, it caused new lesions. The use of viosterol in acne was recently brought forward by Doktorsky and Platt.¹⁶ Along this line, ultraviolet irradiation is a definite aid in raising the resistance to certain foods in some cases. In several young women the viosterol caused such irregular menstruation that its further use was abandoned. Use of the vitamin D as viosterol and ultraviolet irradiation has prevented new lesions, which had occurred from previously taken smaller amounts of allergic foods in several patients.

CONCLUSIONS AND SUMMARY

Specific food or foods have been found to be the cause of an erythematopapular and papulopustular eruption of acneform distribution in some thirty-two cases. Scarring occurred in some cases.

The usual roentgen treatment for acne vulgaris had been given in other hands with only temporary results; unfortunately, four presented definite evidence of too much roentgen treatment.

The causative food allergens had been determined by the use of elimination or "nonallergic" trial diets, as the ordinary skin tests were of little or no value.

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12. Lambert, Ancel P., and Bouin, P.: *Compt. rend. Soc. de biol.* 61: 350, 1911.

13. Luithlen, F.: *Wien. med. Wehnschr.*, 1926, p. 907.

14. Urbach, Erich: *Klin. Wehnschr.* 9: 2046 (Nov. 1) 1930.

15. Use of oral peptone therapy was suggested by Dr. Joseph L. Miller to the author in the discussion of the latter's paper "Eczematoid Sensitization Treatment" before the Central Society for C . . . 1933.

16. Platt, S. S.: *Vitamin D in the Treatment of Acne Vulgaris*, *J. A. M. A.* 101: 275 (July 22), 1933.

LIGHT SENSITIVE DERMATOSES

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AND

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LOS ANGELES

The problem of light sensitivity is one in which the final solution will probably be found by the biochemist. It appears to be bound inseparably with sulphur metabolism, and through sulphur metabolism with the amino acids and perhaps also the vitamins.

A review of some of the recent work on sulphur metabolism is certainly pertinent to the question of light sensitivity. Harris and Hoyt¹ subjected parameria to the effect of ultraviolet rays that had previously

passed through a solution of cystine $\left[\begin{array}{c} \text{NH}_2 \\ | \\ \text{CH}_2\text{S}-\text{CH} \\ | \\ \text{COOH} \end{array} \right]$,

in sodium hydroxide. They found that the time of exposure required to produce fatal results was 1,200 seconds if the ultraviolet rays first passed through the cystine solution, as compared with 150 seconds in the controls. From this they argued that the susceptibility of protoplasm to ultraviolet radiation was conditioned by the selective absorption of the toxic rays by cystine and certain aromatic amino acids. Confirmation of this effect was accomplished by the study of Ward² on the absorption spectrums of amino acids. He found that cystine was the only amino acid that had any marked absorption in the region of solar ultraviolet rays. In the following year Lewis³ made the suggestion that the relatively high concentration of cystine in wool and hair was of physiologic significance in the protection of the organism against the harmful effects of prolonged exposure to sunlight. Ward further called attention to the fact that the curious custom of the Arabs of wearing heavy woolen clothing may have a strong justification in the protective effect of the cystine in the wool.

The following remarks are taken from Smith's⁴ monograph, a review of the subject of sulphur metabolism and the relation of cystine to solar irradiation. About 1920 Sullivan and his co-workers⁵ suggested that there was an abnormal sulphur metabolism in pellagra. Others,⁶ however, as early as 1910 had reported such abnormalities.

It appears rather definitely that the demands of the organism for sulphur are supplied largely by that sulphur-containing amino acid cystine. This amino acid is necessary not only for the growth but for the maintenance of animals as well.⁷ The function of cystine in the organism appears to include not only an important bearing on the oxidation of tissue through the reversible cystine \rightleftharpoons cysteine reaction,⁸ but also a detoxifying influence on certain compounds, one of

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

1. Harris, F. L., and Hoyt, H. S.: *Science* 46: 318, 1917.

2. Ward, F. W.: *Biochem. J.* 17: 898, 1923, cited by Smith.⁴

3. Lewis, H. B.: *Sulphur Metabolism*, *Physiol. Rev.* 4: 394 (July) 1924.

4. Smith, J. H.: *The Influence of Solar Rays on Metabolism*, *Arch. Int. Med.* 48: 907 (Nov., part 2) 1931.

5. Sullivan, M. X., and Dawson, P. R.: *Studies in the Biochemistry of Sulphur*, II. Further Studies on the Distinctive Reaction for Cysteine and Cystine, *Pub. Health Rep.* 44: 1421 (June 14) 1929; *Sulphocyanate in Pellagra*, *J. Biol. Chem.* 45: 473 (Feb.) 1921.

6. Kahn, Max, and Goodrich, F. G.: *Sulphur Metabolism*, Philadelphia, Lea & Febiger, 1926, p. 254.

7. Lewis, footnote 3, pp. 401, 418 and 447.

8. Dakin, H. D.: *Physiological Oxidations*, *Physiol. Rev.* 1: 394 (July) 1921. Lewis.³

which at least, cyanogen, is a product of protein metabolism.

The high content of sulphur and cystine in epithelial protective tissue, e. g., the horny layers of the skin, hair and nails, a content greater than that of any other tissue of pure protein, suggests that the cystine may have a specific function in this tissue. Lightbody and Lewis,⁹ Klauder¹⁰ and others have discussed the relation of the protein and sulphur content of the diet to the growth of hair in both animals and man. In general, however, Lewis, who has thoroughly studied the question, holds that experiments which indicate a special relation of cystine to the growth of epidermal tissues rich in sulphur (hair and wool) are interesting but that further work under carefully controlled conditions is necessary before the specific rôle of cystine in the growth of hair can be accepted without qualification.

Cohn¹¹ stated that most of the known proteins are poor in tryptophan and cystine; nevertheless their necessity for growth in the young and for maintenance of nitrogen equilibrium in the adult animal is fully attested. As Smith states, "in view of the poverty in cystine which characterizes proteins generally, it is of interest to note its occurrence in the foods that Goldberger and his associates advocated as preventive of pellagra and to note that these foods contain cystine (sulphur) in proportions comparable to the value for the prevention of the disease assigned them by this author."

HEMATOPORPHYRIN

The problem of light sensitivity cannot be discussed without some consideration of the porphyrins. The term "hematoporphyrin" is somewhat loosely applied to the iron free pigments that are obtained from hemoglobin, hemochromogen, hematin or hemin by the action of strong acids. As Pryde¹² points out, the presence of a porphyrin is one feature that is common to the hemoglobins, the chlorophylls and other similar substances.

Hematoporphyrin has long been known as possessing a very powerful light sensitizing action. When injected into either man¹³ or experimental animals, this porphyrin causes them to become extraordinarily sensitive to the deleterious effects of ultraviolet irradiation and in other ways increases the response of many tissues to stimuli by ultraviolet rays.

It would simplify the problem of light sensitivity a great deal if it could be shown that hematoporphyrin or one of the other porphyrins was the underlying cause of light sensitivity. When the evidence is looked at critically, however, one can only say that the rôle of the porphyrins in photosensitivity is still unsettled. In hydroa vacciniforme, for example, hematoporphyrin has been demonstrated in only about 25 per cent of the cases,¹⁴ and, further, there are many cases in which hematoporphyrin is present in the urine but in which no light sensitivity exists. In none of our own cases

of light sensitivity that were tested have we been able to detect hematoporphyrin. Templeton and Lunsford¹⁵ were able to produce porphyrinuria in eleven patients not sensitive to light, merely by ultraviolet irradiation, and found that porphyrinuria also occasionally occurred in patients showing a widespread dermal irritation from dermatoses not related to light. They came to the conclusion that porphyria was probably a result rather than a cause of dermal sensitization.

The whole question of the porphyrins and light sensitivity needs further research. The older observations regarding hematoporphyrinuria need to be reviewed and revised through the light of modern research on these complex chemicals. Thus it must be pointed out that hematoporphyrin as known to biochemists, that is in its strict sense, is never found in man. It is an artificial and synthetic product of the laboratory. Uroporphyrin, however, is present in large amounts in the urine of photosensitive patients and is considerably more active in producing photosensitivity than coproporphyrin, which is found in large quantities in the urine of patients with acute hematoporphyrinuria. Patients with acute or idiopathic hematoporphyrinuria and patients with toxic hematoporphyrinuria are rarely light sensitive.¹⁶

More reports are needed like those of Taussig,¹⁷ who demonstrated the presence of uroporphyrin in the port wine colored urine of one of his patients with hydroa estivale. In other words there is need in future for cases of light sensitivity, that the exact porphyrin present may be determined.

LUPUS ERYTHEMATOSUS

The irritative effect of sunlight on lupus erythematosus has long been known. In fact, sunlight not only aggravates this condition once it has appeared but in many instances seems to be the provoking or precipitating cause. In many of the reported cases, lupus erythematosus has followed a severe sunburn and in other cases the disease has been changed from that of a chronic discoid type into one with a widespread dissemination of the lesions.¹⁸

The question of a tuberculous background for this disease is still open for discussion. The only real progress, however, that has been made in recent years in the treatment of lupus erythematosus—namely, the use of gold compounds—was based on a tuberculous etiology. The observations of Gross and Volk¹⁹ indicated that following an injection of a filtrate of dead tubercle bacilli there was a decided sensitizing effect to sunlight. This may perhaps explain both the light sensitivity in lupus erythematosus and the untoward results obtained by treatment with tuberculin. In addition, Randak²⁰ has demonstrated in a case of disseminated lupus erythematosus that even the uninvolved portions of the skin were oversensitive to light.

It has been our impression that gold compounds, while a distinct advance in the treatment of this condition, are not a cure-all. We wish particularly to stress the importance of small doses of gold and sodium thiosulphate and feel that the therapeutic results

9. Lightbody, H. D., and Lewis, H. B.: The Relation of the Protein and Cystine Content of the Diet to the Growth of Hair in the White Rat, *J. Biol. Chem.* **82**: 485 (May) 1929.

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11. Cohn, E. J.: The Physical Chemistry of the Proteins, *Physiol. Rev.* **5**: 349 (July) 1925.

12. Pryde, John: Recent Advances in Biochemistry, Philadelphia, P. Blakiston's Son & Co., 1931, p. 347.

13. Meyer-Betz, Friedrich: Untersuchungen über die biologische Wirkung des Hämatoporphyrins und anderer Derivate. *Deutsches Arch. f. klin. Med.* **112**: 476 (1922). *Photosensitization*, *Am. J. Dis. Child.* **40**:

14. Mason, V. R.; Courville, Cyril, and Ziskind, E.: The Porphyrins in Human Disease, *Medicine* **12**: 355 (Dec.) 1933.

15. Templeton, H. J., and Lunsford, C. J.: Eczema Solare and Porphyrinuria, *Arch. Dermat. & Syph.* **25**: 690 (April) 1932.

16. Hausmann and Haxthausen: Die Lichterkrankungen der Haut, Berlin, Urban & Schwarzenberg, 1929.

17. Taussig, L. R.: Hypersensitivity of the Skin to Light, *California & West. Med.* **39**: 301 (Nov.) 1933.

18. Bechet, P. E.: Lupus Erythematosus Disseminatus with Extension of the Disease After Exposure to Actinic Light, *Arch. Dermat. & Syph.* **13**: 701 (May) 1926.

19. Gross and Volk: *Arch. f. Dermat. u. Syph.* **120**: 301, 1914, cited by Hausmann and Haxthausen.

20. Randak: *Zentralbl. f. Haut. u. Geschlechtskr.* **16**: 382, 1925, cited by Hausmann and Haxthausen.

obtained with smaller dosage will equal or exceed those with larger doses of this drug with less likelihood of toxic reactions. Our initial dose never exceeds 5 mg. of gold and sodium thiosulphate, and we rarely exceed from 30 to 35 mg.

Just how or why bismuth acts in this disease we do not know, but in cases resistant to gold therapy a trial of bismuth therapy is certainly indicated. We use an insoluble preparation, bismuth subsalicylate in 2 grain (0.13 Gm.) doses once a week. Sutherland-Campbell, however, recently presented two cases of chronic resistant lupus erythematosus before the Los Angeles Dermatological Society. Both of these cases had been treated for several years by gold compounds without result. This was followed by a series of bismuth salicylate injections—some twelve to sixteen in number—and these, too, were without effect. Finally an excellent therapeutic result was obtained with the use of iodo-bismutol. Certainly its employment is indicated in cases resistant to other types of therapy.

In all cases of lupus erythematosus that we have seen, the removal of foci of infection has been stressed.

REPORT OF CASE

We have recently made an interesting observation concerning the effect of diet on lupus erythematosus:

A white woman, aged 35, had had a chronic type of disseminated lupus erythematosus for about thirteen years. She presented an extensive but typical involvement of the face, the V of the neck and chest, with some eruption on the extensor surfaces of the arms. She was first started on gold therapy in September 1932 and received a total of twenty gold injections. Toward the latter part of this course, signs of intolerance began to develop and the treatment was temporarily suspended, one injection of ordinary sodium thiosulphate being given. At this time, March 6, 1933, there was considerable involvement of the forehead and cheeks. She was not seen again until Jan. 27, 1934. At this time her face was entirely free from any lesions. On inquiry the patient stated that the eruption became progressively worse after she disappeared from our observation and was as bad as it had ever been. In June 1933 she started on the diet of a well known food faddist and stated that within one week after starting this diet her face was 95 per cent well and at the end of two weeks she was entirely well, there being no sign of any eruption on her face. The diet which she had used was as follows:

7 a. m., one teaspoonful of vegetable salt in a glass of hot water.

8 a. m., one glass of orange juice and at every hour till noon some kind of fruit.

12 noon, a salad of raw vegetables and two cooked vegetables. Every hour in the afternoon a piece of fruit or fruit juice. 6 p. m., a salad of raw vegetables and two cooked vegetables. Prunes or baked apple or fruit.

A vegetable broth, which the patient could drink at any time, was prepared as follows: 3 cups of ground carrots, 3 cups of ground celery, 1 cup of ground spinach and one-half cup of ground parsley. This was ground fresh and put into 2 quarts of luke warm water and placed on a slow flame for twenty-five minutes only. This was allowed to stand for one hour and then was drained through cheese-cloth. The bulk was thrown away. To this liquid tomato juice or juices from ground vegetables were added.

Since this observation we have tried this diet on about six patients either with lupus erythematosus or with an actinic dermatitis. Several of the patients have been helped, one to the extent of perhaps 75 to 80 per cent and another to an extent of at least 50 per cent, and this within a period of two weeks' time. Two patients, one with a severe actinic dermatitis, were unchanged.

Just what this diet does in these cases we are not prepared to state. There is apparently no rationale in its use.

But if we knew the exact cause of lupus erythematosus or actinic dermatitis it is possible that we could study and use those parts of this diet which would be beneficial. Before the use of such an apparently fantastic diet is condemned, one should remember such things as the ketogenic diet in epilepsy, liver diets in pernicious anemia, the Gerson-Herrmannsdorfer-Sauerbruch diet in tuberculosis of the skin, and the fact that dietary changes may be both the cause and used as the cure of pellagra, the skin changes of which certainly belong in the realm of light sensitive dermatoses. In experimental work on arspenamine sensitivity in rabbits, Sulzberger and Mayer²¹ have given reasons to believe that diet may play a leading rôle. Whatever may be the final status of diet in the treatment of lupus erythematosus, whether it acts through changes in mineral metabolism, through vitamins or by changing the intestinal flora, the fact remains that diet may play more of a rôle than can at present be admitted. Incidentally, Urbach²² in his recent work on skin diseases and nutrition mentions several cases of lupus erythematosus in which a marked improvement or cure took



Fig. 1.—Case of chronic, disseminated lupus erythematosus. Temporary improvement after 2 weeks on diet as in figure 2.



Fig. 2.—Same patient as in figure 1. Patient apparently cured after following a modified Gerson diet, consisting essentially of fruits and vegetables and total exclusion of salt, with a vegetable salt substitute.

21. Sulzberger, M. B., and Mayer, R. L.: Sensitization—Regional, Seasonal, Dietary and Other Influences Accounting for Variations and Fluctuations. *Arch. Dermat. & Syph.* 24: 537 (Oct.) 1931.

22. Urbach, L.: Skin Diseases and Nutrition. *Schmidt's English Translation, Vienna, Wilhelm Maudrich, 1932, pp. 182-183.*

place following the use of the Gerson-Herrmannsdorfer-Sauerbruch diet.

LIGHT SENSITIVITY DUE TO DRUGS

There are a number of drugs or chemicals which, if given internally, possess the property of sensitizing the skin to sunlight. Among these drugs are arsenic, phenobarbital, hematoporphyrin, eosin, acriflavine hydro-

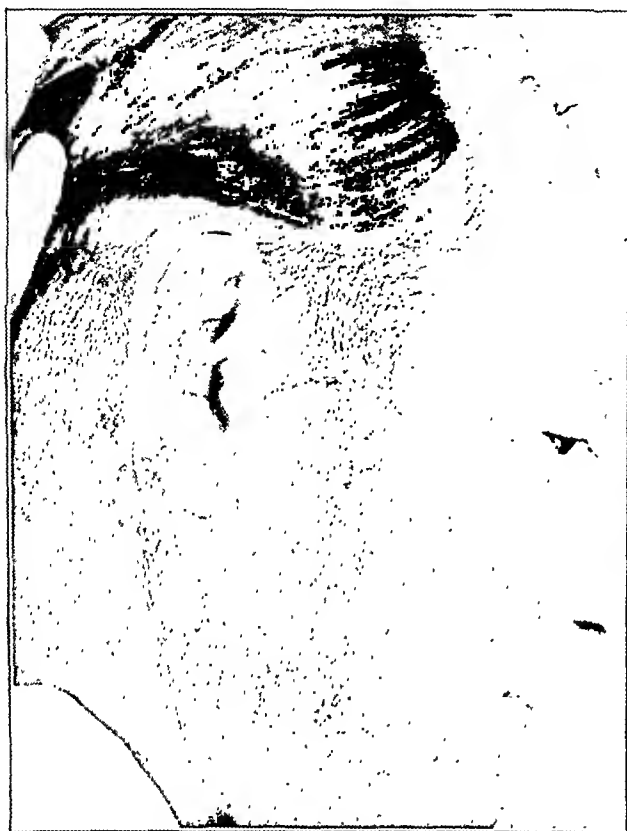


Fig. 3.—Eruption on the face variously diagnosed as an atypical lupus erythematosus or an erythema annulare centrifugum treated for over a year with gold and bismuth without any result. Same patient as in figure 4.

chloride, methylene blue, rose bengal, erythrosin and chlorophyll zeochin (from corn). Most of these substances named possess the common property of fluorescence, which property seems to bear some connection with the ability to photosensitize.²³

Haxthausen²⁴ has reported an interesting case in which a psoriatic patient was given acriflavine hydrochloride intravenously for the purpose of making therapeutic use of this sensitizing effect. Previous to the treatment the patient had been very tolerant of sunlight, but following the injection of acriflavine hydrochloride and the use of ultraviolet rays her skin developed a marked intolerance to sunlight. This was so severe as to necessitate her remaining indoors almost constantly. However, even bright sunlight was without effect if the windows were closed. Haxthausen showed that the hypersensitivity of his patient to light was not limited to the exposed areas, for example, the face and hands; by filtration experiments he proved that the sensitivity of the patient was due to the shorter ultraviolet rays; e. g., those less than 4,000 angstroms.

One must not forget that light sensitivity may be produced by the external application to the skin of drugs or chemicals. The photosensitizing action of crude coal tar is well known, which, by the way, fluoresces beautifully under a Wood's filter. The cases of Berloeq dermatitis belong to the same category.

Whether it will be possible to use the property of light sensitization which certain drugs possess is problematic. Macht and Anderson²⁵ used eosin as such a sensitizer in the treatment of pernicious anemia. They felt that its action was such as to increase the detoxifying efficiency of the ultraviolet rays.

VITILIGO

Sunlight is certainly a factor in the production of many cases of vitiligo. The frequency of its occurrence after sunburn or other exposure to the elements and the greater involvement of exposed areas point to sunlight as an etiologic factor. The normal reaction of ultraviolet irradiation on sound skin is accompanied by the development of pigmentation or tan. The pigments so formed are certainly the melanins, and possibly they are melanins which contain sulphur, although natural melanin, which is formed from the amino acid tyrosine by the action of the enzyme tyrosinase in the presence of oxygen, does not contain sulphur. It is possible, how-



Fig. 4.—Same patient as in figure 3. Result of one month's dietary treatment on a salt free fruit and vegetable diet.

ever, as Pryde points out, that true sulphur-containing melanins of natural origin may exist. But nothing is known of their possible mode of formation. Lewis,³ however, states that the sulphur content of the various melanins is well known, and he cites Brahm,³⁰ who

23. Blum, H. F.: Photosensitization, *Ann. Int. Med.* 6: 877 (Jan.) 1933.

24. Haxthausen, H.: Persistent Hypersensitivity to Light After Intravenous Injections of Trypaflavine, *Brit. J. Dermat.* 45: 16 (Jan.) 1933.

25. Macht, D. I., and Anderson, W. T.: Clinical and Experimental Studies on Phototherapy in Pernicious Anemia, *J. Pharmacol. & Exper. Therap.* 34: 365-389 (Dec.) 1928.

30. Brahm: *Arch. i. path. Anat.* 227: 137, 1920, cited by Lewis.³

found 3.42 per cent of sulphur in melanin from a tumor. Brahm suggested that the pigment might be a phenyl derivative of cysteine, (3,4-dihydroxyphenyl-cysteine).

One of our cases of actinic dermatitis occurred on the exposed areas of a Japanese man engaged in outdoor work. He had suffered from a vitiligo for some twenty years, and it had gradually involved a great deal of the body surface. Incidentally his hair had started



Fig. 5.—Same patient as in figure 6. Acute disseminated lupus erythematosus showing involvement of the exposed areas. Such an eruption often follows a severe sunburn in an apparently normal individual. However, exposure to sunlight may cause dissemination of the disease in a patient with chronic discoid lupus erythematosus.

to turn gray when he was 20 years old—certainly an uncommon occurrence in his race. About four years before he had taken up outside work and since then had been troubled with a continuous and severe eczematous process involving particularly the face and the backs of the hands. His improvement after four doses of a bismuth compounds was quite remarkable, and he also stated that he felt a great deal better physically.

What rôle arsenic may play in the production of vitiligo as advocated recently by Cannon and Karelitz³¹ and whether sodium thiosulphate acts in this disorder by favoring the elimination of arsenic or by furnishing sulphur to the body is a debatable question. We only know that in vitiligo a negative dopa reaction occurs, which means the absence of dopa-oxydase or the pigment-forming ferment. Whether arsenic interferes with the formation or action of this ferment is at present unknown. It is even possible, as Cannon suggests, that it may act by stimulating the process of pigment formation to a point of exhaustion.

31. Cannon, A. B., and Karelitz, Marie B.: Vitiligo from Arsenphenamine Dermatitis and from Arsenic of Unknown Origin: Arsenic Findings in Blood, Urine and Skin, *Arch. Dermat. & Syph.* 28: 642 (Nov.) 1933.

ACTINIC CHEILITIS

It seems worthy of note that practically all cases of actinic cheilitis that we have observed have been in persons of the dark skinned races, notably Mexicans and Japanese. Treatment with gold and sodium thiosulphate and with bismuth compounds has been of no avail. We have not determined the presence of hemato-porphyrin in this group of light sensitive cases. It seems more probable that a local tissue hypersensitivity exists, as in one case the condition was markedly ameliorated by destruction of the mucous membranes by the electrodesiccating current. It is worth while to note that in at least three instances we have seen patients with an actinic cheilitis who returned several years later with prickle cell epitheliomas of the lip.

ACTINIC DERMATITIS AND HYDROA ESTIVALE

Little has been added to the knowledge of hydroa estivale since Senear and Fink's³² review of the subject over ten years ago. There has, however, been a considerable advance made in the chemistry of the porphyrins, which was mentioned earlier in the paper. We have seen a considerable number of cases that might be classed either as actinic dermatitis or hydroa estivale. We have attempted in these cases to demonstrate the presence of photodynamic substances in the urine and



Fig. 6.—Same patient as in figure 5. Apparent cure of acute disseminated lupus erythematosus following the removal of foci of infection (tonsils), protection from overexposure to sunlight, and desensitizing injections of autogenous vaccine. The vaccine was made of organisms grown from the removed foci (teeth and tonsils).

in so doing have utilized the method recently proposed by Perutz and Lustig.³³ For this purpose two strips of sensitive photographic paper, which are of the same

32. Senear, E., and Fink, H. W.: Hydroa Vacciniiforme, seu Aestivale, *Arch. Dermat. & Syph.* 7: 145 (Feb.) 1923.

33. Perutz, A., and Lustig, B.: Simple Method for Demonstration of Photodynamic Substances in Urine, *Wien. klin. Wchnschr.* 46: 1579 (Dec. 29) 1933; abstr. *J. A. M. A.* 102: 733 (March 3) 1934.

size, are used. One strip is half immersed in the urine to be examined and the other into a normal control urine, which has the same color and specific gravity as the urine to be tested. After one minute both strips are removed and exposed to either actual sunlight or ultraviolet radiation. As soon as the nonimmersed portion of the paper has turned brown the light exposure is stopped and the colors of the papers are compared. They found that urine from photosensitive patients always produced a darker coloration. Our results unfortunately were not confirmatory of their observations, as we found the light reaction suggestive in only one case.

We have also attempted, in all cases in which light seemed to play a rôle, to demonstrate the presence of fluorescent substances in the urine of such individuals by means of examining the urine under a Wood's filter.

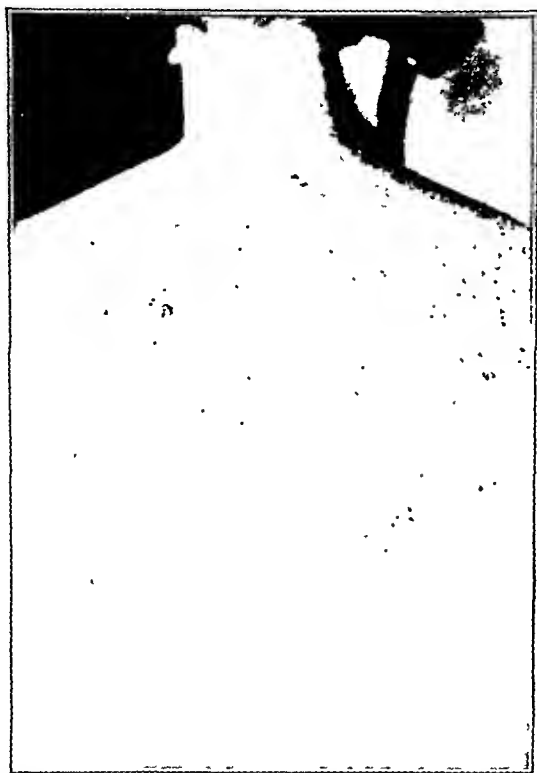


Fig. 7.—Lichen planus. An unusual example of an acute lichen planus precipitated by exposure to the sun. Areas covered by the bathing suit were free of eruption at first; lesions were present on the buccal mucosa.

This procedure was suggested by the work of Jausion and his collaborators,³⁴ who reported a case of solar eczema in a man, aged 51. They were not able to demonstrate hematoporphyrin in his urine but stated that the patient's urine was more fluorescent under a Wood's filter than the urine of three normal individuals. In such an examination of the urine from at least a dozen light-sensitive individuals we were not able to confirm this finding.

Jausion also has made an interesting suggestion regarding the use of auto-urine therapy in such cases. He injected intramuscularly a small amount of freshly passed urine to which had been added an antiseptic such as phenol or ether. This was done on the basis that the urine contained an antigenic substance which acted

to sensitize the patient to light, and the auto-urine injections were given to decrease or abolish this sensitivity. We have not been able as yet to try this procedure, although Jausion has reported excellent results in several cases.

Uhrbach³⁵ has suggested the use of a liver diet in cases of actinic dermatitis and cites several instances in which good results were obtained in such cases, the purpose of the diet being to protect liver function.

PELLAGRA

In the production of the skin lesions of pellagra, light certainly plays a very important rôle. This has been recognized almost as long as the disease itself and was beautifully shown by the experiments of Ormsby, who demonstrated conclusively that if patients in the early stage wore fenestrated gloves, the dermatitis appeared only in the areas of skin directly beneath the windows cut in the gloves. That light itself, however, is not the sole cause of these lesions is evident from the fact that involvement of unexposed areas, particularly the perineum and genitals, occurs. Smith, however, has explained involvement of these normally pigmented areas on a phylogenetic basis.

It is interesting in this connection to mention the disease of fagopyrism,³⁵ which occurs only in white or lightly pigmented sheep, hogs or cattle. Its cause has been shown to be a chemical compound, flurophile, which is present in the buckwheat eaten by these animals. The disease presents erythema, edema, vesiculation and at times necrosis. But this condition manifests itself only after such animals are brought out into the sunlight in the spring. In spotted animals the condition occurs only in the nonpigmented regions of the skin. Thus it is seen that two factors are necessary for its production: (1) exposure to sunlight (external) and (2) eating of buckwheat (internal).

Since sunlight must be a factor in the production of pellagra, the idea that disturbed sulphur metabolism also plays a rôle is probable. It is only necessary to recall what was mentioned before; namely, the protective action of cystine against ultraviolet radiation.

Hematoporphyrin is not present in the blood serum of pellagrous patients,³⁶ nor has any one ever shown the actual presence of a photosensitizing substance in pellagrous patients. Jobling and Arnold,³⁷ however, recorded experiments tending to show that pellagra might be the result of the absorption from the intestinal tract of photodynamic substances produced by certain fungi when the diet consists largely of carbohydrates. Modern biochemical research, however, apparently places the light sensitivity of pellagra as being due not to the presence of some photosensitizing chemical but to the absence or disturbed metabolism of some light protecting mechanism.

The fact that yeast is curative in pellagra may take on a new significance when it is recalled that Koch and Sugata³⁸ showed that cystine actually stimulated the growth of vitamin B containing yeast.

The common occurrence of either a hypo-acidity or an achlorhydria (from 80 to 90 per cent) with an absence of pepsin has long been noted in the pellagrous

34. Jausion, H.; Carrot, E., and Gibert, A.: Un cas d'eczéma solaire spontané; Sa brusque généralisation après application de pommade. Su guérison par l'auto-urine-thérapie, *Bull. Soc. franç. de dermat. et syph.* 38:9 (Jan.) 1931.

35. Gans, Oscar: Proc. Staff Meet., Mayo Clin. 2:198 (Aug. 31) 1927. Smith, H. L.: Buckwheat Poisoning, *Arch. Int. Med.* 3:350 (May) 1909.

36. Scott, L. C.; Turner, R. H., and Mayerson, H. S.: Spectrographic Examination of Pellagrin's Sera, *Proc. Soc. Exper. Biol. & Med.* 27:27 (Oct.) 1929.

37. Jobling, J. W., and Arnold, Lloyd: Observations and Reflections on the Etiology of Pellagra, *J. A. M. A.* 80:365 (Feb. 10) 1923.

38. Koch, F. C., and Sugata, H.: Sulphur Metabolism in Yeast, *Proc. Soc. Exper. Biol. & Med.* 23:764 (May) 1926.

patient. Their occurrence, however, assumes more importance when the biochemist explains that pepsin is required to produce the change in the protein molecule whereby a positive nitroprusside reaction occurs. This reaction occurs only in the presence of the SH or sulphhydryl group. All in all, as Smith says, "the evidence is suggestive that a lack of cystine may have a specific relation to the etiology of pellagra."

Recent clinical work, notably that of Sabry,³⁹ gives additional evidence of disturbed sulphur metabolism in pellagra. He found that injections of sodium thio-sulphate caused a checking of the skin lesions in early cases of pellagra and a prompt disappearance of the dermal lesions in the late or advanced cases. Other symptoms too were cleared up. Sabry felt that the symptoms of pellagra were due to a poison belonging to the chemical group of dioxyphenylalanine, which is of course closely related to tyrosine, one of the normally occurring amino acids of the body. He felt that this pellagra toxin, the "dopa" of the late lamented Bruno Bloch, came from beans. Perhaps dear old grandmother was not so far wrong on insisting "that we take our regular spring dose of sulphur and molasses."

There is yet another angle, however, to the question and that is the finding of Boggs and Padget,⁴⁰ Ramsdell and Magness⁴¹ and others that liver and liver extract are curative in pellagra. This curative action of liver preparations is probably related to their high content of vitamin B complex. What relationship liver extract or desiccated hog's stomach, which is also curative in pellagra, bears to sulphur and to cystine must await the researches of the biochemist.

Among the miscellaneous conditions in which we felt that sunlight was a factor in causation were two cases of lichen planus (fig. 7) and a case of multiple streptococcic furuncles which appeared rather rapidly after exposure to the sun and were sharply limited to the sunburned area.

SUMMARY

Evidence has been presented to show that disturbed sulphur metabolism plays a rôle in the production of light sensitivity and further that the exact status of the porphyrins in light sensitivity is as yet undetermined. The high incidence of lupus erythematosus following severe sunburn is recognized and certain cases will respond to dietary measures when all other known remedies have failed. Certain drugs, foods such as buckwheat, focal infections or physical allergy may at times be light sensitizing agents. Whether disturbed sulphur metabolism bears any relationship to vitiligo is yet to be discovered. What part faulty liver metabolism plays in the causation of actinic dermatoses and of pellagra is not known. It appears that liver therapy is of definite value in both conditions.

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39. Sabry, Ibrahim: On the Chemical Nature of the "Pellagra Toxin" and the Discovery of the Sodium Thiosulphate Treatment of Pellagra, *J. Trop. Med. & Hyg.* 34: 303 (Sept. 15) 1931, 35: 164 (June 1) 1932; Note on Pellagra, *ibid.* 34: 391 (Dec. 1) 1931.

40. Boggs, T. R., and Padget, Paul: Pellagra: Analysis of 102 Cases, *Bull. Johns Hopkins Hosp.* 50: 21-32 (Jan.) 1932.

41. Ramsdell, R. L., and Magness, W. H.: Parenteral Liver Therapy in the Treatment of Pellagra, *Am. J. M. Sc.* 185: 568 (April) 1933.

Sources of Vitamin A.—The chief sources of vitamin A are the livers of certain fish and mammals, dairy produce from well fed animals, eggs and animal fats. Carotene is found in yellow root vegetables, green leaves and many colored fruits and seeds. Vitamin A concentrates are made chiefly from the liver oils of fish and mammals, the liver oil of the halibut being one of the richest sources known.—Colwell, S. J.: Vitamins in Clinical Medicine, *Practitioner* 132:15 (Jan.) 1934.

RAGWEED DERMATITIS

A REPORT BASED ON EIGHTEEN CASES

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Sensitivity to the ragweeds (Ambrosiaceae) is generally regarded in terms of the well known hay fever and asthma, which occur so commonly in the United States during the season of pollination in the late summer and autumn months. Occasional cases have been reported, however, of a recurring, eczematous eruption in this same season, in the form of dermatitis venenata affecting chiefly the exposed surfaces of the body, due to an acquired sensitivity of the epidermal cells to the irritating oil of the plant as distinguished from the manifestations of allergic reaction to ragweed protein.

In this agricultural belt of the Midwest, it has been our experience to encounter rather frequently this form of dermatitis, related to season and environment, particularly among farmers and others whose residence, occupation or other contacts bring them extensively into rural districts where ragweed is abundant. A growing interest in problems of sensitivity and a more generous application of the patch method of diagnosis enabled us, during the season of 1933, to identify and study eighteen cases of dermatitis due to ragweed; the cases form the basis of this report.

LITERATURE

The first systematic reports of dermatitis caused by ragweed were those of Hannah¹ in 1918 and of Sutton² in 1919. Others³ have commented on the frequency of a similar summer eruption associated with contact to weeds and dust in general and ragweed in particular.

The value of the patch method of testing these eczematous eruptions was brought out by Sulzberger and Wise,⁴ who in 1930 reported the case of a man, aged 40; in his case tests by the usual scratch technic gave negative results, but after application of the pollen to the skin for twenty-four hours under a patch there was a positive eczematous eruption.

Milford,⁵ and Brown, Milford and Coca⁶ subjected plants of ragweed to extraction in Soxhlet's apparatus by means of petroleum ether and anhydrous ethyl alcohol and found that the oily fraction so removed

From the Section on Dermatology and Syphilology, the Mayo Clinic.
Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Hannah, Louis: Ragweed Dermatitis: A New Treatment, with Preliminary Report of a Case, *J. A. M. A.* 72: 853-854 (March 22) 1919.

2. Sutton, R. L.: Ragweed Dermatitis, *J. A. M. A.* 73: 1433-1435 (Nov. 8) 1919.

3. Bengtsson, Otelia: Ragweed Dermatitis, *J. Allergy* 1: 457 (May) 1930. Gay, L. N., and Ketron, L. W.: A Case of Ragweed Dermatitis Recurring Over a Period of Thirteen Years, *ibid.* 3: 478-484 (July) 1932. Klauder, J. V.: Clinical Aspects of Allergy in Dermatology, *Arch. Dermat. & Syph.* 19: 198-217 (Feb.) 1929. Ramirez, M. A., and Eller, J. J.: The "Patch" Test in "Contact Dermatitis" (Dermatitis Venenata), *J. Allergy* 1: 489-495 (Sept.) 1930; Intradermal, Scratch, Indirect and Contact Tests in Dermatology, *J. A. M. A.* 95: 1080-1083 (Oct. 11) 1930. Stroud, C. M.: Personal communication to the authors. Sutton, R. L., and Sutton, R. L., Jr.: An Introduction to Dermatology, ed. 2, St. Louis, C. V. Mosby Company, 1933, p. 147.

4. Sulzberger, M. B., and Wise, Fred: Ragweed Dermatitis, with Sensitization and Desensitization Phenomena, *J. A. M. A.* 94: 93-95 (Jan. 11) 1930.

5. Milford, E. L.: Studies in Allergy: I. The Specific Activity of Pollen Oil, *J. Allergy* 1: 331-333 (May) 1930.

6. Brown, Aaron; Milford, E. L., and Coca, A. F.: Studies in Contact Dermatitis: I. The Nature and Etiology of Pollen Dermatitis, *J. Allergy* 2: 301-309 (July) 1931.

was capable of provoking a positive patch reaction in a case of ragweed dermatitis and was to be distinguished from the atopic excitant or protein fraction that remained in the plant. On the basis of these observations it was recommended that measures of desensitization toward contact dermatitis to ragweed be carried out by means of the oily fraction of the plant. Pascher and Sulzberger⁷ mentioned a case in which treatment was carried out by this method; the patient was given intracutaneous injections of diluted oil of ragweed, which provoked a flare up at sites where positive patch reactions had been obtained five months previously.

There are few reports of sensitivity to burweed marsh elder⁸ (*Iva xanthifolia*), although the plant is a species of ragweed, is widely distributed in the middle

had several attacks of dermatitis, the onset can usually be dated to a definite week in July or August, which in itself is an important clue to the nature of the irritating agent. Symptoms are well under way by August, reach their maximum in September, and subside gradually within a few weeks after the first frost, which agrees fairly well with the season of pollination of the ragweeds. Periodic flare ups may occur after intimate contact with the plants themselves, after hunting trips, after weeding in the garden or fields, or after handling hay or grain that has become contaminated with the irritant. Five of our eighteen cases will be abstracted here:

ABSTRACT OF CASES

CASE 1.—A man, aged 49, a resident of northern Minnesota, an iron ore miner, farmed a small plot of ground at the edge of town. Each year, from 1928 to 1933, dermatitis of the exposed surfaces of the face, neck and forearms had developed, which had begun regularly in July and had subsided some time in October. The symptoms had been aggravated on windy days during this period, and in particular after he had worked on the farm plot.

CASE 4.—A man, aged 74, a farmer and dealer in farm machinery in a small town in Michigan, first had noted dermatitis of the face, neck and arms in July 1930, which later had spread to the trunk and legs and had persisted almost continuously until he came to the clinic in July 1933. During January 1932 the skin had become clear while he was confined to bed with influenza; on another occasion the condition had cleared after a visit to Ohio.

CASE 10.—A man, aged 56, a railroad section hand in Missouri, reported the occurrence of attacks of dermatitis during the autumn of 1932 and of 1933. Although the symptoms had improved in the interval, he had nevertheless been subjected to episodes of pruritus after days of work along the road bed. There had been a brief attack of dermatitis in the autumn of 1926. During the summer of 1933 symptoms were unusually severe, and the dermatitis had extended from the face and hands to involve the entire surface of the body, with considerable lichenification (fig. 1).

CASE 14.—A man, aged 28, a photographer in a small city in Minnesota, had dermatitis of the exposed surfaces of the face, about the eyes, for the first time in July 1933. The condition had persisted, with periodic flare ups and remissions, until October (fig. 2). In the spring of the same year he had taken up his residence in the outlying suburbs, where there was a luxuriant growth of ragweed in the adjacent fields. On one occasion, after symptoms had appeared, there had been a severe exacerbation, with edema of the eyelids, and dermatitis with intense pruritus of the face and neck, which had occurred within twelve hours of a long drive through the country. Shortly before, he had coated his face with a bland ointment, which apparently served to catch the irritating pollen dust in a most concentrated form. That the ointment itself was not the irritant was proved by subsequent tests. There was a definite familial strain of allergy in the form of hay fever and urticaria, and the patient himself had had hay fever caused by ragweed annually since 1929. He had received injections of ragweed protein for purposes of desensitization during 1930, 1931 and 1932, with benefit as regards the hay fever.

CASE 18.—A woman, aged 65, residing in a large city in Michigan, first seen in the autumn of 1933, during each autumn from 1914 to 1923 and again from 1931 to 1933 had suffered from dermatitis of the exposed surfaces, which had begun during the latter part of July and had lasted until October or November. Patch tests were positive to the ragweeds and to pyrethrum. Of interest was the relationship of the attacks to change of residence. During the first period, 1914 to 1923, she had lived adjacent to a baseball park that was overrun with weeds. She then had moved to a larger city thirty miles away and had been free from trouble until 1931, when she had moved from the settled districts of the city to a home in the suburbs, where there were many weeds nearby.

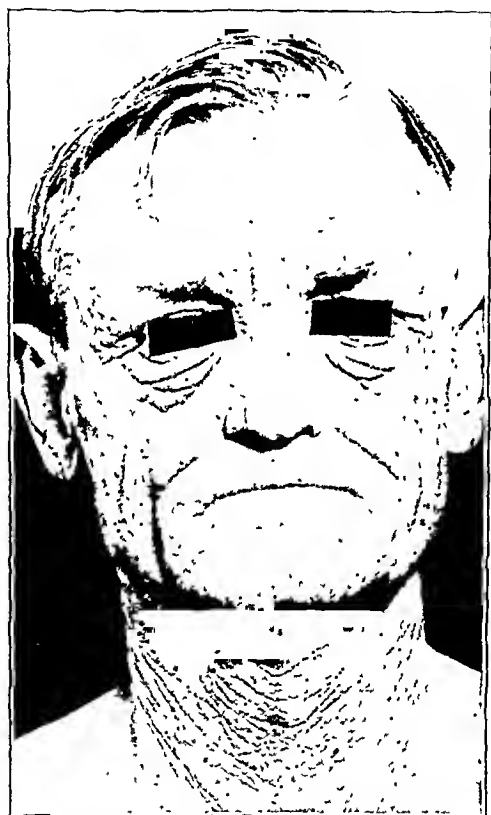


Fig. 1 (case 10).—Ragweed dermatitis, late stage, with lichenification of the skin.

Western and Southern states and, according to Durham,⁹ is a likely source of irritation.

CLINICAL COURSE AND SYMPTOMS

The clinical course of dermatitis due to sensitivity to weeds of this type is almost sufficiently clear cut to be pathognomonic. One of the most striking features is the tendency to seasonal recurrence each year. The reaction of the sensitized person depends in each case on the degree of sensitivity and the amount of exposure to the irritant. In the northern states of the Middle West there is sufficient dust in the wind in early summer to cause symptoms of pruritus among persons who are particularly responsive; however, if most of those have

7. Pascher, Frances, and Sulzberger, M. B.: Ragweed Dermatitis. Report of Two Cases. *Arch. Dermat. & Syph.* 28: 223-227 (Aug.) 1933

8. Cunningham, T. D., in discussion on Gay and Kelson.² *J. Allergy* 3: 525 (July) 1932. Huber, H. L., and Harsh, G. F.: A Summer Dermatitis Caused by a Common Weed, *ibid.* 3: 578-582 (Sept.) 1932

9. Durham, O. C.: Personal communication to the authors.

Most farmers are exposed to the dust of ragweed the year round, through contact with clothes on which the dust has settled, or in the handling of hay or grain in the barns. If the involvement at first has been strictly seasonal, the condition may lapse irregularly through the winter months. It is probable also that in the more



Fig. 2 (case 14).—Ragweed dermatitis, early stage. The involvement of the eyelids is especially noteworthy.

extensive and resistant cases the reactivity of the skin, at first limited to the ragweeds, may become extended over a wider range of irritants, including pyrethrum,¹⁰ turpentine and other vegetable oils.

The earliest signs of dermatitis of this type are redness and edema of the tender skin of the eyelids and neck, with considerable pruritus. The exposed surfaces are chiefly affected, the face, the neck above the collar line, the hands, forearms and ankles. In most instances the dermatitis persists in the subacute stage, with erythema and superficial desquamation, and a minimum of vesiculation. The irritant may be spread to other parts of the body by the hands or clothing, or by the injudicious application of greases, during the early stage of contact. With continued exposure, the eczematous manifestations become more chronic, with lichenification and fissuring. In some cases only the eyelids are involved; in others, the eruption may be universal.

Evidently, sensitivity to ragweed is acquired only after long contact with the irritant, which is shown by the fact that of the cases reported elsewhere, as well as of those in this series, all patients were adults. The

youngest patient was 28 years of age, the oldest 74. The average age of those in this series at the time of the onset of symptoms was 42 years, and in the average of the group there was a history of recurrent attacks for almost six years (fig. 3).

The condition would naturally be expected to appear among persons who have extensive rural contacts, but it is not limited to farmers. However, there was only one woman in the 1933 seasonal group of eighteen cases observed. In none of the cases had the exact nature of the irritant been ascertained previously, although in general it was naturally suspected to be related to the dusts of the environment.

REACTIONS TO PATCH TESTS WITH RAGWEED

Although it has been demonstrated that the irritant in ragweed exists in the oil or oleoresin, which is most abundant in the leaves, there is certainly a sufficient amount of the irritant in the pollen to produce a reaction in the sensitized skin. In most instances of ragweed dermatitis the symptoms coincide with the season of dissemination of the pollen by the wind; they are aggravated by a dust storm and relieved after rain. On two occasions we subjected samples of ragweed pollen to a process of extraction with alcohol and ether in a Soxhlet apparatus for more than a week without being able to wash out all the irritant. When ripe, unwashed pollen is applied to the skin, a positive vesicular reaction is obtained in cases of the sort considered

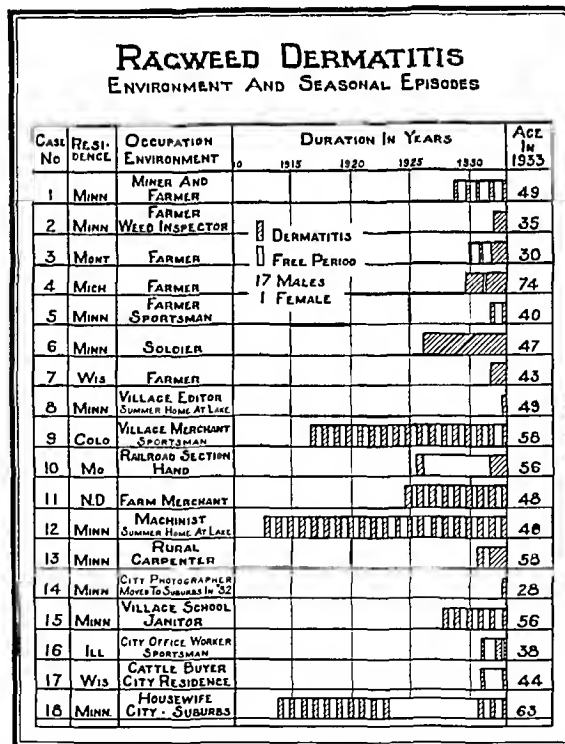


Fig. 3.—Place and season. Reproduction of wall chart.

here, which compares favorably with that provoked by the leaf or stalk of the plant. Pollens in this form are less expensive than the prepared commercial oils and are conveniently available at all seasons for patch testing.

When contact sensitivity of this type is suspected, the patient is tested by the patch method for sensitivity to

10. Feinberg, S. M.: Pyrethrum Sensitization: Its Importance and Relation to Pollen Allergy, *J. A. M. A.* 102:1557-1558 (May 12) 1934. McCord, C. P.; Kulker, C. H., and Minster, Dorothy K.: Pyrethrum Dermatitis: A Record of the Occurrence of Occupational Dermatoses Among Workers in the Pyrethrum Industry, *ibid.* 77:448-449 (Aug. 6) 1921. Ramirez, M. A.: Pyrethrum: Etiologic Factor in Vasomotor Rhinitis and Asthma, *J. Allergy* 1:149-155 (Jan.) 1930.

the more common weeds and cultivated plants in harmony with the environment, as well as to such miscellaneous irritants of unlimited number as may pertain to the problems of the particular case in hand. In the case of the weeds, a small amount of the pollen is placed on a square of cloth that has been slightly moistened with olive oil and applied to a clear site on the skin, fixed with adhesive tape or bland cement for approximately twenty-four to forty-eight hours. A positive reaction is manifested by pruritus and the appearance of varying degrees of eczematoid change at the site in the form of erythema, edema or vesiculation (fig. 4). In very sensitive persons the patch should be removed and the site cleansed with alcohol at the first sign of irritation in order to avoid an uncomfortable reaction and a possible systemic flare up at all the sites of dermatitis, which sometimes occur.

Because of the wide distribution in the United States of the various species of ragweed, our tests on these patients included samples of several common species in each case in order that we might determine evidence of specificity of reaction to the genera as a whole or to

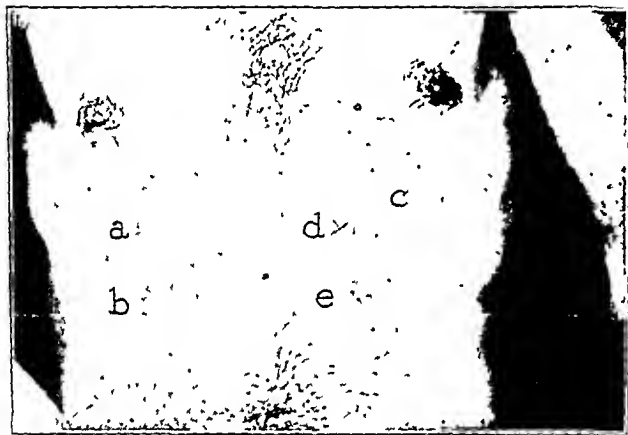


Fig. 4 (case 3)—Patch reactions in a case of ragweed dermatitis: a, positive reaction with Western ragweed pollen; b, Positive reaction with burweed marsh elder pollen, c, positive reaction with short ragweed pollen, d, negative reaction with turpentine, e, negative reaction with pyrethrum.

any single species or variety. The following specific weeds and miscellaneous irritants were used in sufficient number to indicate the trend and range of sensitivity: short ragweed (*Ambrosia elatior*), giant ragweed (*Ambrosia trifida*), western ragweed (*Ambrosia psilostachya*), burweed marsh elder (*Iva xanthifolia*), cocklebur (*Xanthium canadense*), pyrethrum (used extensively as an insecticide), turpentine, potassium arsenite (1 per cent solution), quinine sulphate (1 per cent solution) and corrosive mercuric chloride (0.1 per cent solution). The reactions to the patch test were graded in severity from — to ++++ and are recorded for the eighteen cases in this series in figure 5.

Inspection of figure 5 reveals the fact that almost all the positive reactions occurred within the range of the samples of ragweeds, particularly to tests with burweed and with two of the three varieties of *Ambrosia*, short and western ragweed. Cocklebur gave a decided reaction in only two instances and giant ragweed in only one case. Except for these two there is definite evidence of species specificity in the list of positive reactions. Our data in regard to other species are incomplete; in future testing it might be well to include other members

of the family of Compositae, such as the sages and heleniums,¹¹ which are also recognized as irritating weeds.

In four cases sensitivity was demonstrated to a single species or variety of ragweed (cases 1, 7, 8 and 16). In the other cases the reactions were polyvalent. The response to applications of samples of pyrethrum and turpentine is of interest (cases 4, 13, 17 and 18). In these cases the symptoms of dermatitis might well be expected to extend beyond the season of ragweeds, provided there was sufficient contact with paint or with insecticides, such as fly sprays or insect powders, which are now in common use and which contain pyrethrum.

The report in figure 5 on the reactions to giant ragweed is not in harmony with our expectations. It is likely that this particular variety is less irritating than the others, for it is not rare by any means and the samples that were used for testing a number of the patients included not only pollen from varied sources but also the leaf of the plant and the extracted oil. Detailed tests were made on one patient (patient 14) and on another patient sensitive to ragweed whose case is not included in this report; multiple samples of ragweeds from varied sources were used to demonstrate that the sensitivity in some cases may be restricted to certain varieties of the same species of ragweed, which will be reported subsequently.

In these cases, definitely positive reactions were not obtained to tests made with solutions of the metallic salts of mercury and arsenic. More data are needed in this regard before it can be said that a specific sensitivity exists in the skin to vegetable oils on the one hand and to metallic salts on the other.

Brown, Milford and Coca stated that, in general, 15 per cent of the average run of persons, whether normal, atopic or those with other forms of contact dermatitis, will give positive reactions to patch tests of oil of ragweed. At present we are attempting to confirm these interesting observations.

RELATION OF RAGWEED DERMATITIS TO ATOPY

Contact dermatitis to oil of ragweed is to be distinguished from the state that exists in hay fever and asthma when there is an urticarial response, on skin tests, to the protein fraction of ragweed. The latter condition reveals a familial strain and the presence of specific atopic reagins in the circulating blood, which can be demonstrated by passive transfer and which has not been satisfactorily demonstrated in contact sensitivity.

Scratch or intracutaneous tests with water-soluble protein allergens of ragweed were made in thirteen cases, and in only two was there a positive urticarial flare (cases 14 and 16). Atopic reagins to ragweed were demonstrated in both these cases; in one there was evidence of hay fever and an allergic familial strain; in the other, tests by the direct method and by passive transfer were likewise positive for ragweed and for orris root, without clinical history or familial record of the usual allergic manifestations, representing an example of incipient or undeveloped atopic capacity. This coincidence has been recorded on three other occasions.¹² One other patient (patient 6) is worthy of

11 Balyeat, R. M., Rinkel, H. J. and Stemen, T. R. Contact Dermatitis (Venenata) Distribution and Importance of the Heleniums as a Cause of Contact Dermatitis in the United States, *Am. J. M. Sc.* 184: 547-555 (Oct.) 1932

12 Hannan¹, Ramirez and Eller², Sulzberger and Wise⁴

mention in this regard. There was clinical evidence of vasomotor rhinitis and disseminated neurodermite with positive tests to foods by direct and indirect methods, but no reaction to ragweed protein, although there was superimposed dermatitis venenata during the ragweed season, with positive patch reactions, as recorded in figure 3.

In two instances of contact sensitivity to ragweed (cases 10 and 17), tests to ragweed protein were negative by direct application and by passive transfer, which is consistent with contact dermatitis in general. In a few persons who were tested by the scratch method to ragweed pollen, we observed dermatitis at the site of the tests about three or four days later, although there were no urticarial reactions immediately, which we interpreted as contact reaction to the oil in the pollen, which had been insufficiently cleansed from the skin after the tests. From a summary of these data, we are agreed that there is no more than a casual relationship between contact sensitivity and the atopic state.

TREATMENT

Symptomatic measures of treatment of ragweed dermatitis are similar to those recommended for dermatitis venenata in general. During the acute stages, the use of ointments and oily lotions is contraindicated, because they place the irritant in solution and favor its spread to unaffected surfaces. Wet dressings of astringents, such as lead acetate or aluminum subacetate, suitably diluted, are attended by considerable relief of symptoms. Soothing baths and drying lotions are likewise of benefit. During the process of involution there will be improvement under bland ointments, and sometimes fractional doses of roentgen rays may be given for relief of pruritus, but only under expert supervision.

An ideal method of escape is possible for those who are able to make a change of environment, which is admirably illustrated by the experience of one patient in this series (patient 18), who suffered dermatitis only when near weed-infested districts. Obviously, for the most part, such is not practical for the farmers who comprise the greater proportion of those who are sensitive.

In the earlier reported cases of ragweed dermatitis, treatment toward desensitization by means of injections of the protein-containing allergen was recommended with a favorable percentage of protection being conferred thereby. Others were not so fortunate, in particular a patient of Stroud and one in this series (case 14); in the latter case, dermatitis first developed after three years of such desensitization.

Brown, Milford and Coca, after pointing out that the contact irritant of ragweed was an oil, recommended that such specific oil be used by injection for purposes of desensitization. Favorable results have been reported¹³ by means of this method after other procedures had failed. Published reports are few, except in cases of sensitivity to Rhus, in which some observers obtained a decided elevation of the level of tolerance to the irritant, although the skin still responded with eczematous reaction to application of the specific irritant by the patch test. There is need for further controlled experiment in this field.

Our experience with the injection of specific oils of ragweed for purposes of desensitization is limited to

observations in eight cases in this series (cases 2, 4, 9, 10, 12, 13, 15 and 17), in which from three to six injections were given at intervals of from several days to several weeks during the time the dermatitis was in evidence. Injections consisted of 0.5 cc. of 1 per cent oil of mixed ragweed (short and giant) in sterile almond oil (Lederle) intramuscularly. In one case (case 10), oil of burweed was used. During the course of the treatment there was relief of symptoms in one case for twenty-four hours after each injection of the oil intramuscularly; in two others there was an associated flare up in the sites of dermatitis, and in the previous patch reactions, with increase in pruritus for a day after each injection.⁷ Two patients (10 and 17) expressed the opinion that the treatment by injection had served materially to shorten the present seasonal episode and to elevate to some extent the tolerance of the skin to previously forbidden contacts.

Observations of this type are difficult to evaluate, because it is the natural tendency of the hopeful patient to expect improvement, although at the same time he

RAGWEED DERMATITIS SUMMARY OF PATCH REACTIONS																
Case No.	Ragweed Family	RAGWEED FAMILY														
		Short	Giant	Witch	Devil	Common	Russet	Green	Turpentine	Pyrethrum	Paraffin	Castor	Almond	Linseed	Walnut	Other
1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
7	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
8	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
9	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
13	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
14	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
15	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
16	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
17	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
18	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Fig. 5.—Patch reactions. Reproduction of wall chart.

unconsciously exerts a change in his environment by avoiding those contacts the irritating qualities of which have been pointed out to him.

The solution of oils to be used for desensitization should contain the various particular irritants to which the patient has been found sensitive. A comprehensive series of patch tests should be employed preliminary to treatment and at varying intervals afterward, in order to detect, if possible, any change in the degree of response of the reactive skin. The most practical manifestation of benefit from desensitization, however, rests with those who, having had repeated seasonal episodes of dermatitis, are enabled to carry on in the same occupation and environment with comparative freedom.

During the spring of 1934, the patients of this series who have been willing to cooperate have been started on further treatment preseasonally, and their reactions at the time of the expected return of symptoms with the ragweed season will be observed with interest.

COMMENT

Ragweed dermatitis is more common than is generally supposed. In cases of recurrent eruption in the summer, patch tests should include samples of the several ragweeds, as well as pyrethrum and turpentine. Further

13. Pascher and Sulzberger.⁷ Stroud.³

investigative work is necessary in experimental and clinical fields to determine the exact nature of the irritant, the factors concerned with the development of sensitivity, and the mechanism of desensitization

ABSTRACT OF DISCUSSION

ON PAPERS OF DR COCA, DR WHITE, DRs N. P. ANDERSON AND AYRES, AND DRs BRUNSTING AND C. R. ANDERSON

DR MARION B. SULZBERGER, New York. The differentiation between atopic and contact dermatitis seems to be of far more than theoretical importance. Consider the following four points: 1. The difference in the test technique that must be employed. In contact dermatitis, the contact or patch test, in atopic dermatitis, scratch or intracutaneous tests. 2. The difference in the causative agents. In contact dermatitis, simple chemicals such as solution of formaldehyde, mercury and nickel salts, local anesthetics, dyes and plant oils, such as ragweed oil, primrose and chrysanthemum oils, and the fungi—I think the eczematogenous fungi of the monilia trichophyton group must be included in this series of irritants. In atopic dermatitis on the other hand, the so-called protein antigens, those which are the usual causes of other atopic diseases, are usually the causative factors. 3. The difference in the type of treatment in these two groups. In contact dermatitis, simple antipruritic measures, provided contact can be avoided, are usually sufficient. In atopic dermatitis perhaps because the avoidance of the excitants is more difficult, systemic measures have to be employed such as sedatives and more attention in general must be paid to the systemic treatment of the atopic dermatitis from the endocrinologic, the vasomotor and the psychic points of view. Needless to say, local and topical remedies, including x-rays, maintain their importance in the treatment of atopic dermatitis. Elimination diets combined with the removal of suspect inhalant substances and of foci of bacterial and/or mycotic infection should bring relief in many heretofore intractable cases of atopic dermatoses. Unfortunately, this procedure is in most cases practically impossible. I am not quite as pessimistic as Dr. Coca about the possible success of desensitization treatment with protein extracts in these cases though I admit that the desensitization is certainly much more difficult than either in the plant-oil group or even in the case of dermatomycoses, which in some selected cases certainly are markedly benefited by the combined injection of fungus extracts as Dr. Coca has stated. 4. The fourth difference is one that cannot be considered proved but must be considered only as a hypothetical possibility as yet. It is recognized that in contact dermatitis the epidermis is the shock tissue and the site of primary reaction. On the other hand, it appears probable that in atopic dermatoses the uppermost vascular layers of the cutis are the shock tissue. In other words, not the ectodermal but the mesodermal part of the skin is the "shock organ," and the epidermis becomes only secondarily affected, owing to repeated subclinical reactions in the upper cutis. This would seem to explain to some degree why atopic dermatitis is associated with vascular sensitivity of other organs as in hay fever and asthma, and the presence of urticarial skin test reactions and of reagins. It is amazing that one has such marked success with desensitization of a contact dermatitis in the case of the employment of the vegetable oils. All know how well nigh impossible it has been to desensitize cases of contact dermatitis due to substances other than plant oils. In view of these sharply contrasting results I believe it would be well to attempt desensitization with other substances with a method paralleling as closely as possible that employed in the cases of dermatitis due to plant oils.

DR JEFFREY C. MICHAEL, Houston, Texas. Dr. N. P. Anderson and Dr. Ayres have done valuable work in correlating and evaluating the knowledge on photosensitization and on photosensitive dermatoses. They have divided their paper into a consideration of the physical and biophysical properties of light and of photosensitization and then into a clinical discussion of the subject. As to the biochemistry and biophysics of light that pertain to cutaneous medicine probably every one

realizes that present knowledge is quite elementary and that it cannot be applied to clinical phenomena with entire satisfaction. The authors especially discussed the question of sulphur metabolism as it relates to light sensitivity and of hematomorphyrin. Of course there are many other substances that have photosensitive properties, among them two important circulating metabolites, sugar and urea. Sugar, I think, is quite an important photosensitizer, at least it has been suggested that the frequency of cataract in diabetes is due to the photosensitive properties of the sugar. I will discuss lupus erythematosus and pellagra together. I have seen cases of lupus erythematosus that have followed severe sunburn. The cases that I have seen are few, and all of them have occurred de novo. I am not so certain, however, that this is true photosensitivity. I do not think that such a precipitation necessarily indicates a true sensitivity. It may indicate a sort of biotropic effect. For example, cases of lichen planus as well as cases of psoriasis in which irradiation is done during the stage of progression of the disease will sometimes present lichen planus or psoriasis in the areas that have been subjected to x-rays just as in the case of Anderson and Ayres in which lichen planus had been treated with light. This is what probably occurs in these cases of lupus erythematosus and also in pellagra, in other words they are in a stage of the disease in which some further insult, in this case light, causes a precipitation of the disease at certain exposed points. If it should be conceded that this is true photosensitivity, it would be necessary to show that in these cases the skin is more fluorescent than it formerly had been and so far as I know such a condition has not been demonstrated. On the other hand, hydroa estivale and urticaria and eczema solare seem to be more specifically light sensitive cases. So far as urticaria is concerned, Wucherpfennig thought it well to divide cases of light sensitive urticarias or light allergic urticarias into two types, urticaria solaris meaning that they are precipitated by visible light and those which he calls urticaria photogenica, which are produced by invisible light.

DR JAMES R. DRIVER, Cleveland. Dr. Coca has actually thrown the challenge to dermatologists to give this subject the importance it deserves. The interest shown here will do much to keep certain phases of allergy in the specialty of dermatology where they belong. Drs. Brunsting and Anderson have called attention to a type of sensitization dermatitis that is doubtless much commoner than has been supposed. The fact that in the series they report there was only one woman affected is most interesting. One would expect the incidence to be higher. Farmers, of course, come in contact with ragweed the year round but naturally more so in the late summer months. The higher incidence at this time is to be expected. However, I believe that the presence of moisture on the skin due to perspiration is the factor that increases the possibility of irritation from the pollen. This is frequently seen in cases of fur dye dermatitis. As long as the fur and skin are dry no irritation results, but if the fur is worn in the rain, in a snow-storm or on a warm day, a dermatitis may occur. Dr. White has given some important facts in regard to some cases of acne. Every dermatologist has had cases that did not respond to the usual roentgen treatment but in the past the value of diets has been underestimated. Investigation along these lines is indicated in all cases of acne that do not respond to roentgen treatment within a reasonable time. It should be kept in mind however, that children under 18 years of age with acne do not respond well to roentgen treatment. Failure to recognize this fact has resulted in many instances of too much irradiation and the consequent unfortunate results. The rational use of diets along with roentgen treatment in acne cases should in many instances reduce the amount of irradiation necessary.

DR ALBERT H. ROWE, Oakland, Calif. I would emphasize cases of dermatitis that I have studied in California characterized by negative reactions to pollen oils but by definite reactions to pollens by the scratch or intradermal tests. These cases give a seasonal history. The eruption first appears on the exposed areas of the body, especially the face, hands, arms and legs but as the season progresses it gradually may involve more and more of the extremities and body. A few patients fail to react to pollens or to pollen oils but respond to treat-

ment with the important pollens in the air at the time of the dermatitis. Those patients who give positive pollen tests require antigens prepared according to their skin reactions. Treatment has to be given over long periods and perennial treatment is of as much value in obtaining permanent results as it is in the problem of hay fever. In California and also in the Middle West, Amaranth, Atriplex, Artemisia and other fall pollens, as well as ragweed pollens, must be recognized according to locality as the causative factors. Dr. Cleveland White's confirmation of the frequent occurrence of the acneform type of dermatitis due to food allergy is timely. Because of the difficulty in obtaining satisfactory skin tests in all food sensitizations, I have recommended "elimination diets" since 1928. These diets must be modified by skin reactions that are obtained, and history of food idiosyncrasies. The chosen diet must be used for one to three weeks in order to eradicate the allergic effects of former foods, and, if relief is not obtained, other elimination diets must be tried before food allergy can be ruled out. My experience indicates that manifestations of food allergy may recur in a few minutes or days after the resumption of a causative food, although such food may frequently be taken for two or three weeks, or even a month or two before established tolerance is overcome, and a return of the specific reaction, whether migraine, asthma or dermatitis, occurs.

DR. C. M. STROUD, St. Louis: I agree with Dr. Sulzberger that allergists should maintain a well balanced dermatologic outlook if they expect to treat patients who suffer with what seems to be an allergic skin disease. It is not always easy to differentiate allergic conditions from conditions that are entirely foreign to allergy; it is likewise not always easy to differentiate contact dermatitis from atopic eczema. The presence of atopic eczema should not deny the existence of a contact dermatitis. I have seen the two occur in the same individuals on several occasions. The presence of other allergic manifestations, such as hay fever, asthma or migraine, does not deny the existence of a contact eczema. For three years I have treated some cases of contact dermatitis with various oils, to which they showed reactions. I have given ragweed oils through three seasons as treatment. I have given pyrethrum oil and have also treated patients with turpentine and almond oil and have secured in most instances very desirable results. I agree with Drs. Brunsting and Anderson that some patients are sensitive to the oil of the short ragweed and not to the oil of the giant ragweed. I have found variations in their reactions on several occasions. Multiple sensitivity is common. Patients who have a contact dermatitis lasting the entire year have been noted to be sensitized to two or more substances acting as the causative factors in different seasons. Thus, a patient who had a ragweed dermatitis in the summer also had a lesion in the winter which appeared to be similar to the one in summer. The winter dermatitis was markedly improved when contact with wool was restricted. It is noted that allergy frequently complicates dermatologic conditions. It is probable that a few patients whom I have seen whom I considered as having an acne complicated by allergy, have in reality the condition that was mentioned by Dr. White. I have seen several patients who had acne who were not benefited by dermatologic procedures until various substances to which they showed positive allergic reactions were removed from their environment or from their foods. A carefully taken history frequently gives important information regarding the causative factor and thereby reduces the number of necessary tests to a minimum.

DR. G. L. WALDBOTT, Detroit: Urticaria is often caused by pollen. This has been clearly brought to me during the past year when at the height of the tree hay fever season a large group of patients came to my office with hives. At the same time, several pediatricians called me up and wanted to know "what was in the air," because they had the same experience. Some of these patients had nasal catarrh, and injections with tree pollen extracts gave them considerable relief within one to two days. In some, the condition cleared up a week or so after the pollen had disappeared from the air. If one remembers that the majority of investigators believe that pollen is the most important single cause in allergy, one will appreciate its rôle in allergic skin diseases. Another point concerns the question of acne. Various types of skin lesions are

referred to the allergists. Sometimes the patients come on their own initiative with the desire to be skin tested. I have been in the habit of referring such patients to dermatologists whenever I thought that I was dealing with a nonallergic disease. However, once an acne patient insisted on the tests. She had a negative family history and there was no evidence whatever of allergy. After certain foods to which she gave positive reactions had been eliminated and a few desensitizing injections of inhalants had been given, the patient's acne, which had been present for a long time, disappeared. Since then I have given these cases at least the benefit of an allergic investigation and have found it well worth while. As to the question of food sensitivity, I should like to discourage some of the enthusiasm expressed by some of the previous speakers. I feel that food is an important factor, but its control is not the panacea of treatment of allergic diseases. In my hands, elimination diets have not been very successful. If one considers that any inhaled antigen can be demonstrated by immunologic methods in the blood soon after the inhalation, one will probably pay more attention to pollen and other inhalants and obtain better results. This also explains why dermatologists have had such poor results in desensitizing eczema cases with food extracts, since the food that is employed in the treatment is not the main causative agent. If one determines correctly which of the many causative substances is the main factor, and if one treats the patient with this specific extract in small increasing doses, whether it is food, pollen or epidermal, there will be less pessimism concerning desensitizing eczema cases in the future than there has been in the past.

DR. A. B. LOVEMAN, Louisville, Ky.: I should like to ask Dr. White whether routine gastric analyses were made in his cases. Within the past four months I have had ten or twelve cases similar to those described, which were most resistant to the usual type of therapy, which included x-rays, ultraviolet rays and a low carbohydrate diet. Gastric analyses were made because of the resemblance of this type to acne rosacea. In about 50 per cent of the cases I was unable to demonstrate any free hydrochloric acid, and in the other 50 per cent, although some free hydrochloric acid was present, there was a definite hypo-acidity. They all improved markedly on hydrochloric acid by mouth. Incidentally, all the cases to which I refer were in girls and were the erythematous type, clinically simulating features of both rosacea and iododerma.

DR. LEON UNGER, Chicago: Dr. White quoted a case of mine of a girl of 13 whose acne was incidental to her main complaint, which was one of epileptiform convulsions due to epilepsy. The mother mentioned that eating eggs caused a rash. We took eggs out of the diet, the acne disappeared, and the epileptiform convulsions disappeared and have not recurred in the last seven or eight years. It is well known that certain other foods, such as strawberries, will cause acneform rashes. Many people get pimples instead of getting hives from eating strawberries. I agree with Dr. Rowe that the skin tests in the cases of acne due to allergy should be done. While the skin tests may not be positive, they will be of great help if positive, as it is a short cut to diets. I should like to ask Dr. Coca about the source of his oil fractions; whether they are made from the pollen, stalk or leaves, and a little more detail about the injections of the oil extract. Drs. Brunsting and Anderson's observation that these patients give strongly positive contact tests with the short ragweed and negative contact tests with giant ragweed brings up an interesting point. I have always thought that giant and short ragweed were practically identical, and in hay fever patients one can give an injection of a certain dose of giant ragweed and can shift him over to an equal dose of the short ragweed without any constitutional reactions. It would seem, therefore, that as far as the ordinary allergy as expressed in hay fever and in asthma is concerned there is an identical element in short and giant ragweed but that the two differ greatly in their oily fractions.

DR. JOSEPH MULLER, Worcester, Mass.: Concerning the deductions of Drs. Anderson and Ayres, I want to ask whether they are familiar with the chemical work done by Professor Bloch of Zurich, his pupil Professor Rothman of Heidelberg, now of Budapest, and Dr. Rajka of Budapest, who investigated

other amino acids and obtained important results. I don't see that their paper produces evidence that those conditions which are light sensitive are due entirely to the source mentioned. Rajka also demonstrated some changes in the enzymes of the skin under ultraviolet irradiation. Dr. White apparently differentiates between acnelike dermatoses and true acne. I was working in a similar field and I want to bring out some clinical differences between true acne and the acnelike dermatoses. The general appearance of the skin of these patients is rather a dry one and not the extremely oily one of the true acne vulgaris. The eruption, as Dr. White mentioned, was mostly nodular or papular, and there was much less suppuration than in true acne. The forehead is more often affected than is the case in true acne. I had the same experience with the elimination diets as Dr. Rowe. I had excellent results. I never could get any positive scratch tests in these acnelike cases. In a small number of cases I made hydrochloric acid determinations and in some of the cases which I thought were not acne but an acnelike eruption I got very low hydrochloric acid values. About 30 per cent of them improved on hydrochloric acid alone, without any allergic work being done on them. The rest of them were cleared up by elimination of certain foods from their diet, and in a great number of them I could get a relapse within a week by allowing the patients to eat again the allergenic food.

DR. SAMUEL M. PECK, New York. I disagree with both Dr. Coca and Dr. Sulzberger in their conception of what they call atopic eczema, not in its entirety but in some of its manifestations. Dr. Sulzberger carried the conception of atopic eczema into its clinical phase and has brought into that group what is generally called disseminated neurodermatitis and furthermore he has differentiated the shock tissue or the point at which the allergic action takes place, by saying that unlike contact dermatitis it is not mainly in the epidermis but mostly in the upper vascular layers and the papillary body. If one studies a group of children with eczema over a long enough time it is striking that children with typical neurodermatitis disseminatus practically all have had an infantile eczema and yet one practically never sees this clinical picture during the first year of life. In other words, a clinical picture that resembles ordinary eczema with vesiculation, scaling and crusting without any special arrangement of predilection (except the cheeks) invariably precedes the typical lichenified neurodermatitis picture in the flexors. About 90 per cent of those cases of eczema in which there is a hereditary family history of allergy (the atopic group) will develop into a typical neurodermatitis disseminatus after the second year if the skin manifestations last long enough. This observation is important in that such a differentiation would fit in with Dr. Coca's and Dr. Sulzberger's conception of atopic dermatitis in infancy and childhood, meaning by that that in the atopic dermatoses one is dealing with a tendency to manifest a neurodermatitis type. On the other hand, only 50 per cent of my neurodermatitis cases gave a family history of allergy when the patient was over 2 years of age. My observations have proved to me that in infancy there is no way of clinically differentiating the group that would eventually develop a neurodermatitis disseminatus. It is doubtful that in the neurodermatitis group or in the atopic group one is dealing with a mechanism and localization of the allergic manifestations that in any way differs from ordinary eczema. Routine testing of children with eczema for almost four years by means of the scratch and patch methods shows that scratch tests are of much less importance than the patch tests; furthermore, this statement applies equally to the neurodermatitis group. Contact or environmental substances were much more important than foods in giving positive reactions with patch tests. Foods were important in the infantile cases only. No matter what type of eczema was seen in infancy and childhood it is common knowledge that these cases invariably cleared up in the hospital. This seems to me an added proof of the importance of the environmental factor as against foods.

DR. HOWARD FOX, New York. I should like to say a few words about the diagnostic value of sensitization tests in skin diseases. In my experience both the scratch and the intradermal tests have been very disappointing, especially in atopic eczema, while on the contrary patch tests, especially in contact

eczema, have been extremely valuable. I am speaking not so much of personal experience as that of a group of men who worked for four years in my clinic at the New York University. This group consisted of trained allergists under the leadership of Dr. Aaron Brown, himself a pupil of Dr. Coca. Some twelve thousand tests were made, mostly by the intradermal method, which is acknowledged to be more sensitive than the scratch method. The diseases studied included, among others, eczema, urticaria, angioneurotic edema and erythema multiforme, most of the patients being adults. Innumerable reactions were obtained, the majority of which, however, appeared to have no practical significance. This was especially true of the intradermic tests for foods. I should like to say a word about a case which Drs. Anderson and Ayres mentioned, one of lichen planus apparently due to light sensitization. This I think is a rare occurrence, though I had a similar case of a boy who developed an acute generalized lichen planus following a violent sunburn, the eruption appearing on areas not covered by his bathing trunks.

DR. ARMAND F. COHEN, Louisville, Ky. I wish to record my observation that dermatitis occurs in a number of atopic patients during the grass as well as the ragweed season. This is explained by the fact that, when the epidermis is the shock organ, the epidermis will react in those allergic individuals who receive a sufficient amount of the excitant to which they are specifically sensitive. I make this statement because the impression may be gained that symptoms are produced only through contact with ragweed pollen or some portion of the ragweed plant. I have observed this dermatitis appearing in patients who get in contact with ragweed or grass only through inhalation. Such dermatitis may likewise occur through artificial injection. When the epidermis is the shock organ, regardless of how the excitant is introduced, the epidermis is the tissue that will react.

DR. ARTHUR F. COCA, New York. Replying to the discussers in the reverse order, I would say to Dr. Peck that I would like to see him alone sometime for an hour or two, and we will try to compose our differences. Dr. Unger asks what oil fraction is used in the treatment of ragweed dermatitis. I am using the oil extracted from the leaf of the plant because I have found this much stronger in skin test than the oil obtained from ragweed pollen that has been thoroughly dried and stored for some time. Under these conditions the oil in my leaf deteriorates rather rapidly and I suppose that a similar deterioration takes place in the oil of the stored ragweed pollen. This might explain why farmers have their ragweed dermatitis only in the summer time. The ragweed that they harvest with their other farm products lies open, exposed to the air, and it is quite possible that the excitant in this dry ragweed deteriorates and this is why they show no symptoms during the winter in spite of contact with the dry stuff. I think that it is quite probable that Dr. Waldbott is not right in his idea that pollen may produce urticaria. There are only two ways that I can think of by which urticaria could possibly be caused by contact with pollen by surface contact or by absorption through the mucous membrane. It is well known that surface contact with a protein does not produce urticaria, as a rule. On the other hand, if the possibility is considered of the urticaria being due to absorption of the proteins through the mucous membranes, there is almost experimental information about that. Urticaria does occur if an overdose of an aqueous pollen extract is injected, but it must be an overdose. One does not get constitutional symptoms from the inhalation of a few grains of pollen during the pollen season. Therefore, on a quantitative basis alone it seems to me quite unlikely that urticaria can be due to the natural contact with pollen. Dr. Rowe states that he has seen a group of patients that were not sensitive to contact with the oil of pollen but were sensitive to the scratch test, and he considers that the oil in these cases was not the excitant of the contact dermatitis. Here there is a conflict with the principle of the separation of the atopic group from the group of contact dermatitis or epidermal allergy. Contact dermatitis is not produced by the water soluble extracts or substances in plants and the intracutaneous test with the oily excitants of it results negatively. This can be considered an established principle. Therefore, if Rowe's patch test reaction to the oil was nega-

tive, I would rather look into the freshness of the extract or the method of the testing

DR LOUIS A. BRUNSTING, Rochester, Minn. I should like to say that the experiments we did with giant ragweed were controlled by samples of pollen that we obtained from six or seven sources over the country, and in the control cases we applied these samples without getting positive reactions so that when we reported a negative reaction we meant a negative reaction to more than one sample. I would take issue with Dr Coca that desensitization with the oil extract in contact dermatitis is usually successful. Dermatologists are not willing to say that for Rhus toxicodendron. Those who have had experience with the desensitization find that the results are extremely desultory. Furthermore, there is no list of data extant to show that the contact irritability of the skin after such injections has been materially reduced quantitatively, and in addition the injection of oil extracts is not entirely without harm. We have seen an exfoliative dermatitis produced in an undertaker who had eczema of the hands and face due to sensitivity to formaldehyde, in whom we injected a minute amount of diluted solution of formaldehyde intradermally. A certain number of patients, florists, for instance, some sensitive to pyrethrum and some sensitive to chrysanthemum, have not obtained uniformly good results by such methods. Rather than accept the oil treatment for general usage I would suggest that it be held *sub judice* pending further clinical trial before being used indiscriminately. I would say, with regard to the classification that has been put out didactically between contact dermatitis and atopic eczema, it appears that in a number of instances in contact sensitivity there is a family susceptibility to external irritants.

DR NELSON PAUL ANDERSON. Answering Dr Muller, I am not at all familiar with the work that he quoted. Regarding Dr Michael's suggestion that perhaps sugar metabolism plays a role in these cases, there is the observation of Urbach in a case of light sensitivity with hematuria. He treated this patient by means of a high carbohydrate diet and the injection of small doses of insulin, feeling that this relieved some of the stress on the liver. The whole question of liver therapy in light sensitivity needs to be looked into, whether it is due, as it probably is, to its vitamin containing complex or whether it is due to certain sulphur compounds is yet to be determined.

DR CLEVELAND J. WHITE, Chicago. As a group, dermatologists have not taken the study of diet very seriously, in fact, at times some have held it up as a subject of ridicule. Dr Sulzberger has sounded a timely warning in these acne-form cases in regard to a complete general examination. I am not convinced yet that diet is the cause of all these acne-form eruptions. I think it is of great value in many of them, but it is necessary to go further to see if there are not some endocrine changes, and so on. However the endocrine experts with whom I have talked have not all been able as yet to give much help. As Dr Driver has said, the most important thing is, if the patient's acne cannot be cured, to give him an x-ray burn in its place and still have some eruption persisting. I think it is extremely important to consider the dietary factors in many such persistent cases before too much roentgen therapy is given. Dr Rowe emphasized again the necessity of being on the right track and persisting in elimination diets for at least one, two or three weeks. The physician has to talk to these patients to see if they have been really on the diet, because oftentimes they will eat things that they consider in the diet. It takes a great deal of detective work to follow the dietary phase. Dr Loveman asked about the gastric analyses. There has not been one gastric analysis done in this group of cases. I think possibly the administration of hydrochloric acid may raise the allergic threshold to the foods to which the patient may have been sensitive rather than having any significant meaning as far as the hydrochloric acid contents of the stomach are concerned. Further study will be needed to confirm this impression. Dr Unger stated the desirability of doing skin tests in these patients. The tests should be persisted in, for occasionally they are very helpful. In this group of cases, the epidermal testing has been of very little aid in detecting the offending specific foods.

IMPORTANCE OF ALLERGY IN ETIOLOGY AND TREATMENT OF NASAL MUCOUS POLYPS

RICHARD A. KERN, M.D.

AND

HARRY P. SCHENCK, M.D.

PHILADELPHIA

In a previous communication we¹ presented evidence which in our opinion justified the conclusion that allergy is a constant factor in the etiology of so-called mucous nasal polyps. At this time we present further clinical data which we feel confirm our original view. It may be well at the outset to define the type of lesion to which we refer. Nasal polyps, other than malignant forms, may be classified as (1) mucous polyps or edematous fibromas (a better term we feel is myxoid fibroma), (2) mixed polypoid hyperplasia, and (3) papillary hypertrophy or mulberry polyps.

1. Mucous polyps or edematous fibromas (myxoid fibromas) may be single or multiple and are frequently pedunculated. They are smooth, pale and translucent, varying in color from translucent white or gray to bright yellow tinged with red. Older polyps may show marked discoloration. They possess a characteristic jelly-like softness and their consistency is such that unless palpated by a probe they may at times be mistaken for mucus.

Microscopically, hypertrophy and edema of the tissue from which the polyp has arisen are the striking features. Mucous glands may be lacking or present in scanty remains. The epithelium varies from a thin layer of squamous cells to a thick, many-celled layer of stratified columnar epithelium. Ciliated cells become increasingly rare in older polyps. The bulk of the polyp consists of an edematous tunica propria, with large areolar tissue spaces, containing a considerable quantity of albuminous fluid and showing a tendency to cyst formation. The areolar fibers are loosely disposed, crossing in all directions and enclosing correspondingly indefinite lymphatic clefts. The cellular constituents are relatively inconspicuous (fig. 1) and are bathed by the fluid which wells through the interfascicular spaces. Within these clefts are also lodged the migratory lymphocytes, round cells, plasma cells, mononuclear cells and eosinophils. The eosinophil content will be discussed farther on. When the process has extended deeply, an exostosis of bone may be present at the site of the polyp. This is by far the most frequent form of nasal polyp.

It is the mucous polyp that is the subject of our discussion.

2. Mixed polypoid hyperplasia, as Kaufmann² points out, is essentially similar in structure to the mucosa but is more markedly cellular. It is red or grayish red. This group may be subdivided into (a) glandular hyperplasia or glandular polyps, and (b) angiomatous polyps.

Glandular hyperplasia or glandular polyps, as described by Hopmann,³ are dense, vascular formations,

From the Allergy Section of the Medical Division and the Division of Otolaryngology of the Hospital of the University of Pennsylvania. Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland June 13, 1934.

¹ Kern, R. A. and Schenck, H. P. Allergy: A Constant Factor in the Etiology of So-called Mucous Nasal Polyps, *J. Allergy* 4: 485 (Sept.) 1933.

² Kaufmann, Edward. Pathology for Students and Practitioners, Philadelphia: P. Blakiston's Son & Co. 1: 301, 1929.

³ Hopmann, C. M. Ueber Nasenpolypen. *Monatsschr. f. Ohrenh.* 19: 161, 1885. Was ist man berechtigt Nasenpolypen zu nennen? *ibid.* 21: 152, 188, 249, 1887.

are usually red, and retain their form on pressure. Histologically, they differ from mucous polyps by being rich in glands and infiltrated with cells, and by having an exclusive origin from the turbinates themselves. By presenting a body separable from the mucous membrane and by being movable with a probe, they may be distinguished from hyperplasia following hypertrophic rhinitis.

Angiomatous polyps comprise a small group of highly vascular lesions of obvious characteristics.

3. Papillary hypertrophy or mulberry polyp is differentiated primarily by its papillary form. Appearing on the posterior end of the inferior turbinate, the mass consists of hyperplasia of the turbinal mucous membrane in which cystic degeneration of the glands and dilatation of the vessels have occurred. This type has by some been considered as a mixed or combination



Fig. 1.—Section of a typical mucous polyp under high power. The cells are inconspicuous, while edema of the tunica propria accounts for the bulk of the polyp.

form of glandular and angiomatous polyp mentioned in the preceding section. Its papillary structure, its usually red color and its comparatively firm structure readily differentiate the mulberry from the mucous polyp. Mulberry polyps are relatively infrequent lesions.

That true tumor formations may be frequently mistaken for mucous polyps is well shown in the following case:

A man, aged 56, had had nine operations in ten years for what were thought to be mucous polyps. At the tenth operation, six polyps⁴ were removed and the volume of tissue totaled 20 cc. Microscopic examination demonstrated this tissue to be a neurogenic tumor. Dr. Joseph McFarland, to whom we are indebted for the microscopic studies, suggests that the tumor arose from the terminal filaments of the olfactory nerve.

4. The tissue was obtained through the courtesy of Dr. T. Harris Boughton, Mercer Hospital, Trenton, N. J.

A detailed discussion of the theories that have been advanced as to the etiology of mucous polyps was presented in our earlier paper.¹ While various causes of mucous nasal polyps have been proposed and defended from time to time, not one has received complete acceptance. Polyps have been held to be the result of inflammation,⁵ infection,⁶ necrotizing ethmoiditis,⁷ sinus suppuration,⁸ vascular disturbances⁹ and lymph-vascular disease.¹⁰ Of these the inflammation-infection theory has heretofore been most widely championed.

A constitutional or hereditary factor¹¹ has been suggested from time to time since the earliest writings on the subject, largely, it would appear, in an attempt to explain the discrepancies between clinical observation and other theories of origin. More recently, Runge¹² has stated that in his opinion the development of polyposis demands the preexistence of a general pathologic alteration of the mucosa, the "hyperplastic mucosal constitution."

ALLERGY IN THE ETIOLOGY OF NASAL MUCOUS POLYPS

That the changes in the nose and sinuses in allergy are similar to those which occur in the bronchial structures in asthma has been pointed out by Hansel,¹³ but he was unwilling to admit an allergic factor in the etiology of all mucous polyps, notably in primary sinus infection with polyps. Hirsch¹⁴ has gone further, stating that it is his clinical impression that all mucous polyps may be based on allergy. Recently, Leroux and Delarue¹⁵ noted that every patient presenting polyps rich in eosinophils also had more or less characteristic allergic disease, and that in all patients with allergic disease and polyps, the polyps showed many eosinophils. Wiethe¹⁶ likewise regards allergy as the important

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etiologic factor in the formation of mucous polyps and reports the disappearance of polyps in a patient following desensitization to an allergen.

We wish to present clinical data, obtained since the publication of our original paper, supporting the view that allergy is constantly a factor in the causation of nasal mucous polyps.

TABLE 1.—*Clinical Incidence of Mucous Polyps in Allergic States*

	Total Cases	Number with Polyps	Percentage
Bronchial asthma	600	183	30.5
Vasomotor rhinitis	104	15	14.4
Hay fever (seasonal)	118	16	13.5
Hay fever plus perennial asthma	52	18	34.6

The incidence of nasal mucous polyps is strikingly high in allergic diseases of the respiratory tract. The incidence is highest in those allergic states which continue throughout the year, notably asthma; it is lowest in pollinosis, the allergic disease in which the sensitizing substance acts on the nasal mucosa for only a few weeks each year.

The incidence of nasal mucous polyps is extremely small in patients whose presenting symptoms are those of nonallergic diseases. In studying the relation of paranasal sinus disease to diseases of the lower respiratory tract, as well as to diseases elsewhere in the body, we were struck with the infrequency of nasal polyps in connection with infectious states of the respiratory tract, especially in infection of the sinuses. In seventy-three cases of bronchiectasis, every one of which showed roentgenologic evidence of sinus disease and usually a pansinusitis with dense clouding of the affected sinuses, only a single patient had definite mucous polyps. It therefore seemed highly questionable to us that infection was the sole factor in the etiology of mucous polyps. We then determined to search out the incidence of mucous polyps in a large series of patients suffering primarily from nonallergic diseases and to investigate further from the standpoint of a possible unsuspected allergy those individuals found to have polyps. Of 372 patients with pulmonary tuberculosis as diagnosed in the Medical Division of the Hospital of the University of Pennsylvania, eighty-two gave sufficient evidence of nasal abnormality to lead to a clinical examination of the nose by a rhinologist. Mucous polyps were found in six. Yet forty-five of these patients, especially those with cavitation,

teen patients with lung abscess, all with extensive sinus disease, none had polyps.

We then attempted to study from the standpoint of allergy the fourteen patients who presented themselves for an obviously nonallergic disease and yet were found to have polyps. In one of these, a supposed polyp proved on section to be carcinoma. Of the other thirteen patients with polyps, ten were found to have asthma, one had asthma and vasomotor rhinitis and one had vasomotor rhinitis alone. The remaining patient, a youth, aged 17 years, with extensive bronchiectasis, gave a pronounced family history of asthma, vasomotor rhinitis and urticaria. At the age of 8 years he had had symptoms that had led an experienced pediatrician to make a diagnosis of bronchial asthma. When tested by us, the patient gave positive skin tests to house dust and feathers.

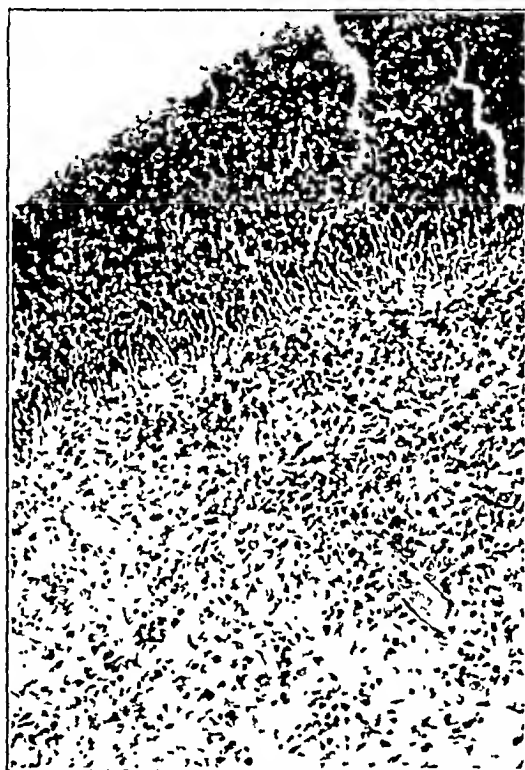


Fig. 2.—Mucous polyp removed and sectioned during an attack of hay fever. The dense infiltration of eosinophils obscures all other cells. Patient E. R.

TABLE 2.—*Incidence of Polyps in Routine Examinations of Patients with Nonallergic Disease as Major Complaint*

Presenting Disease	Total Cases	Number with Polyps
Bronchiectasis	73	1
Lung abscess	17	0
Pulmonary tuberculosis	82	6
Arthritis	200	7

mixed infection and profuse sputum, had evidence of sinus disease, which in many instances was most extensive. Of 200 patients with chronic arthritis, in whom an intranasal examination was made in a search for focal infection, seven were found to have mucous polyps. Yet eighty patients were found to have sinus abnormality clinically or roentgenologically. Of seven-

DO NASAL MUCOUS POLYPS OCCUR IN THE ABSENCE OF ALLERGY?

In order to find the answer to the question whether nasal polyps occur in the absence of allergy we have been on the watch for all patients who presented themselves to the rhinologist simply because they had nasal symptoms associated with polyps and who did not complain primarily of any obviously allergic disease. These patients were carefully questioned as to allergic disease in themselves and in their families. Whenever possible, complete skin tests were performed and a polyp was removed for microscopic section.

In a careful search during more than a year we succeeded in collecting only twenty-five additional cases of polyps in which the patient had not complained primarily of an allergic condition. These twenty-five

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With increased assurance that probably all patients who are allergic. Infection

Eighly-Fifth Annual
Island, June 14, 1934.

the examiner can easily see light on the patient's cornea. In situations in single degrees. All only every 10 degrees. Our are accurate and eliminates

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LOWING AMIDOPYRINE, RRENCES

WINSTON-SALEM, N. C.

of a physician, had a left she took amidopyrine in to four times a day for began to ache and had a xt day her gums became chilly, the aching became rated. The prostration elevation continued, and On May 10 a leukocyte She was taken to the ven 8 minims (0.5 cc.) the left arm, as sug- dition she was given twice a day for eight and a very unpleasant ses of pentnucleotide, doses. Considerable where the turpentine appuration.

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Special Article

ARTIFICIAL PNEUMOTHORAX

CLINICAL LECTURE AT CLEVELAND SESSION

J. ARTHUR MYERS, M.D.

MINNEAPOLIS

Itard coined the term "pneumothorax" in 1803 to designate the existence of air in the pleural cavity. He had observed three cases of spontaneous pneumothorax and made reference to the cases described by Selle and Boyle. Since that time large numbers of cases of spontaneous pneumothorax have been reported, particularly since the advent of the x-rays, and numerous references have been cited in the literature. Thus nature demonstrated that a lung may be partially or completely collapsed while the opposite lung carries on adequately the respiratory functions of the body. Moreover, observation revealed the fact that marked improvement of pulmonary disease sometimes occurs following spontaneous pneumothorax. These facts brought to light great possibilities in both the diagnosis and treatment of chest diseases.

After carrying out several experiments on animals, Carson, a Scotch physician practicing in Liverpool, in 1822 concluded that one lung can be collapsed artificially with safety by introducing air into the pleural space. Although he recommended that artificial pneumothorax be used in the treatment of pulmonary tuberculosis in man, he apparently did not administer it. Only a decade later, McRuer of Bangor, Maine, made some independent observations, which also led him to recommend immobilization of the diseased lung by introduction of air into the pleural cavity. In 1882 Forlanini of Italy also suggested artificial pneumothorax in the treatment of pulmonary tuberculosis.

Although there is reference in the literature to the introduction of air into the chest for the treatment of disease by the Greek physicians in the fourth century B. C., the modern practice of artificial pneumothorax dates back to 1888, when Forlanini introduced air into the pleural cavity of a patient suffering from pleural effusion, and in 1892, when he actually collapsed a diseased lung.

Apparently not knowing of the work of Forlanini and from independent observations and thinking, Murphy of Chicago reported some actual cases he had treated by artificial pneumothorax in 1898. Tice began to use artificial pneumothorax about the same time as Murphy, and Lempke continued the work that Murphy began. Since that time artificial pneumothorax has become a standard method of treatment. Waring speaks of it as a "procedure that has unquestionably saved hundreds of thousands of lives, and as long as mankind suffers from tuberculosis will remain a most valuable method of treatment."

METHOD OF ADMINISTRATION

In collapsing the lung by this method, pure nitrogen, pure oxygen, carbon dioxide and sterile air have been used. Although these gases in pure form may have

Prepared with the aid of a grant from the Medical Research Fund of the University of Minnesota Medical School.
Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 11, 1934.
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cases were gathered not only from the outpatient department of the Division of Otolaryngology of the Hospital of the University of Pennsylvania with a total number of 2,486 new patients and 6,225 patient-visits in the year, but also included several patients from the private practices of our colleagues who knew of our interest in such cases.

That so small a number was found is in itself good evidence of the rarity of nasal mucous polyps not due to allergy, if indeed they exist at all. In twenty-two of the twenty-five patients, a careful inquiry revealed a definite history of allergic disease, including asthma in

in the absence of hypersensitiveness of the individual, does not lead to the formation of typical nasal mucous polyps. To raise the question as to whether there is concerned a hypersensitiveness to inhaled substances only, or to bacteria only, or to combinations of the two is beside the point, although we admit all three possibilities in individual cases. The main point is, we believe, that hypersensitiveness of some type is present and operative in all cases of nasal mucous polyps. For a detailed discussion of the mechanism of allergy in these cases the reader is referred to our previous article.¹

Nasal mucous polyps represent a pathologic process in which regression to a normal state would appear extremely unlikely. The greatly overstretched mucosa, the poor blood supply and the easy compressibility of the slender pedicles of most of these lesions are obvious reasons against such regression. Yet we have seen typical mucous polyps disappear completely in four cases, merely after treatment of the allergic factor, and Wiehe¹⁰ has reported a similar instance. While it is of course not to be expected that mucous polyps will disappear merely by treating the patient for his allergy, nevertheless the fact that any case has been so cured has some value as evidence for the allergic etiology of these lesions.

The importance of making histologic studies of nasal polyps has not been sufficiently emphasized and the failure to make such a study has led to clinical error.



Fig. 3.—Mucous polyp removed after the first frost: Eosinophils have almost completely disappeared. Patient E. R.

thirteen individuals, hay fever in two, vasomotor rhinitis in thirteen, migraine in two and urticaria in one. Yet in none of these cases had allergic disease appeared on the record first submitted. In twenty there was also a definite family history of allergy. Positive skin tests were obtained in seventeen of the nineteen patients tested. Microscopic section showed typical mucous polyps in nineteen of the twenty cases so studied. There was only a single case in which there was neither a personal nor a familial history of allergy and with negative skin tests as well. Microscopic examination of the tissue removed from this patient showed that what clinically had been considered a mucous polyp was in reality glandular hyperplasia and therefore not of allergic origin. The question Do mucous polyps occur in the absence of allergy? we would still answer in the negative as far as our own experience is concerned.

COMMENT

With increased assurance we repeat our original view that probably all patients with typical nasal mucous polyps are allergic. Infection alone, that is, infection

TABLE 3.—Allergy in Patients with Nasal Polyps as Their Chief Complaint

Case Number	Personal Allergy	Familial Allergy	Skin Tests	Microscopy of Polyp
1	+	+	+	MP
2	+	?	+	MP
3	+	+	+	MP
4	+	+	+	MP
5	0	0	0	GH
6	+	+	..	MP
7	+	+	+	MP
8	+	+	+	MP
9	+	+	+	....
10	+	0	+	MP
11	+	..	..	....
12	+	..	+	MP
13	+	+	+	MP
14	+	+	+	MP
15	+	+	+	MP
16	0	+	..	MP
17	+	+	..	MP
18	+	+	+	MP
19	+	+	..	MP
20	0	+	..	MP
21	+	+	0	MP
22	+	?	+	MP
23	+	+	+	....
24	+	+	+	....
25	+	+	+	....
Total	22 = + 3 = 0	20 = +	17 = + 2 = 0 6 = ..	19 = MP 1 = GH 5 = ..

A denotes asthma; VMR, vasomotor rhinitis; HF, hay fever; M, migraine; U, urticaria; +, positive; 0, negative; .., no data or not done; MP, mucous polyp; GH, glandular hyperplasia.

Attention is called again to the patient who had ten operations for supposed mucous polyps but only after the last operation was a polyp sectioned and the true diagnosis of neurogenic tumor established. In one of our own cases, the supposed mucous polyps were twice removed before microscopic examination was made and the glandular hyperplasia recognized. It is now our routine procedure to study microscopically the material from all our cases of polyp.

At this point we would call attention to an erroneous interpretation that has been placed by a number of observers on a detail of the histologic structure of mucous polyps. We refer to the matter of eosinophil content. It seems to have been assumed that the presence or absence of eosinophils in mucous polyps represents a constant and unchanging feature of their structure. This has led to the view that those mucous polyps which contain many eosinophils have an allergic origin, whereas those with few or no eosinophils are therefore not of allergic nature. This view we are convinced is incorrect for this reason: Polyps removed from a hay fever patient during his pollen season show many eosinophils (fig. 2); polyps removed from the same patient only a short time after the pollen season is over show practically no eosinophils (fig. 3); yet pollinosis was the only etiologic factor involved. This observation we have made not once but a number of times. It is our opinion that the presence of many eosinophils in a polyp indicates recent exposure to the exciting allergen and, conversely, a paucity of eosinophils suggests that there has not been recent exposure to the allergen.

TREATMENT OF NASAL MUCOUS POLYPS

If it is true that allergy is a constant factor in the causation of mucous polyps, a search for and careful attention to the allergic factor becomes a prime requisite in the study and treatment of all cases of nasal mucous polyps. It is the neglect of the allergic factor that probably accounts for the great frequency with which mucous polyps recur after their operative removal. In polyp cases, therefore, careful sensitization tests should be a routine procedure. When possible, the reacting substances should be avoided; otherwise a thorough attempt at desensitization should be made. Of course, the correction of anatomic abnormalities, the adequate drainage of infected sinuses, the use of vaccines and suitable local treatment are integral and indispensable parts of the management of these cases.

CONCLUSIONS

1. Nasal mucous polyps are extremely common in allergic conditions of the respiratory tract.
2. Nasal mucous polyps are rare in patients with non-allergic diseases of the respiratory tract, even in the presence of extensive and chronic sinus infection.
3. In our experience, all patients with mucous polyps have been found to have either a personal history of allergy or a family history of allergy or positive skin tests and usually all three. No case of nasal mucous polyps has as yet been encountered in the absence of these three.
4. Histologic study of the tissue removed in polyp cases should be made as a routine procedure to guard against diagnostic error.
5. The eosinophil content of polyps may vary from time to time and is dependent on exposure to the causative allergens.
6. The finding of nasal mucous polyps in a patient warrants the assumption that the individual is hypersensitive, and the case should be studied from that standpoint.
7. The treatment of patients with nasal mucous polyps must include attention to the allergic factor; the failure to reckon with this factor is the chief cause for postoperative recurrence.

ABSTRACT OF DISCUSSION

DR. WARREN T. VAUGHAN, Richmond, Va.: Drs. Kern and Schenck conclude that nasal polyps of the mucous type are probably invariably allergic. They emphasize the need for collaboration between the rhinologist and the allergist. There was a time when the rhinologist insisted that all hay fever, vasomotor rhinitis and even asthma belonged in his field. Then the allergist came along and insisted that they were his. Now, not infrequently, each one wishes that it belonged to the other. Most of the past statistics are worthless. In a review of the literature from both fields as to the incidence of nasal disorder or sinus disease in chronic perennial asthma the figures run from 14 to 90 per cent. There is no room for any sort of conclusions here, because there is too much variation. The results of treatment from the rhinologic point of view vary with different authors from zero to a hundred per cent. The trouble is that they have taken every case of asthma and considered it as a single disease. There are many, many forms of asthma, depending on the cause. With allergic therapy one finds it almost as bad, anywhere from 24 to 90 per cent. The reason why it has not been possible to correlate these past observations is that physicians have not distinguished between extrinsic allergy due to factors reaching the subject from without, and intrinsic allergy. Obviously one will not expect to get the same type of result when the cause is due to some intrinsic factor: focal infection, sinus infection, or some other unrecognized factor in the patient himself; and one will find that the results from allergic therapy are far better (68 per cent), in the extrinsic than in the intrinsic cases (27 per cent relief by allergic methods). The latter is the group in which best results are to be obtained by collaboration between the rhinologist and the allergist. Ten years ago the internist who was interested in allergy was considered by his friends a hyperenthusiast. Now, all interested in internal medicine know there is such a thing as allergy. The rhinologists are in about the stage the internists were in ten years ago. There are a few rhinologists who are getting hyperenthusiastic on allergy, but the rhinologist will be in the best possible position to study allergy, preferably in collaboration with an allergist, as soon as he realizes that probably 50 per cent of his patients have some form of allergy that should be recognized and treated.

DR. JONATHAN FORMAN, Columbus, Ohio: Polypi, as they come into the pathologic laboratory, have been, in the past, neglected. The paper of Drs. Kern and Schenck offers a valuable classification that should be in the hands of all pathologists doing tissue work for nose and throat men. With this contribution as a keystone to the arch built by other workers, I feel that it can now be said that the presence of a nasal polypus means the existence in that nose of an allergic state. It must be remembered, however, that by allergy is meant only an altered, unusual reaction. Therefore there must be many different types of allergy. I am saying this so that many men may escape the pitfall of thinking that they can get results by doing a few skin tests. The tests are valuable, I am not decrying them; but they must be used in conjunction with other methods, and they must be used, above all, with brains. There are at least four types of allergic coryza that may form the background for the development of polypi. There is an atopic form characterized by a positive family history, by a personal history of other allergic manifestations, by the presence of the eosinophilia, and, finally, by positive skin tests and passive transfers to normal individuals of the sensitizing antibodies in the serum of the patient. Then there are bacterial allergies, recognized, first, by the elimination of the atopic state, and, secondly, by the history of infection or the demonstration of foci and, finally, by the delayed intracutaneous tests much like the tuberculin reaction to the proper cultures. It is also possible, of course, to have an atopic coryza due to bacterial protein, because bacterial protein is no different from any other protein in its antigenic properties. Then there is what I have dared to call contact allergic coryza, which is recognized by the elimination of both the other types, by the history of exposure and the identification of an offending substance, usually not organic, among the inhalants and contactants of a nose, and by the relief on the avoidance of the offending substance. Finally, there is that group of coryzas which has

been described admirably by Dr. Duke of Kansas City, due to physical agents. If all these things are kept in mind, physicians will begin to look into cases of nasal polypi with a systematic method. They will not be sent to a laboratory and have twenty, thirty, sixty, 200 or 300 skin tests, but they will be studied in a systematic manner. The allergic method must be used carefully and with a well planned program. If one just makes a skin test, one will fall into the error of dermatologists of using intradermal and scratch tests when one should have used contact tests, and using patch tests when one should have used intradermal and contact tests. So here one must use all these methods if one is going to study these patients from the allergic point of view and get the results that one should get. The removal of the polypi without taking care of the allergic background is the explanation of the recurrences that are so frequent.

DR. HARRY L. BAUM, Denver: For many years I have been convinced that most of the edematoses in the nose and in the accessory sinuses are allergic. I have never had the temerity to state definitely that all are and that allergy is the sole cause of nasal and sinus edematoses or mucous polyps. Drs. Kern and Schenck would freely admit that it is not possible to prove conclusively the contention of their paper. They do not claim positive proof, and when it is realized that there is no method of proving definitely that any condition is allergic it would be equally impossible to prove that this particular condition is always allergic. The assumption of allergy must always be based on the results attained when cases are studied according to certain criteria. These criteria are: Does the patient have a personal or family history of allergy? Do his mucous membranes have the clinical appearance of allergy? Does he respond positively to certain skin tests? Are eosinophils present in unusual numbers in his secretions, in his tissues, and possibly in his blood? And, finally, do we have the presumptive evidence of apparent cure by means of the methods of treatment commonly used by allergists? In most instances, some or all of these criteria can be brought to bear with positive results in cases of nasal mucous polypi. Therefore, rhinologists must be willing to accept the tentative conclusion that nasal mucous polypi, in the great majority of instances, are allergic. The paper implies that more nasal diseases are allergic than rhinologists have believed in the past. It has been thought that nasal polypi were indications of sinus disease, and it has been accepted as axiomatic that this was true; but physicians have not gone on to define the nature of this sinus disease. After all, the nasal polyp is nothing more than an extruded portion of the edematous lining membrane of a cavity. Therefore there may be no more disease in that cavity than the edema which results from allergy, and certainly there would be no indication in such a case for surgery within the cavity, because by the removal of the allergic mucous membrane one does not cure the underlying condition, which is systemic and not local. By proper consideration of that one point, medical practitioners may be led to greater conservatism in sinus surgery. Every rhinologist should be, to at least a certain extent, an allergist and should either himself be conversant with the common practices in the study of allergy or should be in close cooperation with one who is; and I am led also to many other implications in regard to sinus diagnosis based on the presence of polypi or edematoses in the nose and sinuses.

DR. H. P. SCHENCK, Philadelphia: Two of the discussers quoted Dr. Kern and me as saying that 100 per cent of nasal polyps are due to allergy. We do not state that all nasal polyps are due to allergy but that all mucous nasal polyps are due to allergy. Photomicrographs showing the typical structure of mucous polyps make their characteristic design evident. In contrast is a photomicrograph showing a neurogenic tumor, possibly a schwannoma (a type of neurofibromatosis), supposedly due to proliferation of cells in the sheath of Schwann. The patient had had nine operations in ten years for the removal of nasal polyps. At the tenth operation, six polyps, amounting to about 20 cc., were removed. Grossly they resembled mucous polyps but microscopic section disproves the clinical diagnosis. The crux of the situation rests on careful pathologic examination of every supposed polyp removed.

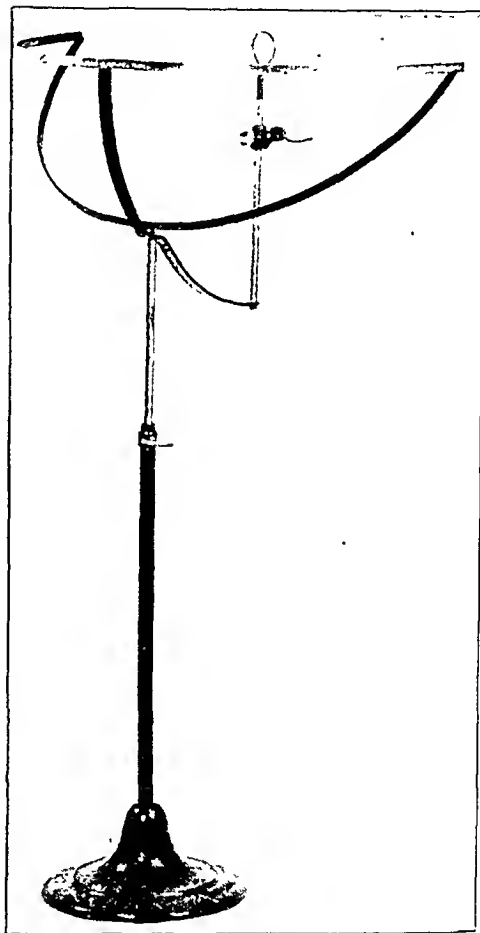
Clinical Notes, Suggestions and New Instruments

A STRABISMOMETER

J. L. BRESSLER, M.D., CHICAGO

Early in September 1933 an orthoptic clinic for the treatment of squint was started at the Illinois Eye and Ear Infirmary. From the beginning, the greatest difficulty with which we were confronted was the getting of accurate measurements of the angle of deviation.

The development of the instrument described here occurred following a suggestion made by Dr. Leo L. Mayer, a member of our staff. In our opinion this instrument has many distinct advantages over the perimeters previously used for this pur-



Strabismometer developed in the orthoptic clinic at the Illinois Eye and Ear Infirmary.

pose. We first used the ordinary table model perimeter and later Schweigger's hand perimeter. Both of these instruments have obvious faults, which interfered with an accurate determination of the angle.

Our new instrument has eliminated many of these objectionable features. Its advantages are as follows:

1. The instrument slides up and down in a tubular weighted stand. It can be firmly fixed at any desired height to accommodate varying heights of patients.

2. It cannot sway from side to side or up and down. Once centered and fixed, it remains so. The eyepiece, which is 13 inches from the center of the arc, is marked so that accurate centration is neither difficult nor a matter of guesswork.

3. The horizontal arc consists of a steel bar about five-eighths inch in height, over which the patient can readily fix

Read before the Section on Ophthalmology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

the distant light and over which the examiner can easily see the reflex of his ophthalmoscope light on the patient's cornea.

4. This arc is marked with graduations in single degrees. All other perimeters have markings only every 10 degrees. Our instrument makes readings more accurate and eliminates guessing.

5. For the near fixation point we have a movable target which slides along the upper edge of the arc and can be placed in position when needed.

This instrument was built for us by Mr. Freeman of the American Optical Company of Chicago.

6254 South Ashland Avenue.

A CASE OF GRANULOPENIA FOLLOWING AMIDOPYRINE, WITH TWO RECURRENCES

WINGATE M. JOHNSON, M.D., WINSTON-SALEM, N. C.

Mrs. B. N. J., aged 41, the wife of a physician, had a left supra-orbital neuralgia for which she took amidopyrine in 5 grain (0.3 Gm.) doses from one to four times a day for about two weeks. On May 6 she began to ache and had a temperature of 100 to 101 F. The next day her gums became moderately inflamed. May 8 she was chilly, the aching became worse, and she began to feel prostrated. The prostration became more marked, the temperature elevation continued, and the gums became swollen and spongy. On May 10 a leukocyte count was 1,400, with no granulocytes. She was taken to the North Carolina Baptist Hospital and given 8 minims (0.5 cc.) of turpentine into the deltoid muscle of the left arm, as suggested by Roberts and Kracke.¹ In addition she was given 10 cc. of pentnucleotide, in the buttocks, twice a day for eight doses. There was a sharp febrile reaction and a very unpleasant feeling of numbness after the first two doses of pentnucleotide, becoming less marked with successive doses. Considerable swelling and pain developed in the region where the turpentine was injected, but this subsided without suppuration.

Daily blood counts were made. From May 10 to 16 the leukocytes remained between 1,400 and 1,550. On May 17 the count was 1,650; May 18, 1,900, with an occasional immature granulocyte. After that successive daily counts were 2,300, 3,600, 4,950 and 6,600 on May 22, with 63 per cent granulocytes. The red blood cells remained throughout between four and a half and five million, with a hemoglobin of 70 per cent.

At this point the patient was allowed to go home. The blood picture was normal, June 2, and a count was not made again until June 11, just at the end of menstruation (she had menstruated the first week in May). She was then feeling so much worse that a blood count was made, and her leukocytes were found to be only 2,100, with 10 per cent granulocytes. She was given daily injections of liver extract, 3 cc. each, for five doses. The leukocytes gradually rose by June 19 to 6,550, with 53 per cent granulocytes.

Her next menstruation began June 29, lasting six days. On July 2 her leukocytes were 4,100, with 50 per cent granulocytes. They rose to 6,450 on July 12, with 64 per cent granulocytes.

Throughout her last two menstruations, the blood picture has remained normal, from 6,150 to 7,000 leukocytes, with 65 to 67 per cent granulocytes.

During the first two menstrual periods after her return from the hospital, the patient took one or two tablets of cibalgine daily for the first two days; during her last period she did not take anything. Each cibalgine tablet contains $3\frac{1}{2}$ grains (0.2 Gm.) of amidopyrine, combined with the hypnotic dial.

While this case may illustrate the deleterious influence of menstruation on granulopenia, as suggested by Thompson,² I am reporting it as one more link in the chain of evidence against amidopyrine. The two recurrences when the drug was taken, and the absolute lack of disturbance during the last two menses when it was not taken, certainly suggest that amidopyrine played the villain's rôle in this case.

703 O'Haulon Building.

1. Roberts, S. R., and Kracke, R. R.: Further Studies on Granulopenia with a Report of Twelve Cases, *Ann. Int. Med.* 8: 146 (Aug.) 1934.

2. Thompson, W. P.: Observations on the Possible Relation Between Agranulocytosis and Menstruation, *New England J. Med.* 210: 176 (Jan. 25) 1934.

Special Article

ARTIFICIAL PNEUMOTHORAX

CLINICAL LECTURE AT CLEVELAND SESSION

J. ARTHUR MYERS, M.D.

MINNEAPOLIS

Itard coined the term "pneumothorax" in 1803 to designate the existence of air in the pleural cavity. He had observed three cases of spontaneous pneumothorax and made reference to the cases described by Selle and Boyle. Since that time large numbers of cases of spontaneous pneumothorax have been reported, particularly since the advent of the x-rays, and numerous references have been cited in the literature. Thus nature demonstrated that a lung may be partially or completely collapsed while the opposite lung carries on adequately the respiratory functions of the body. Moreover, observation revealed the fact that marked improvement of pulmonary disease sometimes occurs following spontaneous pneumothorax. These facts brought to light great possibilities in both the diagnosis and treatment of chest diseases.

After carrying out several experiments on animals, Carson, a Scotch physician practicing in Liverpool, in 1822 concluded that one lung can be collapsed artificially with safety by introducing air into the pleural space. Although he recommended that artificial pneumothorax be used in the treatment of pulmonary tuberculosis in man, he apparently did not administer it. Only a decade later, McRuer of Bangor, Maine, made some independent observations, which also led him to recommend immobilization of the diseased lung by introduction of air into the pleural cavity. In 1882 Forlanini of Italy also suggested artificial pneumothorax in the treatment of pulmonary tuberculosis.

Although there is reference in the literature to the introduction of air into the chest for the treatment of disease by the Greek physicians in the fourth century B. C., the modern practice of artificial pneumothorax dates back to 1888, when Forlanini introduced air into the pleural cavity of a patient suffering from pleural effusion, and in 1892, when he actually collapsed a diseased lung.

Apparently not knowing of the work of Forlanini and from independent observations and thinking, Murphy of Chicago reported some actual cases he had treated by artificial pneumothorax in 1898. Tice began to use artificial pneumothorax about the same time as Murphy, and Lempke continued the work that Murphy began. Since that time artificial pneumothorax has become a standard method of treatment. Waring speaks of it as a "procedure that has unquestionably saved hundreds of thousands of lives, and as long as mankind suffers from tuberculosis will remain a most valuable method of treatment."

METHOD OF ADMINISTRATION

In collapsing the lung by this method, pure nitrogen, pure oxygen, carbon dioxide and sterile air have been used. Although these gases in pure form may have

Prepared with the aid of a grant from the Medical Research Fund of the University of Minnesota Medical School.

Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 11, 1934.

From the Departments of Internal Medicine and Preventive Medicine, University of Minnesota Medical School, and the Lymanhurst School for Tuberculous Children.

certain minor advantages, filtered air has been found to be the most practical and satisfactory.

Simple and inexpensive devices can be made or may be purchased for the administration of air into the pleural cavity. These are equipped with manometers that determine when the point of the needle is in the pleural cavity. When one is certain of this fact, a small amount of air, approximately 25 cc., is allowed to flow into the pleural cavity. If the manometer shows that the pressure is still definitely negative, another 50 cc. of air may be introduced. If the manometer readings are still good, one should continue to introduce small amounts, watching the manometer readings until approximately 200 to 250 cc. has been introduced. This amount suffices for the initial treatment in the case of an adult and should be decreased for children, according to the size of the chest. The second treatment should be administered in approximately forty-eight hours, and here again, with the same meticulous care, one should introduce only small amounts of air between manometer readings until approximately 300 cc. has been introduced, provided the pressure remains negative. The third treatment is administered about seventy-two hours after the second; the fourth about five days after the third. The subsequent treatments may be administered at weekly intervals. Later, many patients may have their intervals increased to ten days or two weeks. However, this must be determined by the rapidity with which the air is absorbed from the pleural cavity and by the degree of collapse one desires to maintain. When no adhesions are present, the lung collapses to the desired degree without the use of positive pressure. When adhesions are present, one is justified in using slight positive pressure after the patient has been on treatment for some time.

Some workers later use high positive pressures in order to stretch the adhesions sufficiently to permit a satisfactory collapse. Others prefer never to use more than a slightly positive pressure because of the possibility of tearing adhesions.

COMPLICATIONS

The passing of a needle through the chest wall for the purpose of introducing air into the pleural cavity is attended by some dangers, which must be recognized by every physician administering this form of treatment. The first is that of gas embolus, which may result if the tip of the needle is in a pulmonary vessel when air is introduced. This accident may be avoided by refraining from the administration of air until the manometer readings indicate with certainty that the point of the needle is in the pleural cavity. Probably a far more common cause of gas embolus is the giving way of an adhesion at its pulmonary attachment, resulting in the tearing of pulmonary vessels in which there is negative pressure. Thus, air that has been introduced into the pleural cavity is readily sucked into these vessels and may be transmitted to the coronary or cerebral arteries. This is a most distressing complication and sometimes is fatal. Fortunately, it occurs rarely. In the administration of approximately 20,000 treatments during the past fourteen years I have seen five cases of gas embolism, only one of which was fatal. The last one occurred six years ago.

Another complication is spontaneous accidental pneumothorax. This may be due to injury by the needle of the visceral pleura and pulmonary tissue immediately

subjaacent, thus allowing air from the lung to leak into the pleural cavity. The more common cause of this complication is the giving way of an adhesion at its attachment to the visceral pleura, thus producing a fistula through which air passes from the lung to the pleural cavity. Again, spontaneous collapse of the contralateral lung is occasionally seen. Such accidents may occur at any time during the administration of treatment or during the interval between treatments. When the lung spontaneously collapses suddenly and a flap of visceral pleura serves as a valve to prevent the return of air from the pleural cavity to the bronchial tree, relief must be provided by removal of air in a short time to prevent death. I have seen only two patients who I believe died from spontaneous or accidental pneumothorax. In both, death occurred within a few minutes after the onset of symptoms and before a physician could reach them. Although there was no postmortem examination and other physicians are inclined to believe that each patient died of cardiac failure, I am still of the opinion from the symptoms described by members of their families and other associates that death was due to spontaneous pneumothorax.

Another complication is fluid in the pleural cavity. Small serous effusion is seen very frequently in artificial pneumothorax patients. It probably would be found in every case if one searched diligently and persistently enough for it. The serous fluid that lubricates the pleural layers gravitates to the most dependent part of the pleural cavity when air is introduced. Such effusion is of no significance. Large serous effusion occurs less frequently. It is often accompanied by symptoms that closely simulate those of influenza but usually persist longer. After the symptoms subside, the patient regains strength and a sense of well being in a short time. If not aspirated, the fluid may remain for weeks or months and apparently favors the formation of obliterative adhesions, which may make further treatment impossible. Fibrin bodies in the fluid are observed in some cases and cast dense shadows on the x-ray film.

Some large effusions that appear to be only serous in the beginning are later found to be infected with tubercle bacilli or other pyogenic micro-organisms, or both. Thus, empyema becomes a complication that is most serious when it is due to mixed infection. Empyema rarely if ever results from micro-organisms reaching the pleural cavity through the needle. The cause of tuberculous empyema is obvious. Mixed infections usually result from pleural fistulas, which allow pyogenic micro-organisms to pass from the lung into the pleural cavity.

When instituting artificial pneumothorax, one must keep under close observation the mediastinum, since in some persons it is very flexible. This may result in considerable respiratory and cardiac embarrassment. In some cases mediastinal hernia is seen. When the mediastinum is too flexible to allow satisfactory collapse of the diseased lung, there are methods of stabilizing it, such as the introduction of oil into the pleural cavity.

Occasionally febrile reactions result from artificial pneumothorax treatment. They are probably due, for the most part, to increased absorption of toxins as a result of the collapse of the diseased area. These usually are not serious and disappear in a short time.

During and immediately following the first treatment, the patient may experience a sensation in the chest that

is difficult to describe but is often spoken of as "heaviness." This is not significant and usually lasts only a few minutes to an hour or so. During the first twenty-four hours after the first treatment there may be discomfort in the chest, which varies in intensity from a slight ache to excruciating pain. This is caused in most cases by adhesions. The pain may be controlled by codeine. Usually it is not present following subsequent treatments.

In some cases, when artificial pneumothorax is attempted, pleural adhesions are encountered. They may vary in size and extent from those which completely obliterate the pleural space to those which are only thin strands and stretch to such an extent that satisfactory collapse is obtained. Between these extremes are seen adhesions, which become definitely stretched but not enough to permit the closing of cavities or adequate collapse of the diseased area to allow a good clinical result. In many such cases, intrapleural pneumolysis is practiced with great success. The adhesions are cauterized near their attachment to the parietal pleura, following which the lung often collapses in a satisfactory manner as artificial pneumothorax is continued.

In an occasional case, during the first few hours of treatment, air leaks through the needle tract and causes subcutaneous emphysema. This is of no significance but may cause the patient some discomfort and considerable alarm. After the first treatment is administered, the physician should take time to discuss the various possibilities with regard to pain, subcutaneous emphysema, and so on. If this is not done, the patient's confidence may be lost if some of these possibilities actually occur.

EFFECT ON NORMAL AND DISEASED LUNG TISSUE

Since artificial pneumothorax was first instituted, much has been learned about its effect on normal as well as on diseased lung tissue. Through observations it has come to be looked on as a simple procedure rather than a drastic one, as it was at first thought to be. Careful observations have revealed the fact that no serious harm comes to normal lung which is kept under a state of collapse over a long period of time. Gardner has shown that alterations resulting from collapse of the lung consist of the development of fibrous tissue in the pleura and connective tissue coats of the blood vessels and bronchi. The degree of permanent changes caused by artificial pneumothorax in fifteen cases studied pathologically was found to depend on the extent and degree of injury by the tuberculous process. There are slight changes in the circulatory system when artificial pneumothorax is instituted, but they are harmless. The slight deviations from normal sometimes observed in the electrocardiogram are due to pleural and mediastinal adhesions that have altered the position of the heart rather than to myocardial factors. Basal metabolism is not altered in a significant way. Therefore, artificial pneumothorax can no longer be looked on as a drastic procedure when indicated in the treatment of pulmonary disease. Of the various forms of collapse therapy, artificial pneumothorax is the simplest and yet the most effective.

Fortunately, diseased areas in the lungs, except consolidations, dense fibrosis and the like, collapse more readily than normal areas, owing to the fact that in such areas there is little or no diminution of contractility

but marked impairment of expansibility. Thus, selective collapse actually occurs. This makes it possible in many cases to keep the diseased area well collapsed while a considerable part of the normal lung tissue is functioning.

ARTIFICIAL PNEUMOTHORAX IN DIAGNOSIS

Since artificial pneumothorax is a simple procedure and when carefully performed does no harm, it has been found to be a very valuable diagnostic procedure, especially in diseases of the mediastinum, pleura, lungs, ribs and chest wall when obscure conditions exist. It has been used to determine definitely whether interlobar empyema exists and whether true cavity formation is present in the lung, as well as in mapping out other pulmonary conditions.

ARTIFICIAL PNEUMOTHORAX IN TREATMENT

Pulmonary Tuberculosis—Formerly the indications for artificial pneumothorax were hemorrhage, cavity formation, or extensive disease involving one lung. In recent years the indications have been extended. Not long ago a small area of disease in the opposite lung was looked on as a contraindication to artificial pneumothorax. However, paradoxical as it may seem, disease in the opposite lung often improves following the institution of artificial pneumothorax on the side of the more extensive disease. Such improvement is probably due to several factors. First, by reducing the toxemia the patient's general condition is definitely improved, giving the body a better chance to control the lesion in the contralateral lung. Second, the sputum is soon rendered negative or entirely disappears, so that the feeding of the opposite lung and other parts of the respiratory tract with tubercle bacilli is discontinued. Third, the effect of pneumothorax is not confined to the lung being treated but has a slight immobilizing effect on the opposite lung. In case the disease in the opposite lung does not come under control or in case a new lesion appears in it, partial bilateral artificial pneumothorax may be instituted with a good deal of success. The reserve lung capacity is so great that it is possible to collapse each lung to about one-half its volume without causing dyspnea or other discomfort to the patient. A good many workers now look on minimal, progressive pulmonary tuberculosis of the reinfection type as a definite indication for artificial pneumothorax. Conditions that were formerly thought to be a contraindication, such as tuberculous laryngitis and enteritis, are no longer considered so, as they may improve if the pulmonary lesion is brought under control. Even in cases of coexisting pulmonary carcinoma, artificial pneumothorax may render the patient's sputum negative until death results from malignancy. Diabetes is not a contraindication; in fact, many diabetic patients with coexisting pulmonary tuberculosis now have their diabetes treated successfully by modern methods and their pulmonary lesions brought under control by artificial pneumothorax. One of my patients has been under treatment for both conditions since 1925.

The main contraindications for artificial pneumothorax are cardiac disease, asthma, severe grade of emphysema with markedly reduced vital capacity, and extensive bilateral tuberculosis.

Rest has long been looked on as the most important factor in the treatment of a tuberculous lesion in any part of the body. Strict bed rest alone reduces the activities of the lungs very slightly. They continue

breathing at the rate of approximately 25,000 times a day. This probably is one of the reasons why bed rest alone so often fails. With satisfactory collapse by artificial pneumothorax, the diseased organ is actually at rest. This treatment has two main effects on pulmonary tuberculosis. First, the growth of tubercle bacilli is definitely inhibited. Second, venous stasis and some blocking of the lymph circulation occur, which are believed to stimulate the growth of connective tissue and aid in healing. Thus, it is well known that the two factors so significant in the control of tuberculosis are present; namely, the inhibition of proliferation of tubercle bacilli and the stimulation of fibrosis. Relief from symptoms, such as cough and expectoration, fever, increased pulse rate and impaired digestion, is very quickly experienced in many cases.

When cavities are present and their walls are not too thick, artificial pneumothorax closes them by bringing the walls in apposition where they become adherent and are permanently obliterated. Thus, artificial pneumothorax is a simple, harmless procedure and yet most effective in the treatment of pulmonary tuberculosis.

Unfortunately, most of the results of artificial pneumothorax treatment observed to date deal with cases that were moderately or far advanced when the treatment was begun. The first object of artificial pneumothorax treatment is to render the sputum negative or to prevent a case with negative or no sputum from becoming positive, thus protecting the patient as much as possible against endogenous reinfection and protecting his associates and the community against contamination with tubercle bacilli. By the time the disease has become moderately or far advanced most patients have positive sputum, whereas in the minimal stage this is true of only approximately one third.

The Committee on Treatment of the American Sanatorium Association, consisting of Douglass, Peters and others, found that at the termination of artificial pneumothorax as recommended by the physician 66.1 per cent had negative sputum, whereas among those whose lungs reexpanded before their physicians recommended it only 46.9 per cent had negative sputum. A much higher percentage would have had negative sputum if the treatment could have been instituted while the disease was in the minimal stage. They classified 405 patients with reference to sputum at the termination of treatment according to the condition of the treated lung before collapse. Approximately 11 per cent more were negative when slight or no cavitation was present before treatment was begun than among those who had definite cavity formation. Thus, the less disease and destruction done before the lung is collapsed, the better the chances of rendering the sputum negative to tubercle bacilli.

In most groups of cases reported, those in which collapse was possible have shown a 20 per cent or more better chance of becoming well or able to work than those who were not treated by this method. Thus, the treatment is very much worth while even in moderately or far advanced cases, yet many such cases require long periods of bed rest in addition to artificial pneumothorax treatment.

Although the treatment of moderately and far advanced cases by pneumothorax has been found to be far superior to previous forms of treatment, such as strict bed rest, still it was not entirely satisfactory because the patients had often lost their best chances

of recovery before the treatment was begun. Therefore the results obtained leave much to be desired. Moreover, when cavities have been formed, a high percentage of patients were disseminating tubercle bacilli to their associates.

Many artificial pneumothorax workers are now of the opinion that this form of therapy is most valuable for patients with minimal lesions. In the past, such lesions have been diagnosed so rarely, and when found so many workers believed that pneumothorax was too drastic for them, that very few reports show the results of artificial pneumothorax on minimal lesions. However, with modern methods of diagnosis, including the tuberculin test and the x-ray film, particularly when used as a part of the periodic examination in the physician's office and in special case-finding campaigns, the percentage of cases found presenting minimal progressive pulmonary tuberculosis is definitely increasing. The disease is found before it has produced symptoms, before great destruction of lung tissue has occurred, and before tubercle bacilli are being eliminated. In these cases, physical signs usually are absent. The diagnosis is made largely by the tuberculin test and the roentgen examination. One is not justified in instituting artificial pneumothorax every time a shadow, minimal in extent, is found in the lung. The roentgen examination is not sufficiently refined to determine on first examination with a high degree of accuracy whether the lesion is of long standing and well controlled or is recent and progressive. To collapse a lung containing the former type of lesion is to do definite injustice to the patient and much unnecessary work. Therefore, before instituting collapse therapy one should keep the lesion under observation long enough to determine that it is progressive. Whenever this fact is established, no matter how small the lesion, it is none too early to institute artificial pneumothorax. To wait until the disease has become extensive, cavities have formed and adhesions are binding the lung at least in part to the chest wall is just as ridiculous as to wait until the appendix has ruptured before performing appendectomy.

I now have approximately fifty patients under observation whose artificial pneumothorax was instituted when the disease was minimal. To date, the results in this group are superior to those in other groups under my care who had artificial pneumothorax instituted after the disease had become moderately or far advanced. The results are also superior to those of other groups of minimal cases whom I have observed as they were treated by bed rest alone. I am convinced that, if the lesions are minimal when the treatment is begun, strict bed rest is necessary for only a short time, if at all, and in most cases the period of hospitalization when necessary can safely be limited to a few weeks. Thus, from the standpoint of rendering the sputum negative, of obtaining good results, that is, restoring good working capacity in a high percentage of cases and saving of the patient's time, the earlier in the course of the disease the treatment is begun, the better.

Any physician practicing artificial pneumothorax therapy to a considerable extent will be confronted with lesions in all stages from minimal to far advanced. The answer to the frequently asked question when should artificial pneumothorax be instituted is to attempt it in all unilateral cases at the earliest possible moment

after the disease is known to be progressive, no matter how minimal or how advanced except when the foregoing contraindications are present. When both lungs are involved, that of the more extensive and progressive disease should be collapsed, provided the better lung is or becomes sufficiently clear to carry on the necessary respiratory functions. The physician frequently meets considerable disappointment, since a fair percentage of patients in whom artificial pneumothorax is definitely indicated as determined by the extent of the lesion have extensive or complete obliteration of the pleural cavity through the development of adhesions. For this group, strict bed rest is indicated and should be supplemented by phrenic exeresis, extrapleural thoracoplasty and extrapleural pneumolysis if necessary. Even though the prognosis is not as favorable in far advanced cases, artificial pneumothorax should be attempted when the better lung appears sufficiently free from disease. Good results are obtained in enough such cases to justify giving every patient the advantage of a trial of artificial pneumothorax. Obviously, the less extensive the disease, the better the general condition of the patient; and the fewer the extrapulmonary complications, the better is the patient's risk.

When one sees the mother with extensive pulmonary tuberculosis, first detected by reason of symptoms a few days or a few weeks after delivery, one can be reasonably certain that the disease did not develop suddenly; that in all probability it had been present in a detectable form long before the pregnancy began. Therefore, many disasters can be avoided when all physicians insist on a careful chest examination, including the x-ray film, of every pregnant woman as early in the course of pregnancy as possible. In the Minneapolis General Hospital and Minnesota General Hospital, there is close cooperation between the obstetric and the chest services. Every woman who presents herself for obstetric care is referred to the chest clinic, where the tuberculin test is administered and x-ray films of the chest are made of all positive reactors. Obviously, if the private practitioners of this country, who do the bulk of medical work, will adopt the same procedure, they will be rewarded many times for their effort through finding in the chest of pregnant women tuberculous lesions previously unsuspected. Often these lesions can be successfully treated by artificial pneumothorax and the pregnancy allowed to continue without any harm to the mother. In our experience, delivery is not rendered more difficult after the institution of artificial pneumothorax. The mother's sputum is prevented from becoming positive or, if positive when the lesion is detected, it may be rendered negative. Although it does not seem wise for such mothers to nurse their infants, they may remain in the home as safe associates of their families. The physician who detects and treats such cases renders a service of inestimable value to the patient, the family and the community. He not only often saves the mother's life or prevents a long period of invalidism, but he protects her children, her husband and many members of the community against contamination with tubercle bacilli.

In the past, artificial pneumothorax has been used very extensively among ambulatory patients. However, most of these patients were submitted to a long period of bed rest after artificial pneumothorax had been instituted. They were later allowed to become ambulatory and return to work, while the artificial

pneumothorax treatments were continued. In recent years it has been found that many patients with pulmonary tuberculosis may have artificial pneumothorax instituted without being subjected to strict bed rest, or at most to a few weeks of such rest, while the treatment is being instituted. Reports of the results of such treatment coming from various parts of the world, including a few centers in this country, are very encouraging. Patients on ambulatory treatment from the beginning must be very carefully selected. They will be found among individuals who have minimal or moderately advanced unilateral lesions which are definitely progressive but which have not yet caused serious illness. There should be no significant tuberculous or nontuberculous complications. The sputum may be negative or positive. If it is negative or none is present, one may direct the disease toward healing rather than let it go on progressing. If it is positive, collapse will often render it negative or entirely absent in a short time. The physician often sees patients with advanced disease, mostly unilateral, who refuse hospitalization or do not require it; that is, their general condition is good, they have reasonably good working capacities, but there is always the danger of their bacilli spreading to other parts of the body and to their associates. To collapse the diseased lungs of such patients while they remain ambulatory is a service not only to them but to their communities.

Tuberculosis is frequently seen among elderly persons. While the disease may not cause them serious illness and may not cut short their lives, it may be very dangerous to their associates. In such cases artificial pneumothorax, when possible, protects the community against the spread of their tubercle bacilli while the patients remain ambulatory.

Thus there is a considerable percentage of patients with pulmonary tuberculosis who may now be treated with a short or no period of hospitalization. They avoid the mental complications that so frequently develop from long periods of hospitalization, they are permitted to enjoy their homes, and they continue their earning capacity. We now have under treatment approximately seventy-five such patients who in times past, when we believed it was necessary to hospitalize them, would have cost the taxpayers approximately \$75,000 a year. To date, the results have been as good as those obtained in other cases that were treated both by strict bed rest and by collapse. Moreover, the extension of this work to larger numbers of patients makes available beds in institutions, where patients with disease so advanced that it cannot be treated successfully may be isolated.

Artificial pneumothorax is indicated in children only when the lesions are of the reinfection type. Unfortunately, unless tuberculin tests have been administered periodically it is difficult to differentiate between the lesions of the first infection type in the inflammatory stage and lesions of the reinfection type in the infiltrative stage. However, a period of observation often aids in such differentiation. Lesions of the first infection type usually cause slight or no symptoms. They reach their maximum development in a short time, remain stationary, and then begin to resolve, whereas lesions of the reinfection type usually show a tendency to increase in size sooner or later, cause symptoms and present definite evidence of fibrosis, cavitation and other conditions. There is rarely, if ever, any justification

for inducing artificial pneumothorax in the case of a child who has the first infection type of tuberculosis. This statement applies also to the first infection type of tuberculosis in adults. Among 149 children whom we have observed with the first infection type in the inflammatory stage over a period of one to twelve years at the Lymanhurst School, we have not instituted artificial pneumothorax in a single case. When the lesion is found to be of the reinfection type and is demonstrated to be of a progressive nature, no matter how small it is or how young the child, artificial pneumothorax is recommended. This procedure does not lead to deformity unless complications arise, such as empyema; therefore one need have no hesitancy in administering artificial pneumothorax during the period of childhood.

The question which artificial pneumothorax patients most frequently ask the clinician is When may I discontinue the treatments? Unfortunately, symptoms, physical signs and x-ray films are not safe criteria in answering this question. No one can determine with certainty when the tuberculous lesion is so well under control that it will not reactivate if allowed to reexpand. In the earlier days of this work, the lung was usually allowed to reexpand too soon. The disappearance of symptoms and the marked improvement in the patient's general condition led to a false sense of security on the part of the patient as well as of the physician. Experience soon taught us however that, if permanent results were to be obtained, the lung should be collapsed over a long period. No one can lay down a rule as to just how long the treatment should be continued. This is a problem that must be solved for each individual patient. It must depend on several factors, such as the extent of disease when the treatment is instituted, size of the cavities, presence of tubercle bacilli in the sputum, tuberculous and nontuberculous complications, and the patient's general condition. In minimal cases one hesitates to allow the lung to reexpand in less than two years. In moderately or far advanced cases the lung should be kept collapsed for a period of at least three to five years and in many cases much longer; in fact, when large cavities are present and the involvement is extensive when the treatment is instituted, it is doubtful whether the lung should ever be allowed to reexpand. The red cell sedimentation rate, as recommended by such workers as Cutler, may prove a valuable index on this subject. He is of the opinion that, by observing this rate carefully and periodically throughout the course of treatment, one can determine with a reasonably high degree of accuracy when the lesion is well under control.

A very unfortunate fact about artificial pneumothorax work is that one is not able in all cases to continue the collapse as long as one desires. In a fair percentage of patients, adhesions develop in the pleural cavity and finally obliterate the pneumothorax space. The development of such adhesions may be rapid, so that the space is lost in a short time, or it may be slow, thus permitting one to continue the treatment with a partial collapse over a long period of time. When it is obvious that such adhesions are developing, particularly if the space is being lost fairly fast, oleothorax should be instituted at once. In such cases gomenol (an oil obtained from *Melaleuca viridiflora*) may be used, although many workers are of the opinion that sterilized liquid petrolatum or olive oil has an equally good effect.

Thus, through the replacement of air with oil, further development of the obliterative adhesions is prevented or definitely retarded and the lung may be kept collapsed over the desired period of time. Because of complications that sometimes arise with oleothorax, it is not yet considered a substitute for artificial pneumothorax except in special cases.

Other Pulmonary and Bronchial Conditions.—Artificial pneumothorax has been used to some extent in the treatment of bronchiectasis and pulmonary abscess. Although it has not been found as valuable in these conditions as in pulmonary tuberculosis, it is very much worth while in properly selected cases.

Lobar Pneumonia.—One of the recent developments in artificial pneumothorax work has been its administration to patients suffering from lobar pneumonia. In 1921 Friedman reported the results of artificial pneumothorax in seven cases of pneumonia. Since that time, several workers in other countries have used it and the reports to date, although they cover a limited number of patients, are very encouraging. The more recent observations were reported by Coghlan in January 1932 and by Li in September 1932. Each treated six cases. The treatment resulted in almost immediate relief of symptoms, such as fever and pain. In short, artificial crises appeared soon after the treatment was instituted. In fact, fifty cases have been reported in other countries, with forty-seven recoveries.

In this country, Moorman of Oklahoma City instituted artificial pneumothorax in the treatment of two cases of pneumonia in 1930. Lieberman and Leopold of Philadelphia reported the results of their work on therapeutic pneumothorax in experimental lobar pneumonia in dogs in March 1934. They produced lobar pneumonia in thirty-six dogs, eighteen of which were used as controls and eighteen were treated by artificial pneumothorax. Of the treated dogs, fifteen recovered and three died; of the untreated dogs, five recovered and thirteen died. Two of the treated dogs probably died from another cause; thus, the results of treatment were exceptionally good. Of this work Stengel says:

These results were so confirmative of the clinical experiences reported by several persons . . . that we proceeded to try the treatment in man.

Again he says:

While this method seems to be a step of value in the treatment of pneumonia, I think it should be emphasized and reemphasized that this is not a treatment which in the state of our present knowledge should be regarded as applicable to influenzal pneumonias or diffuse streptococcal pneumonias, nor should it be used, in my opinion, in any case of pneumonia that is recognized at the time as being in any degree bilateral, even with a small lesion on the opposite side.

In May 1934 Blake of New Haven reported his results in the treatment of twenty early cases of pneumococcal lobar pneumonia by artificial pneumothorax on or before the fourth day of disease. Eleven of his patients had a free pleural space, and all recovered promptly by crisis or rapid lysis with no complications except a sterile pleural effusion in one. In the remaining nine cases, preexisting pleural adhesions were present, which prevented adequate collapse. Although none of these patients died, the disease appeared to run its natural course and two developed empyema.

In June 1934 Behrend and Cowper reported the results of treating eleven patients with unilateral lobar

pneumonia by artificial pneumothorax. Nine patients recovered, and two died, but neither of the fatalities could be directly attributed to the pneumothorax.

Stengel says:

The very prompt development of a crisis in patients with marked but early lobar pneumonia and the almost immediate improvement in all subjective symptoms is very striking. Taking all the cases together the mortality of pneumonia under this treatment will probably be distinctly limited but it is to be remembered that certain complicating conditions, such as bilateral involvement, the presence of dense pleural adhesions, etc., interfere with the appropriateness and effectiveness of the treatment and possibly these cases may also be those which contribute to elevating the mortality rate of this disease under any kind of treatment. If the mortality from pneumonia were in no degree lowered by pneumothorax, it might still be said that the prompt improvement and the speedy termination of the disease secured by pneumothorax treatment would still constitute a very decided advance.

SUMMARY

1. Forlanini in Italy collapsed a diseased lung in 1892. Murphy of Chicago in 1898 reported a group of cases treated by artificial pneumothorax.

2. Filtered air to the amount of from 200 to 250 cc. is introduced, under carefully observed manometer readings, into the pleural cavity as an initial treatment. The second treatment is given forty-eight hours later; the third seventy-two hours after the second, and the fourth about five days later. The interval between subsequent treatments depends on the extent of collapse and the rate of absorption of air.

3. The complications are gas embolus, spontaneous or accidental pneumothorax, serous effusion, empyema, mediastinal hernia, febrile reactions, pain and subcutaneous emphysema.

4. Artificial pneumothorax has no deleterious effect on normal lung tissue or the other organs, such as the heart. Diseased tissue collapses more readily than normal tissue, so that selective collapse may result.

5. Artificial pneumothorax may be used as a diagnostic measure.

6. Hemorrhage and minimal progressive to far-advanced unilateral pulmonary tuberculosis are indications for pneumothorax. Even bilateral disease, if one lung is not too extensively involved, responds to pneumothorax treatment. Contraindications are cardiac disease, asthma, severe emphysema and advanced bilateral tuberculosis.

7. In moderately and far-advanced cases, successful pneumothorax shortens the period of bed rest necessary, renders the sputum negative, and closes cavities if the walls are not too thick. In minimal progressive lesions it prevents the sputum from becoming positive or, if positive, renders it negative and controls the disease and frequently obviates hospitalization and strict bed rest.

8. Pregnancy is an indication for rather than against pneumothorax, if the disease is discovered at that time because of the beneficial effect for the patient and the possibility of changing the sputum to negative.

9. Treatment by pneumothorax with the patient remaining ambulatory is possible for selected cases, including elderly persons.

10. Pneumothorax is indicated in children if the lesion is of the reinfection type.

11. Several factors must be kept in mind when discontinuation of pneumothorax is acceded to. Minimal cases should continue at least two years, and moderately

or far-advanced cases from three to five years or even longer.

12. Oil may be substituted for air if adhesions are forming and obliterating the pleural cavity.

13. Pneumothorax is used to some extent in bronchiectasis, pulmonary abscess and lobar pneumonia.

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Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.

CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed.

THERAPY OF ECZEMA (DERMATITIS)

This disorder is a noncontagious exudative inflammation of the skin.

THE CAUSE

The cause is twofold in all cases of true eczema: an irritant (exciting cause) and a special irritability (predisposition) of the skin. Without the latter, one has to deal with simple acute dermatitis. Eczema is always a chronic disease, with, however, a tendency to acute exacerbations.

Exciting Causes.—These must always be looked for and eliminated when discovered. Several of these may act simultaneously. They may be:

(a) Chemical: Occupational poisons, as acid, alkalis, turpentine, formaldehyde, toilet articles such as strong soap, dyes (e. g., paraphenylenediamine, which is also used to stain furs), ingestion of medicines.

(b) Mechanical: Friction of opposing surfaces, woolen underwear, scratching (as on account of animal parasites), pressure.

(c) Thermal: Heat or cold.

(d) Actinic: The sun's rays.

(e) Allergens: For methods of discovery see "Allergy."

(f) Micro-Organisms: Though not perhaps a primary cause, these may act as secondary invaders, aggravating the condition and delaying its healing.

In localized involvement there is a strong probability of the existence of a localized exciting cause, just as in generalized involvement a general (predisposing) cause is probably present.

Predisposing Causes.—These may be found in:

(a) The Condition of the Skin: It is desirable to distinguish between the dry, parchment-like skin in which soap as well as roentgen therapy must be avoided and in which bland oils should be used for cleansing and ointments after baths (these patients are better in summer than in winter) and the oily, seborrheic skin, in which roentgen rays are useful to reduce the activity of the sebaceous glands, which may be benefited by reduction in carbohydrate and in which sulphur is likely to be useful.

(b) Digestive Disturbance: Feeding must be at regular intervals, nothing being allowed between meals. The feces should be examined for excess of starch (blue with iodine) or fat. In infants, if the stools are acid, green and loose, sugar restriction is indicated.

(c) Nutritional Disturbance: In the overweight individual, feeding should be reduced quantitatively as well as qualitatively (especially carbohydrate). In the underweight patient the malnutrition must be corrected.

(d) Allergy: Allergy (q. v.), most commonly in infants and to egg, milk, wheat, demands exclusion of the offending food from the dietary.

(e) Systemic Disease: In such conditions as diabetes or nephritis the skin is a great storage area for sugar, salt and water. Reduction of salt and of sugar intake may be of special value in exudative skin disease.

(f) Focal Infection: This may lower resistance, and its removal may be required for cure.

(g) Circulatory Impairment: Eczema of the lower third of the leg may be maintained by varicose veins (q. v.).

(h) Disturbance of the Nervous System: As the skin has the greatest vasomotor nerve supply in the body, disturbance of the nervous system, most especially of emotional nature, may prevent healing or cause exacerbations. The "blush area" is particularly affected in this manner.

LOCAL THERAPY

Local therapy requires recognition of three stages: the acute stage, the subacute stage and the chronic stage.

Acute Stage.—In the acute stage, soothing treatment is required. One should avoid water and hypotonic solutions (which increase swelling), ointments (which interfere with drainage and favor proliferation of micro-organisms in the retained exudate), and irritants of all kinds, such as disinfectants, soaps, chafing, rubbing and most especially scratching (for infants, light elbow splints). To remove crusts, a starch poultice (see impetigo) should be used; for cleansing, olive oil or cold cream, a boric acid solution, or a colloid bath (e. g., three cupfuls of oatmeal gruel in a gauze bag, which is squeezed until the warm water becomes opalescent; a cupful of sodium bicarbonate added to the bath enhances its antipruritic value).

(a) Cooling Lotions: The cooling effect is produced by their evaporation: hence they must not be applied under an occlusive dressing. They should be used either in the form of compresses, if drainage is aimed at, or as drying applications for protection. Compresses are especially valuable to "clear up" infection.

PRESCRIPTION 1.—Menthol-Boric Acid Solution

℞ Menthol	0 015 Gm.
Boric acid	10 00 Gm.
Water	500 00 cc.

Apply on gauze compress.

and cold boric acid solution is probably as good as any, provided it is not permitted to dry. If itching is severe, the addition of a minute amount of menthol (prescription 1) may be permissible. Keeping the compress moist is best done by frequent changing of the top dressings without disturbing the lowest layer, to avoid mechanical irritation. When the acutest stage has passed, solution of aluminum subacetate, diluted 1 to 10 and later 1 to 5, is useful. It may be borne in the acutest stage if diluted with ice cold milk. Whenever such moist applications are used, it is well to protect the healthy skin surrounding the lesion with Zinc Paste.

If a drying effect is desired, Calamine Lotion, dabbed on frequently, is likely to be useful on "weeping" surfaces. If crusts form after a repeated reapplication, these need to be removed by means of sweet oil, which may then be removed by a small quantity of egg yolk gently worked up into an emulsion with a little water (Glaze's method).

If Calamine Lotion is found too drying, Calamine Liniment, which is a cream lotion rather than a liniment (because it is not applied by rubbing), might be useful.

PRESCRIPTION 2.—Calamine Liniment with Phenol

℞ Phenol, liquefied	0 60 cc
Calamine liniment	120 00 cc

Apply freely.

If the itching seems excessive, the addition of a small proportion (0.5 per cent) of phenol (prescription 2) or of menthol or of both, may be admissible. On the whole, however, the less that is used of an irritant antipruritic in acute eczema, the better.

(b) Dusting Powders: Powders that are very fine and clinging such as talcum or zinc stearate, protect inflamed skin against friction, light and moisture and hence are especially important in the acute erythematous or the papular (dry) stage of eczema and between opposing body surfaces to prevent chafing. They should be applied liberally by means of a cotton wad. When the back is affected, body and bed linen should be thickly strewn with it, producing a "powder bed."

Subacute Stage.—In the subacute stage the applications may be mildly stimulating, antiseptic and antipruritic. When one is in doubt it is always safer to start with a soothing rather than stimulating remedy and not to apply the latter until improvement under the soothing agent has come to a standstill.

(a) Pastes: Pastes with a fatty base should be used only when the surface to which they are to be applied is dry enough for them to stick. They are applied to the lesion as butter is spread over bread.

The chemical reaction of the application is probably of greater significance than has heretofore been surmised. It may explain why one of these salves may aggravate a condition that is soothed by another one. Certain infantile eczemas have been found strongly alkaline, while some cases of eczema in adults were acid. It may be that the acidity of the sweat causes the more superficial lesions to be acid, while the alkalinity of serous exudates may be responsible for alkaline reaction in more deeply located lesions. The N. F. Soft Zinc Paste (Unna's), essentially Lime Liniment (linseed oil and lime water, equal parts) with zinc oxide and chalk (equal parts) to secure a soft pastelike consistency has an alkaline reaction. Of firmer consistency is Zinc Paste (Lassar's), which by reason of its 2 per cent of salicylic acid has an acid reaction and exerts a mildly stimulating effect toward healing. It can be made still firmer, yielding a better crust, by substituting hydrous wool fat for one half of the petrolatum (prescription 3). In this prescription, Coal Tar, which is alkaline, has been incorporated instead of the salicylic acid. A thin crust should be applied when a drying effect is desired, a thick crust when one wishes to soften and macerate. Such a crust may be best kept in place by means of a thin sheet of cotton and a bandage. Before a fresh application is made, the old one is removed with petrolatum or oil, provided it comes off readily. If not, it is left in place. Water should not be employed to remove it.

(b) Ointments: These have a softening effect as compared with pastes and they are indicated when the affected surface has become dry and is inclined to crack. Zinc salve may be used or a calamine zinc salve (prescription 4) if a somewhat flesh-colored zinc salve be desired, as for eczema of the ears.

When there is much itching, resorcinol 1 or 2 per cent or menthol (not above 2 per cent) may be added to Ointment of Rose Water (prescription 5), which by reason of the water it contains has a cooling and somewhat antipruritic effect of its own.

PRESCRIPTION 3.—Zinc Paste with Wool Fat

R Coal tar.....	1.00 cc.
Zinc oxide.....	
Starch	
Hydrous wool fat.....	
Petrolatum.....	12.50 Gm.

Apply as a rather thick crust and dust freely with talcum powder.

PRESCRIPTION 4.—Calamine Zinc Salve

R Calamine	4.00 Gm.
Zinc oxide ointment.....	30.00 Gm.

Apply twice daily.

PRESCRIPTION 5.—Ointment of Rose Water with Menthol

R Menthol	0.60 Gm.
Ointment of rose water.....	30.00 Gm.

Apply to itching part as required.

Chronic Stage.—In the chronic stage, stimulating (irritative) applications are indicated, and their strength should be in proportion to the chronicity of the condition. To be on the safe side, one may start with a mild application; but if no result is secured one should not hesitate to double or quadruple the strength. If excessive irritation occurs, one should promptly change to an appropriate soothing application, whereupon healing may take place that, without the interlude of irritation, might not have occurred.

(a) Lotions: These are especially suitable for application to extensive areas. A good example of a stimulating lotion is the Coal Tar Solution of the National Formulary. It is generally best to prescribe this lotion to be diluted by the patient, possibly with 20 parts of water to start with, and have him progressively double the strength. In some cases, even full strength may be tolerated with benefit. If one cannot rely on the patient's intelligence to carry out such instructions, a dilution of definite strength (prescription 6) had better be prescribed. It may afford great relief of the itching, and at the same time stimulate healing. A paste dressing might be applied over night.

PRESCRIPTION 6.—Diluted Coal Tar Solution

R Coal tar solution.....	30.00 cc.
Glycerin	8.00 cc.
Solution of calcium hydroxide.....	60.00 cc.
Water.....	to make 180.00 cc.

Apply three or more times daily.

(b) Ointments: These are preferably medicated with reducing agents, as such bodies stimulate the formation of horny epithelium (keratoplastic action). Most popular among these are the tars and sulphur.

Tars. Among the tars, the choice would lie between Wood Tar (which is acid), Oil of Cade (a tar prepared from juniper wood, which has the least unpleasant odor), Coal Tar (which is alkaline) and Sulphurated Bitumen (ichthyol), which is also alkaline and contains a considerable amount of sulphur. From 5 to 50 per cent of any one of these added to an ointment base may secure the desired degree and kind of stimulation. The tars are contraindicated in hairy places because of their tendency to produce folliculitis (tar acne).

Tar derivatives, less offensive because colorless and odorless, are of similar value. Most prominent among

these are resorcinol and salicylic acid. Resorcinol (prescription 7), which has considerable antipruritic value, may be employed for purpose of stimulation in a strength of from 5 to 20 per cent. In the higher concentrations it causes peeling of the skin (discutient effect). It may be incorporated in a paste base if pro-

PRESCRIPTION 7.—Resorcinol Salve

R Resorcinol	1.50 Gm.
Hydrous wool fat.....	10.00 Gm.
Petrolatum	20.00 Gm.

Apply locally with friction.

tection and maceration are desired. As it has a tendency to darken, it should not be used on the scalp. The brown stain produced by it on the clothing or the skin, may be removed by citric acid solution. Salicylic acid is devoid of any staining tendency and in strengths of 10 per cent (prescription 8) is a good discutient.

PRESCRIPTION 8.—Salicylic Acid Ointment

R Salicylic acid.....	3.00 Gm.
Hydrous wool fat.....	15.00 Gm.
Petrolatum	15.00 Gm.

To be rubbed in twice daily (in squamous eczema of the hands or feet).

Sulphur is perhaps especially indicated by skin with a seborrheic greasy tendency. Its strength may range from 3 to 30 per cent according to the tolerance of the lesion. The official Sulphur Ointment is 15 per cent in strength. The ointment base in which it is incorporated may vary from Benzoinated Lard, if a relaxant effect is desired, to Zinc Paste, if a protectant crust is aimed at.

PRESCRIPTION 9.—Film for Obstinate Itching

R Oil of cade.....	3.00 cc.
Flexible collodion.....	30.00 cc.

Paint on lesions.

PRESCRIPTION 10.—Film for Thickened Epidermis

R Salicylic acid.....	3.00 Gm.
Flexible Collodion.....	30.00 cc.

Paint on two coats twice daily until peeling occurs.

(c) Films: For obstinate itching (prescription 9) or to secure peeling of excessively thickened epidermis (prescription 10), films are useful.

(d) Irradiation: While contraindicated in acute cases, irradiation is useful in the chronic stage. Ultra-violet rays are believed to be especially valuable in cases associated with bacterial infections. General exposure to one erythema dose, with a second degree erythema dose to the affected area, may be given two or three times weekly. Roentgen rays often give spectacular results in subacute and chronic cases. They are usually given in fractional doses, 75 roentgens, at intervals of a week, carefully kept below an erythema dose. Radium is especially valuable in locations difficult to treat by roentgen rays, as in the treatment of fissured, crusted or lichenified patches. As the skin treated with x-rays and radium undergoes more or less permanent changes, their rather spectacular effect should not be resorted to until after the cause has been identified and removed. Resorting to this treatment repeatedly to remedy recurrences may result in dire damage to the skin.

Only soothing or at most but mildly stimulating applications are admissible in connection with radiation treatment.

CONSTITUTIONAL TREATMENT

If causal systemic treatment (q. v.) is not required, and even when it is, one may employ:

(a) Restorative Therapy: In the presence of anemia iron may be used or, to improve nutrition, cod liver oil.

(b) Alterative Therapy: Alkalis (potassium citrate or acetate) enough to alkalinize the urine may be useful in acute stages. Arsenic, while contraindicated in the acute form, may be useful in chronic cases characterized by dryness and thickening of the skin.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS ADOPTED THE FOLLOWING REPORT

H. A. CARTER, Secretary.

HYPERPYREXIA PRODUCED BY PHYSICAL AGENTS

Recently a survey of hyperpyrexia produced by physical agents has been carried out by the Council on Physical Therapy, requiring a period of about five months. The object of the survey was to evaluate the efficacy and to determine the dangers connected with the production of fever by physical agents. A list of questions was sent to physicians who have published articles on the subject of hyperpyrexia or have in some way been familiar with the subject. Thirty-four replies were tabulated.

Number of Physicians Reporting Who Have Given Artificial Fever Therapy

For six years	3
For five years	3
For four years	9
For three years	12
For two years	5
For one year	2
Average number of years	3.3

Several sources of energy were reported as having been tried; for example, diathermy, radiant energy, hot water baths, and various sources of high frequency current. Many physicians employed more than one source of energy.

Of this group questioned, more physicians made use of diathermy than any other method. Radiothermy, produced by either tubes or spark gap, came next. Radiant heat, infra-red cabinets, hot water baths, electric blankets, electric light cabinets, so-called nebulized spray cabinets or steam baths, electromagnetic induction and air conditioning came in the order named. One investigator reported the use of paraffin baths. Another reported giving hyperpyrexia by means of wrapping the patients in blankets and using no other source of heat except hot fluids administered by mouth.

The evidence presented did not indicate the number of patients treated by the various methods. It would appear, however, that more patients have been treated by diathermy than by any other method.

More patients afflicted with dementia paralytica were treated than any other disease mentioned. Multiple sclerosis came next, and then in order syphilis, chronic arthritis, asthma, tabes, gonorrhea, gonorrheal arthritis and circulatory disturbances of the extremities.

The work that has been done up to this time indicates certain definite clinical possibilities; however, the lack of statistical evidence does not warrant publishing the therapeutic possibilities or indications.

Fifteen of the thirty-four physicians reported untoward results, while seven replies on this question were too indefinite to tabulate. Thirteen reported burns, most of them being minor burns and due predominantly to the use of electrodes in the diathermy

treatment. Some reported burns on the skin surface caused by local action of the high frequency electric field. One investigator stated nothing serious. Six physicians reported that untoward results were due to the technic used. Another reported the untoward results due to faulty judgment and another to the effect of too rapid rise in temperature. In the set of questions sent out to physicians, one asked for the number of patients treated and another for the number of deaths traceable to the treatment of hyperpyrexia by physical agents. A total of forty-eight hundred and nine patients were treated by thirty-four physicians. Twenty-one physicians reported no deaths, while thirteen reported twenty-nine deaths.

One physician reported that out of seven deaths attributable to the treatment given he believed quite definitely that four were due to the humidity in the infra-red cabinet as a complicating factor. One physician reported that two deaths occurred as the indirect result of treatment.

One question asked was whether any complications had been observed, for example, in the cardiovascular system, genito-urinary system and nervous system. Nearly all the physicians reported that they had no complications. However, several did report heat stroke, circulatory collapse, herpes of the cornea, cerebral hemorrhage, albuminuria, tetany and convulsions.

Physicians reported that complete examination was always given to the patient and that any patients with cardiovascular diseases were not given the treatment.

After a careful study of this survey it appears that any type of machine or apparatus may be used with equal success, provided the person in charge is thoroughly competent and the technician under him is attentive and well informed as to the facts and dangers involved. The Council believes that the technic and administration of this treatment should be given as much study as a surgeon gives to a specialty or a certain branch of surgery. It is probable that any good scalpel will render efficient service in the hands of a skilful surgeon but would be a highly dangerous instrument in the hands of one not proficient in its use.

The Council believes that to subject a patient to an artificial fever of from 105 to 106 F., sustained for five hours or more, is to subject him to a fairly strenuous cardiovascular functional test. Patients with normal heart, kidneys and blood vessels tolerate it well, but patients with myocardial degeneration or with valvular, coronary or other cardiac abnormalities, with impaired renal function from organic disease, with excessively high blood pressure or arteriosclerosis, or with tuberculosis, diabetes or far advanced syphilis of the central nervous system (late, rapidly progressing neglected cases or patients who are totally demented) do not tolerate such treatment well and should not be subjected to it.

CONTRAINDICATIONS

For the reasons given, advanced age (with a few exceptions 60 years may be taken as an arbitrary limit), cardiac or renal insufficiency, rheumatic endocarditis, aortic aneurysm, advanced arteriosclerosis, pulmonary tuberculosis, diabetes, and late neglected neurosyphilis that has progressed to complete dementia should be regarded as absolute contraindications.

In selecting patients for artificial fever therapy, therefore, more than casual attention must be given to such complications. Otherwise, unnecessary fatalities may occur.

PRELIMINARY STUDY

Every patient should undergo a thorough physical examination and clinical investigation. The following laboratory studies should be made:

Electrocardiogram

In patients suffering from infections or gonorrheal arthritis, a thorough roentgenographic examination should be made

Complete blood count before and after each session of treatment

Sedimentation time

Coagulation time

In syphilitic patients, besides the foregoing, a Wassermann test, Kline test, Kahn test, globulin test, colloidal gold test, cell count, and protein determination of spinal fluid

The Council on Physical Therapy, after studying this problem, realizes that this preliminary survey is far from complete. However, the survey does show that the treatment of disease by means of hyperpyrexia is now established but that the best method for administering artificial fever induced by physical agents that can be employed with safety, convenience and comfort to the patient and is subject to complete control by adequately trained physicians is not firmly established. The Council believes that this method should be used only in hospitals, surrounded with the safeguards commonly employed in a major surgical operation and under the direction of skilled physicians. The assisting technician should have ample training and experience and must be capable of recognizing untoward symptoms and know ways of avoiding dangers

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DEXTROSE (See New and Nonofficial Remedies, 1934, p 270).

The following dosage forms have been accepted:

Solution Dextrose U. S. P., 25 Gm., 50 cc., in Bottles. Each bottle contains dextrose U. S. P., 25 Gm., in sufficient distilled water to make 50 cc.

Prepared by the Cutter Laboratory, Berkeley, Calif.

Solution Dextrose U. S. P., 50 Gm., 100 cc., in Bottles. Each bottle contains dextrose U. S. P., 50 Gm., in sufficient distilled water to make 100 cc.

Prepared by the Cutter Laboratory, Berkeley, Calif.

Solution Dextrose U. S. P. 5% in Saffi-flask Containers. Each Saffi-flask contains 1,000 cc of a solution containing 52.5 Gm of dextrose U. S. P.

Prepared by the Cutter Laboratory, Berkeley, Calif.

Solution Dextrose U. S. P. 10% in Saffi-flask Containers. Each Saffi-flask contains 1,000 cc of a solution containing 105 Gm of dextrose U. S. P.

Prepared by the Cutter Laboratory, Berkeley, Calif.

RABIES VACCINE (See New and Nonofficial Remedies, 1934, p 378).

The National Drug Co., Philadelphia

Rabies Vaccine (Human), (Chloroform Killed).—V. D. Co.—Antirabic vaccine prepared according to a modification of the method of David Semple (chloroform killed). The brains and spinal cords of rabbits killed on the sixth or seventh day after inoculation with fluid rabies virus are ground with physiologic solution of sodium chloride containing 2 per cent chloroform, to yield a 25 per cent suspension of brain and cord substance. The suspension is then placed in the refrigerator at 2 to 5 C for two months. It is then tested for absence of living virus by rabbit injection. The finished product represents a 25 per cent emulsion.

Marketed in packages of fourteen vials, each containing a dose of 0.5 cc, and in packages of fourteen syringes, each containing a dose of 0.5 cc.

ORTAL SODIUM (See THE JOURNAL, March 24, 1934, p 928)

The following dosage form has been accepted

Capsules Oral Sodium $\frac{3}{4}$ grain (0.05 Gm.)

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH, Secretary

"VITA-CELL" NOT ACCEPTABLE FOR N. N. R.

Under the uninformative proprietary name "Vita-Cell" Godissart and Pyles, Hollywood, Calif., market a series of products: Vita-Cell—Surgical, Vita-Cell—Dental, Vita-Cell—Home Treatment, Vita-Cell—Dental Plastic, Vita-Cell—Ointment, Vita-Cell—Soap. The firm presented these products for consideration by the Council.

Vita-Cell is claimed to be "A Superior Antiseptic, Deodorant and Healing Agent." The advertising circular states: "VITA-CELL is the result of years of research by the Medical Profession and chemists of Europe, and more recently by dentists and physicians of the United States. A new principle of therapeutics has been evolved and its application perfected the result VITA-CELL." This is typical of the advertising propaganda for the product. In submitting the product to the Council the firm stated:

"For purely commercial reasons, we are reluctant to offer, at this time, a quantitative statement of composition."

As Vita-Cell is a secret formula, a statement of the process of manufacture must necessarily be limited."

The Council, of course, cannot consider the acceptance of a product of secret composition.

Although at various places in the advertising it is stated that "Vita-Cell" is not intended as a "cure-all," throughout the advertising the product is recommended in a host of conditions, from "athlete's foot" to venereal infections. As evidence to support these multitudinous claims, the firm submitted a case report from The All Nations Clinic, Los Angeles, and ten letters from physicians, dentists and an animal pathologist, which are in effect no more than testimonials and are of no value as controlled scientific evidence. The extensive therapeutic claims for the product may therefore be said to be almost entirely unsupported.

If "Vita-Cell" were the "result of years of research" which the firm's advertising claims it to be, it is needless to point out that there would not be lacking in medical literature reports on its composition and probable or actual therapeutic value. No such reports are known to the Council, and the firm has failed to call attention to any such if they do exist. The "Vita-Cell" Dental XX Home Treatment package and circular are obviously directed to the general public, which is in direct contravention of the Council's rules. The danger of indiscriminate reliance of the public on this preparation for all the conditions for which it is claimed to be of value is too obvious to need further discussion.

The Council declared "Vita-Cell" and the submitted forms under which it is marketed unacceptable for New and Nonofficial Remedies, because the preparation is of secret composition and is marketed under an uninformative proprietary name with exaggerated and unwarranted therapeutic claims in such a way as to lead to its ill advised use by the public.

When the foregoing was sent to Godissart and Pyles, the firm replied that it had "abundant evidence to confirm all our claims" and promised to "make clinical control tests in the manner prescribed by your Council of Therapeutics if you will be kind enough to describe to us the technique you desire." The Council holds the burden of proof for such claims to lie justly on the firm which makes them. The firm has not submitted any evidence for the therapeutic value of "Vita-Cell" and "Vita-Cell" preparations other than that already found unacceptable by the Council. No quantitative statement of composition has been submitted.

Before receiving the Council's report, the firm had informed the Secretary that a revision of labels and advertising in conformance with the suggestion of the Department of Agriculture was contemplated. After considerable correspondence the firm submitted some "revised" labels and cartons. These are essentially as objectionable as those submitted before.

In view of the firm's failure to make the products acceptable, the Council voted to confirm its rejection of "Vita-Cell" and the submitted "Vita-Cell" preparations.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 27, 1934

"DOCTORS, DOLLARS AND DISEASE"—RADIO EDUCATION OR PROPAGANDA

In 1929 a series of meetings called by the American Association for Adult Education resulted in the formation of a body known as the National Advisory Council on Radio in Education, Inc. Its general purpose is said to be to "further the development of the art of radio broadcasting in American Education." Recently, Congress enacted some legislation entitled "The Federal Communications Commission Act," which automatically abolished the Federal Radio Commission. This act also makes it mandatory on the new commission "to study the proposal that Congress by statute allocate fixed percentages of radio broadcasting facilities to particular types or kinds of nonprofit radio programs" and to report to Congress by Feb. 1, 1935.

The National Advisory Council on Radio in Education, Inc., is exceedingly interested in this problem, because it has made education of the public over the radio its particular province since the time of its organization. The Council wants more time on the air for education. In a recently issued circular, the director says "The council is an organization independent of faction, nonpartisan in its procedure, disinterested as to personnel and noncommercial in operation." Notwithstanding these assertions, the medical profession is now confronted with the promotion by the National Advisory Council on Radio in Education, Inc., of a series of broadcasts under the title "Doctors, Dollars and Disease," said to be presented by the Public Health Committee of the National Advisory Council on Radio in Education, Inc. These programs are offered every Monday evening over WABC, Columbia network, extending from coast to coast, at 7:45 Pacific time, 8:45 Mountain time, 9:45 Central time, and 10:45 Eastern time.

Let us then view the nature of the organization of the Public Health Committee which prepared the program and the nature of the program itself to see to what extent the National Advisory Council on Radio in Education, Inc., has fulfilled its claims of being inde-

pendent of faction and nonpartisan in procedure. The Public Health Committee includes as its chairman William Trufant Foster. This is the same Foster, an economist and not a physician, who attacked organized medicine bitterly at a conference held in Philadelphia last February, fully reported in THE JOURNAL, March 3, page 701. Associated with Mr. Foster on this committee are the following physicians: Ray Lyman Wilbur, chairman of the Committee on the Costs of Medical Care and signer of its majority report, Thomas Parran Jr., health officer of the state of New York, committed in repeated addresses to compulsory health insurance and measures leading to the socialization of medicine; Haven Emerson, formerly a president of the American Public Health Association and a signer of the majority report. Included with these four are Alice Hamilton, a distinguished investigator in industrial diseases, whose writings indicate nevertheless that her pity for the sad fate of the majority of mankind overbalances her scientific judgment in matters of social control, and, last of all, Dr. Hugh S. Cumming, surgeon general of the United States Public Health Service. It will be obvious to any one that this Public Health Committee of the National Advisory Council on Radio in Education, Inc., is overwhelmingly controlled by the state medicine and socialization of medicine points of view, and that it contains no definite representative of the 100,000 physicians organized as the American Medical Association.

The radio program developed under the auspices of this committee is, as might have been expected, overwhelmingly for the socialization of medical care. It contains the name of but one person who signed the minority report of the Committee on the Costs of Medical Care, and there are indications that he accepted under a misapprehension as to the nature of the program and will not appear. Those who are to discuss the future of medical care and the subject of medical economics are for the most part nonmedical men, unfamiliar with medical practice and for the most part definitely opposed in their writings to the policies of organized medicine. Representing the opposite point of view are Walter P. Bowers, editor of the *New England Journal of Medicine*, who has made that periodical largely the organ of the majority report of the Committee on the Costs of Medical Care, Thomas Parran, George H. Bigelow, Haven Emerson and Ray Lyman Wilbur, who speak as physicians on this program. These are, all of them, proponents who would change seriously the nature of medical practice. Among the laymen listed are such well known names as Edward A. Filene, Michael M. Davis, C. Rufus Rorem, Nathan Sinai, I. S. Falk, Edgar Sydenstricker and Harry H. Moore. It calls the roll of the agitators from the Committee on the Costs of Medical Care. Other speakers include Foster, Paul H. Douglas of the Uni-

versity of Chicago, Robert Jolly of Houston, Texas, and Livingston Farrand, president of Cornell University, the latter as an M.D., who has for long been somewhat out of touch with medical affairs.

It should be clear to any physician that this program indicates an attempt on the part of the interests represented in the majority report of the Committee on the Costs of Medical Care to further its propaganda. In developing a program of this type the National Advisory Council on Radio in Education, Inc., has been untrue to the principles on which it was established. Thereby it fails to merit support from the medical profession. Nevertheless, physicians will do well to be aware of the matter and to use such influence as they may possess with the radio stations that carry such material to bring about a realization of its true nature.

It might have been within the province of the National Advisory Council on Radio in Education, Inc., to develop a series of useful lectures on the prevention of disease and on the maintenance of health. It might have used some of the time, which apparently it is able to get without charge from the broadcasting chains, for the enlightenment of the public on many of the scientific fallacies promoted by commercial interests. It has, however, failed to avail itself of these opportunities, devoting itself and its time instead to what constitutes essentially an undermining of the medical profession of this country. It would be interesting to know the motives that animated the executive officers of the National Advisory Council on Radio in Education, Inc., to lend themselves to this propaganda.

LATENT AND ARTIFICIAL IMMUNIZATION AGAINST DIPHTHERIA

Until recently the British navy maintained in London a semiclosed school of boys, the Greenwich Hospital School, which offered an unusually favorable opportunity to study infection and immunization in diphtheria. Full advantage has been taken of this opportunity, as shown by the recent report¹ on the results of studies that were made. From 1921 to 1928, tests for Schick immunity were carried on regularly but artificial immunization was not practiced, while from 1928 to April 1933, artificial immunization was practiced. Consequently clinical and carrier infection as well as latent immunization could be studied by the same methods under natural and artificial immunity.

By latent immunization is meant the appearance of specific diphtheria antitoxin, in the blood due only to environmental circumstances, presumably subclinical and carrier infection with diphtheria bacilli. It must be understood clearly that while the operation of certain

racial and genetic factors cannot be excluded in latent immunization, this antitoxin is not inborn but the product of antigenic stimulation by diphtheria toxin. In the Greenwich Hospital School it was found that under natural conditions (1921-1928) from 30 to 40 per cent of groups of Schick reactors became latently immune in the course of four months when the prevalence of diphtheria in the school was high; furthermore, that the spread of latent immunity bore a close relation to the seasonal variation in clinical diphtheria, there being much more immunization in the winter than in the summer months. These observations establish again and clearly the development of latent immunization and Schick immunity as diphtheria spreads in an unprotected community. The results of various types of specific prevention of diphtheria in the Greenwich Hospital School may be summarized briefly as follows: The induction of a negative Schick test—Schick immunity—by artificial means gives practically complete protection against clinical diphtheria in the protected individuals but has no preventive influence on symptomless or carrier infection, which on the contrary actually is increased. In other words, active immunization against diphtheria as now practiced with toxin-antitoxin or some form of toxoid does not prevent but tends to increase carrier infection with diphtheria bacilli. From this important fact, which is supported by ample and convincing evidence, it follows that in a given community incomplete immunization may be followed by increase in clinical diphtheria in case the susceptible, unprotected portion outnumbers the protected. The apparent failures of certain antidiphtheria campaigns are explainable by this circumstance, which also makes it clear why it is essential to immunize children in the preschool years. Incomplete immunization may increase the risk of infection proportionately more than it increases the herd immunity. Again, while artificial prevention may protect the individual, he may become a potential danger in the home or group where there are susceptibles. How is this paradox to be explained that specific prevention may protect the individual and yet be the means of spreading the infection? Simply on the ground that the symptoms of diphtheria are caused by the exotoxin of the diphtheria bacillus, and it is the exotoxin that is neutralized by the antitoxin called forth by the injection of the antigenic toxin or toxoid. The immunity in diphtheria is antitoxic, directed against the toxin, rather than antibacterial and directed against the bacillus itself. Without the action of the toxin the main pathogenic agent in diphtheria, infection with the diphtheria bacillus, is of little significance and virtually symptomless.

Precisely similar conditions obtain in scarlet fever, in which the essential immunity and protection also depend on specific antitoxic action. There is, however, no evidence at hand to indicate that the toxin of the scarlet fever streptococcus toxin has been changed to

1. Dudley, S. F.; May, P. M., and O'Flynn, J. A.: *Active Immunization Against Diphtheria: Its Effect on the Distribution of Antitoxic Immunity and Carrier Infection*, Medical Research Council, Special Report Series, No. 195, London, 1934.

toxoid like the diphtheria toxin. The Schick test in diphtheria and the Dick test in scarlet fever are each dependent on the respective antitoxins in the blood.

Among other interesting observations by the English investigators may be noted the facts that tonsillectomy lowers carrier infection and that there appears no great difference between the different types of diphtheria bacilli as immunizing agents. Their observations and comments on immunity against diphtheria toxin, Schick immunity, are of special interest. This immunity may not be permanent, but nevertheless a degree of protection may persist because the body once subjected to the antigenic toxin will respond with increased promptness and range to renewed antigenic stimuli. This deduction is in full harmony with a principle of immunity. Fortified by reinfection from the environment the immunity may become permanent, but immunizability and durability of immunity vary depending on genetic make-up and environmental experience. On the whole the diminution or loss of Schick immunity is regarded as of small consequence. The conception of the interaction between latent and artificial immunization against diphtheria toxin and thus against diphtheria are stated well in this quotation (p. 98): "Although an artificial immunizing agent may be too weak to produce a durable Schick immunity unaided by latent immunization, the artificial agent may act as a primary sensitizing stimulus to those who are about to receive further stimuli from the natural immunizing influences in a diphtherial environment."

Finally a word on the epidemiology of diphtheria as illustrated by the noteworthy study under consideration: In the conditions of herd immunity and herd infection here studied so closely one cannot but be impressed with the tendency of host and parasite to mutual adaptation. When the prevalence of diphtheria increases antitoxic immunity rises, and as the incidence falls the susceptibility increases. The reaction of parasite and host on each other prevents destruction of either by the other and determines the amount of diphtheria at any time and place.

EXTRAMEDULLARY HEMATOPOIESIS IN MAN

One of the most striking examples of the "safety devices" for insuring the adequate functioning of vital tissues in times of stress is the protective mechanism that operates to maintain a sufficient quantity of circulating red blood cells. A sudden loss of blood, for example, is compensated for by the rapid release from the bone marrow of immature erythrocytes, by the reticulocytes, and by an outpouring of stored red cells from certain reservoirs. If the blood loss is more severe or prolonged, the erythrocytic marrow itself may hypertrophy within its bony casing, more or less completely replacing the fatty marrow within a short time. Spicules of bone or even the inner portions of the bone

shaft may disappear, apparently to provide additional space for the expanding red marrow. If these adjustments still fail to meet the demand for increased erythropoiesis, blood production in other tissues may take place. The phenomenon of extramedullary hematopoiesis is particularly pronounced in pathologic processes in which the marrow tissue is damaged or is replaced by a malignant growth. Usually under these conditions the process of blood formation is taken over more or less directly by the primitive erythrocytic tissues, namely the spleen, the principal blood producing organ during the fetal period, and the liver, the erythropoietic organ of the embryo. However, myeloid metaplasia frequently occurs in other tissues or organs, such as the kidneys, lymph nodes, suprarenals, thymus, pleura, falx cerebri and the broad ligaments, or in adipose tissue.

Clinically, extramedullary hematopoiesis apparently takes place more frequently than has been generally supposed. Although a few reports of extramedullary blood formation in certain types of anemia and leukemia have appeared in the literature during the past decade, general recognition of the phenomenon is comparatively recent. Extensive ectopic hematopoiesis was reported several years ago¹ in a case of von Jaksch's anemia in an infant. Large, tumor-like masses of hematogenic tissue were found in several tissues, particularly in hili of the kidneys. Similar observations were made in an adult with anemia due to chronic hemorrhage; widespread extramedullary hematopoiesis was observed, in addition to distinct hyperplasia of the bone marrow. More recently,² extramedullary erythropoiesis was reported in two cases of severe anemia resulting from a damaged bone marrow. In one case, active blood formation in the lymph nodes followed atrophic changes in the myeloid tissue of the bone marrow and spleen. In the other subject, a case of metastatic adenocarcinoma of the prostate associated with almost complete replacement of the bone marrow and lymph nodes, vigorous blood formation occurred in the spleen. The foregoing clinical cases afford a convincing demonstration of the ability of the embryonic and fetal blood forming tissues even in adult life to resume their primitive functions in order to compensate for a loss of other myeloid tissue.

The histogenic processes involved in the establishing of extramedullary erythropoiesis are not well understood. Some information of value in elucidating the problem has been obtained in a current study on the transformation of adipose tissue into hematopoietic tissue.³ Apparently the parent cells, having the appearance of small lymphocytes, may originate from the local stromal cells or perhaps may represent migrants from

1. Brannan, Dorsey. Extramedullary Hematopoiesis in Anemias. *Bull. Johns Hopkins Hosp.* 41: 104 (Aug) 1927.
2. Jordan, H. E. Extramedullary Erythrocytogenesis in Man. *Arch. Path.* 18: 1 (July) 1934.
3. Jordan, H. E. The Transformation of Adipose Tissue into Hemocytogenic Tissue. *Anat. Rec.* 59: 461 (July) 1934.

adjacent lymphatics. These cells accumulate in certain areas about the capillaries and develop into typical hemocytoblasts, which, according to the theory endorsed by Jordan, migrate into the adjacent capillary and finally differentiate into mature erythrocytes.

Thus, at the present time there is unfolding another fascinating story of processes that enable the human organism to survive adverse circumstances.

Current Comment

THE DOCTOR AND THE LEGISLATOR

Next week physicians throughout the country will be voting for men who will represent them in the next Congress. They will in many places be expressing their approval also of candidates for legislative, judicial and executive offices in various state and minor divisions of our government. The time has come when it is desirable for every man to express himself definitely by the ballot and in other ways on the nature of our government. There are indications that plans are being developed for new legislation leading to modifications in the form of medical practice, varying from compulsory health insurance to complete state medicine. Again and again it has been said that physicians exercise a powerful influence, owing to the support which is obtainable from those to whom they have given professional ministrations. It is important that they utilize such influence in maintaining medical practice at the professional level which it has reached in this country—a level which is higher than that of any other country in the world and which at the same time gives to the average American a better quality of medical service than is given to the average man in any other nation. Recently in private conversation and in other ways several of the leading statesmen of this country have indicated to executives of the American Medical Association that there is just one way in which the average citizen may make his influence definitely felt in relationship to proposed legislation; that is, to bring his opinion and that of his associates directly to the legislator. Senators and congressmen equally are influenced by letters from their constituents and by messages from well established organizations indicating their point of view. No one knows at this moment just what type of legislation will be advanced by the administration itself in relationship to these matters, nor is there any definiteness concerning proposals which individual legislators may advance on the urging of interested bodies. Physicians will be kept informed of proposed legislation through *THE JOURNAL* and through the *Bulletin of the American Medical Association*. It is important that they know now the points of view of the legislators to whom they give their support and that they inform such legislators, when elected, of their feelings in regard to such social legislation as may come before the next Congress. Such positive action should yield definite results.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

- November 1. The Common Drinking Cup, W. W. Bauer, M.D.
November 8. Your Child's Sleep, W. W. Bauer, M.D.
November 15. The Health Audit, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- October 30. Diphtheria Must Go, W. W. Bauer, M.D.
November 6. The Fight Against Appendicitis, W. W. Bauer, M.D.
November 13. Does Medicine Cost Too Much? Morris Fishbein, M.D.

The radio stations from which the program is available are as follows:

Middle Atlantic States:		South Atlantic States:	
WJZ	New York	WBAL	Baltimore
WSRY	Syracuse, N. Y.	WMAL	Washington
KDKA	Pittsburgh	WTAR	Norfolk, Va.
East North Central States:		WPTF	Raleigh, N. C.
WCKY	Cincinnati	WWNC	Asheville, N. C.
WENR	Chicago	WSOC	Gastonia, N. C.
WIBA	Madison, Wis.	WIS	Columbia, S. C.
West North Central States:		East South Central States:	
KSTP	St. Paul	WSM	Nashville, Tenn.
WBBC	Duluth, Minn.	WMC	Memphis, Tenn.
KBYR	Bismarck, N. D.	WJDX	Jackson, Miss.
KWCR	Cedar Rapids, Iowa	West South Central States:	
WREN	Kansas City, Mo.	KVOO	Tulsa, Okla.
KWK	St. Louis	WKY	Oklahoma City
KSO	Des Moines, Iowa	WFAA	Dallas, Texas.
		KTBS	Shreveport, La.
		WOAI	San Antonio, Texas

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Investigation of Eclectic Diplomas and Licenses.—Officials have been cooperating with the Eclectic State Medical Board of Arkansas in an investigation of the issuance of fraudulent diplomas and the irregular licensure of eclectic physicians in Arkansas. With the focus of the investigation apparently on graduates of the Kansas City College of Medicine, the charter of which was revoked in 1926, reciprocity licentiates from eclectic boards in other states are also under inquiry. At present, Arkansas is the only state having an eclectic board. The licenses of the following persons were revoked at a recent meeting of the board for the reasons indicated:

J. Sidney Pierce, Little Rock, conviction on charges involving moral turpitude.

Auxenty Miroch, Bloomfield, Va., fraudulent credentials.

William S. Dews, Wynne, fraudulent credentials.

Erick F. Ebert, St. Louis, fraudulent credentials.

Lee Fisher, Little Rock, fraudulent credentials.

Harold S. Bayless, address unknown, fraudulent credentials.

The license of Charles Wade Page, Banks, was revoked on a charge of its having been obtained by fraud and deception. The testimony revealed that Page also had licenses under the names of Charles Russell Conway and Charles William Pagel; these licenses also were revoked. Records indicate that, in 1915, Charles William Pagel, following the revocation of his Indiana and Illinois licenses for forgery and immoral acts, was arrested as the alleged head of a gang of automobile thieves. In 1918, Pagel had his name changed officially to Charles Russell Conway. Later a report came announcing the death of Charles Russell Conway, Greensburg, Ind., at La Ceiba, Honduras, C. A., Dec. 29, 1921. The recent investigation has revealed this report to be false. In the interim, one Charles Wade Page

had been licensed in Florida in 1919, claiming graduation from a Missouri eclectic school. This license was revoked in 1930 following the charge of "stealing an automobile." On this charge he was given a five year sentence to the Florida State Farm at Raiford. After serving little more than a year he was given a pardon on condition that he leave the state. In 1924, Page was licensed in Arkansas, claiming graduation from the American Medical College, St. Louis, in 1902. When a newly appointed board began checking its licentiates and called for reregistration, the discrepancies were noted. Subsequent investigations revealed Page, Conway and Pagel to be the same person. Pagel was listed "address unknown," but Page and Conway were located, according to the records, at Banks and New Edinburgh. Records show that as Pagel he graduated from the American Medical College, St. Louis, in 1896. Ali Yhia Debeh, faced with a similar charge, did not appear, but was represented by an attorney who asked for a continuance since Debeh could not be located. The license was revoked on the testimony presented, but this action of the board was later enjoined by the court. Dews testified that negotiations which he had with one George M. Lindsay, Kansas City, Mo., "developed into the procuring of a diploma in the Kansas City College of Medicine and Surgery, Kansas City, Mo., and a license to practice medicine in the state of Arkansas." For these, Dews is said to have given Lindsay \$500 with a promise of an additional \$1,500 at some future date. Dews stated that he had two years in the "University of Illinois at Jacksonville, Illinois." Paul D. Wesson, Hazen, who pleaded guilty to violating the Harrison Narcotic Act, was placed on probation for six months. Date R. Alexander, the founder of the Kansas City College of Medicine and Surgery in 1915 and the former dean of the Eclectic Medical University of Kansas City, testified at the trials, stating that these men had never attended the Kansas City College of Medicine and Surgery; that he had never seen them before and that the credentials in their possession were forged. A resolution was adopted at this meeting of the board to continue to investigate all licentiates who had obtained their license by fraudulent methods, and those who were chronic inebriates or addicted to the use of narcotics.

CALIFORNIA

Southern California Meeting.—The Southern California Medical Association will hold its next semiannual meeting in Los Angeles, November 2-3. Dr. Laurence Selling, clinical professor of medicine, University of Oregon Medical School, Portland, will be the guest speaker. He will deliver his paper Friday evening on "Diagnosis of Epilepsy." Other speakers will be:

- Dr. Cullen Ward Irish, Cerebrovascular Lesions, a Clinical Pathologic Survey.
- Dr. Arthur E. Guedel, Apnea Under Anesthesia.
- Drs. Nelson Paul Anderson and Samuel Ayres Jr., Diagnosis and Treatment of Common Skin Diseases in School Children.
- Drs. James F. Anderson and Bernard J. Hanley, Review of 190 Cases of Heart Disease Complicating Pregnancy.
- Dr. John L. Pomeroy, Public Health and Medical Coordination in Poliomyelitis Control.
- Dr. Egerton Crispin, Schüller-Christian's Disease (Lipoid Xanthomatosis).
- Drs. Francis M. Pottenger and Francis M. Pottenger Jr., The Supra-nal Hormones in Relationship to General Medicine.
- John F. Kessel, Ph.D., Dysenteries in Southern California.

All the speakers are from Los Angeles, except the Drs. Pottenger of Monrovia. A clinical pathologic conference will be held Saturday morning in the new unit of the Los Angeles General Hospital, under the direction of Drs. Newton G. Evans and Ernest M. Hall and members of the clinical staff.

Chiropractic-Physical Therapy Initiative.—A chiropractic-physical therapy initiative, to be voted on by the electorate, November 6, proposes to create a public corporation, the State Chiropractic Association, and to confer on a board of directors of that corporation exclusive jurisdiction over the practice of chiropractic and of physical therapy. Two types of licenses are to be issued by the board of directors: (1) a license to practice chiropractic; (2) a license to practice physical therapy. No person may obtain a license to practice physical therapy unless he first obtains a license to practice chiropractic. A chiropractic licentiate will be permitted to adjust "by hand to restore to normal any abnormal anatomic disrelation in the condition of human beings." A physical therapy licentiate will be authorized to practice obstetrics, to use, prescribe and practice prophylactic hygiene and sanitation and dietetics "including in any form, herbs, oils and all animal and vegetable foods," and to use all "systems, methods or instruments in diagnosis, including the use of Roentgen Rays." Such a licentiate, also, may employ electrotherapy, hydrotherapy, manipulative therapeutics, heat and light therapy, heliotherapy and mechanotherapy, in the treatment of physical or mental

conditions of human beings. The provisions of the California medical practice act are not repealed by the proposed measure "unless they conflict" therewith. Chiropractic and physical therapy licentiates will be permitted to practice in all institutions supported wholly or in part by public funds.

COLORADO

Society News.—The Denver Society of Internal Medicine presented the program before the Medical Society of the City and County of Denver, October 2; speakers were Drs. Clough T. Burnett on "The Congestive Heart," and Wilfred S. Dennis, "Xanthomatosis."—The medical care of families on federal aid in Long district, Weld County and Boulder County was discussed by Drs. Virgil J. Jernigan, Longmont, Myron W. Cooke, Erie, and Fred C. Klopfcstein, Boulder, before the Boulder County Medical Society in Boulder, October 11; Mr. C. H. Sievers discussed federal relief. Cases of ruptured appendix, sarcoma of the mediastinum and retroperitoneal sarcoma were presented by Drs. Oscar M. Gilbert, Boulder, and Willard J. White, Longmont.

CONNECTICUT

Personal.—Yandell Henderson, Ph.D., professor of applied physiology, Yale University School of Medicine, addressed the Brazilian Academy of Medicine in Rio de Janeiro, September 7, on "Asphyxia and Resuscitation." He also spoke at the opening of the new building of the Institute of Hygiene in São Paulo, Brazil, September 17, and gave an address before the local medical society, September 18.

Report on Tuberculosis Campaign.—Thirty-three cases of tuberculosis were found in the campaign to detect tuberculosis which was carried on during the past school year in Connecticut. According to provisional figures, there were 56,942 roentgenograms taken of school children in 142 towns. Of these, no evidence of tuberculous lesion was found in 54,376. Calcific or fibrocalcific deposits suggesting healed or healing primary tuberculous disease were found in 972, and evidence of pulmonary disease, probably active tuberculosis, in 33. This tuberculosis survey among school children was sponsored by the state health department, the state medical society, the state board of education and the state tuberculosis commission, with the cooperation of various local and state agencies. The state plan evolved from one carried out in New Haven under the auspices of the departments of health and education. Roentgenograms taken total about one sixth of the public school enrolment. The completion of the examination for diagnosis brings to a close the first procedure recommended by the state tuberculosis commission. The second will be a study of the patient's family to discover the source of infection in cases in which tuberculosis is found.

ILLINOIS

Credit Bureau.—At a meeting of the Peoria City Medical Society, September 5, it was voted unanimously to establish and maintain a medical business bureau. The bureau will be controlled by the society and managed by a special board named by the president, according to *Peoria Medical News*. Dues of the society have been increased from \$14 to \$15 a year to maintain the bureau.

Society News.—Dr. William R. Cubbins, Chicago, addressed the Rock Island County Medical Society, October 9, on "Fractures of the Lateral Condyle of the Tibia."—At a meeting of the Will-Grundy County Medical Society, October 10, Dr. Philip Lewin presented a paper on "The Classification, Etiology and Treatment of Arthritis."—Dr. Clarence O. Sappington, Chicago, addressed the Peoria City Medical Society, October 16, on occupational diseases.

Chicago

Discussion of Appendicitis.—The theme of the program of the Chicago Medical Society, November 7, will be a discussion of appendicitis. Speakers will be:

- Dr. Leroy H. Sloan, assistant clinical professor of medicine, Rush Medical College, Its Early Recognition in General Practice.
- Dr. John O. Bower, clinical professor of surgical research, Temple University School of Medicine, Philadelphia, Apparent Increase of Mortality Rate and Its Causes.
- Dr. Karl A. Meyer, medical superintendent of Cook County Hospital, Surgical Problems in Acute Appendicitis.

Society News.—At a meeting of the Chicago Pathological Society, October 8, Dr. Edwin F. Hirsch, among others, spoke on "Generalized Osteosclerosis with Chronic Polycythemia Vera." The presidential address was given by Dr. Isadore Pilot on "Hemolytic Streptococci, Their Present Status and Relationship to Certain Clinical Entities."—A symposium on collapse therapy was presented before the Chicago Tuberculosis

Society, October 11, by Drs. Frederick Tice, Allan J. Hraby, Karl J. Henrichsen, Robert F. Berry and Henry C. Sweany. —Dr. Traian Leucutia, Detroit, discussed "Further Contributions to the Problems of Superhigh Voltage Roentgen Therapy" before the Chicago Roentgen Society, October 11, and Dr. Benjamin H. Orndoff gave a report on the fourth International Congress of Radiology. —At a meeting of the Chicago Orthopedic Club, October 12, Dr. Arthur Steindler, Iowa City, among others, discussed "Tuberculosis of the Wrist." —Dr. Robert von der Heydt discussed "The Ageing Lens" before the Chicago Ophthalmological Society, October 15, among other speakers. —Dr. Leon Unger addressed the Chicago Society of Allergy, among others, October 15, on "Turpentine Abscesses in Treatment of Intractable Asthma." —Speakers before the Chicago Pediatric Society, October 16, were Drs. Arthur H. Parmelee on "Physiologic Changes of Adolescence" and Bert I. Beverly on "Psychologic Problems of the Adolescent." —"What Organized Medicine Has Done for Society" was the title of a public lecture by Dr. Morris Fishbein, editor of *THE JOURNAL*, October 18. The lecture, sponsored by the Jackson Park branch of the Chicago Medical Society, was given in the Hyde Park High School Auditorium.

Anniversary of Institute for Juvenile Research.—The twenty-fifth anniversary of the Institute for Juvenile Research was observed at the Medinah Club, September 28. Speakers included Dr. William Healy, director of the Judge Baker Foundation, Boston, on "What Twenty-Five Years Have Taught Us About the Problems of Childhood"; Dr. David M. Levy, formerly chief of staff, Institute of Child Guidance, New York, "Recent Trends in the Study of Behavior Problems"; Dr. Julius H. Hess, "Contribution of the Institute to Services for Children from the Medical Point of View," and Mr. Henry P. Chandler, authority on child welfare legislation, "The Place of Experts in Public Welfare." The Institute for Juvenile Research, the first child guidance clinic established in the United States, was founded in 1909 through gifts of Mrs. William F. Dummer and under the direction of Dr. Healy. At the end of the first five years, the financial support of the institute was assumed by the board of commissioners of Cook County and, when Dr. Healy left Chicago in 1917 to take charge of the Judge Baker Foundation, it was transferred to the state department of public welfare. At that time Dr. Herman M. Adler, now of Berkeley, Calif., became director and continued in that capacity until 1930, when Dr. Paul L. Schroeder became director of the institute. While the work of the institute was originally limited to the treatment of children brought before the Cook County Juvenile Court, during recent years the scope of its activities has been extended to agencies throughout the entire state. It is concerned with the examination of children who present problems of social adjustment, conduct or personality, and seeks to aid parents, teachers and social agencies in the better understanding and development of the child. In 1925, Dr. Adler organized the Behavior Research Fund which has functioned as an adjunct to the institute and carried on various research projects which could not be financed by state appropriations. Ernest W. Burgess, Ph.D., is director of the fund.

IOWA

Personal.—Dr. Carl L. Gillies, Cedar Rapids, was recently appointed associate professor of roentgenology at the University of Iowa College of Medicine, Iowa City. —Dr. Erwin Schenck, Des Moines, has been appointed a member of the state board of medical examiners. —Dr. George H. Parmenter has taken over the duties of chief of the medical staff at the U. S. Veterans' Hospital, Des Moines. He held a similar position in Fort Harrison, Mont. —Dr. Hubert L. Hollenbeck, Osceola, is retiring from active practice on account of ill health. Dr. William L. Wall, formerly of Osceola, will take over Dr. Hollenbeck's practice.

Graduate Courses.—Nearly one sixth of the membership of the Iowa State Medical Society is enrolled for the fall series of courses promoted by the speakers' bureau, the journal of the society reports. The medical course is being given in Dubuque, Davenport and Fort Madison, while the one on surgery is in Humboldt, Ames and Ottumwa. Both courses are running for ten weeks. In addition, fifty-two physicians in the northeastern section of the state are taking the short graduate course on anatomy, planned by a specially appointed committee of the First District Medical Society. Dr. Ewen M. MacEwen, professor of anatomy, State University of Iowa College of Medicine, is lecturing in this series, which opened in September and will continue on the second Thursday of each month until April. The lectures are given in the Miller Hotel in New Hampton.

KANSAS

New Editorial Board.—The October issue of *The Journal of the Kansas Medical Society* introduces a new editorial board which, with Dr. William M. Mills, Topeka, as editor, is comprised of Drs. Lucien R. Pyle, Robert B. Stewart and Floyd C. Taggart, Topeka. Clarence Munns is the managing editor. Formerly there were twelve associate editors.

Preventive Medicine Program.—A special meeting was held by the Sedgwick County Medical Society, Wichita, October 9, to consider the subject of preventive medicine. Henry F. Vaughan, Dr. P.H., health commissioner of Detroit, was the principal speaker. With this meeting the committee on public health of the society launched a "sustained project in the field of prevention." Dr. Hugh L. Dwyer reported on immunization campaigns in Kansas City, Mo.

Personal.—Dr. Edwin D. Ebricht, Wichita, was awarded the president's cup on winning the annual golf tournament of the Sedgwick County Medical Society, September 21; his score was 80. A new challenge trophy, presented by Dr. Hal E. Marshall, Wichita, was won by Dr. Norris L. Rainey, Wichita, for low net score. —At a recent meeting of the Brown County Medical Society, Dr. Raymond J. Portman, Hiawatha, was presented with a set of sterling silver as a token of esteem by Dr. William G. Emery on behalf of the society. Dr. Portman has moved from Hiawatha to Antigo, Wis.

MASSACHUSETTS

Society News.—A symposium on pneumonia will be conducted before the Suffolk District Medical Society, November 28, by Drs. Fredrick T. Lord, Edward D. Churchill and Roderick Heffron, Boston. Mr. Sidney Lamb, secretary of the Mersey Hospital Council, Liverpool, England, discussed voluntary health insurance before the society, October 12. —Dr. Arthur P. Noyes, Howard, R. I., addressed the New England Society of Psychiatry in Waltham, October 10. His subject was "Psychotherapy in State Hospitals." —Dr. Frederick A. Collier, professor of surgery, University of Michigan Medical School, Ann Arbor, Mich., discussed "Water Losses in Surgical Patients" before the Harvard Medical Society, October 23. —At a meeting of the William Harvey Society, October 17, Dr. Emil Novak, Baltimore, spoke on "The Endocrines in Gynecology." —Drs. Max Ritvo, Boston, and George A. Moore, Brockton, discussed gastroduodenal hemorrhages from the roentgenologic and surgical points of view, respectively, before the Plymouth District Medical Society at Brockton, October 25. Dr. Alfred L. Duncombe, Brockton, considered the "Treatment of Barbiturate Poisoning."

MINNESOTA

Medical Field Representative.—George B. Larson, St. Paul, has been named to the newly created position of medical field representative for emergency medical relief for the Minnesota State Medical Association. Mr. Larson, who took over his duties September 4, has for the last six years been executive secretary of the Polk County Medical Society, Frederic, Wis. One of his first undertakings will be the organization of emergency advisory and contact committees in each county.

NEBRASKA

Clinical Assembly in Omaha.—The Omaha Midwest Clinical Society will present its second annual assembly, October 29-November 2, with headquarters at the Hotel Paxton. Lectures in general assembly by guest speakers, lecture courses given by Omaha physicians and clinics will make up the week's program. Guest speakers will be the following:

Dr. Walter L. Bierring, Des Moines, Iowa, President of the American Medical Association, The Educational Function of the American Medical Association.

Dr. Richard H. Jaffe, Chicago, The Value of Biopsy; Pathology of Essential Hypertension.

Dr. Carl Henry Davis, Milwaukee, Hypothyroidism in Gynecology and Obstetrics; Indications for Cesarean Section.

Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Treatment of Some Types of Secondary Anemia; Diagnosis and Treatment of Pernicious Anemia.

Dr. Willis C. Campbell, Memphis, Tenn., The Process of Bone Growth and Repair; Arthroplasty.

Dr. John Oliver McKeynolds, Dallas, Texas, What the General Practitioner Should Know About Ophthalmology; Differential Diagnosis of Intra-Ocular Affections and Practical Points in Their Management.

Dr. Alfred I. Folsom, Dallas, Texas, Prosthetic Resection; Bladder Irritation in Women.

Dr. Frank H. Lahey, Boston, Diagnosis and Management of Peptic Ulcer; Carcinoma of the Colon.

Dr. Benjamin H. Orndoff, Chicago, The State of the Breast Before It Becomes Cancerous; Cancer of the Breast and Its Management.

Dr. Foster Kennedy, New York, Acute Head Injuries; Necrosis Following Injury.

Dr. William H. Guy, Pittsburgh, Management of Syphilis in General Practice; Drug Eruptions.

Dr. Albert Graeme Mitchell, Cincinnati, Tonsillectomy—Its Indications; Nephritis and Nephrosis.

NEW JERSEY

Anniversary of Preventorium.—The twenty-fifth anniversary of the establishment of the Tuberculosis Preventorium for Children at Farmingdale was observed at a luncheon, October 6. Speakers included Dr. Herbert R. Edwards, chief of the tuberculosis division of the New York City Department of Health, and Dr. Charles Hendee Smith, New York.

NEW YORK

Society News.—At the annual meeting of the eighth district branch of the Medical Society of the State of New York in Jamestown, October 4, speakers were: Drs. Joseph S. Lawrence, Albany, on "Successful Application of the Welfare Law"; George W. Cottis, Jamestown, "Nondrainage Treatment of Peritonitis"; Wallace B. Hamby, Buffalo, "Development and Present Status of Neurosurgery," and Malcolm H. V. Cameron, Toronto, Ont., "Gallbladder Disease." Dr. Arthur J. Bedell, Albany, president of the state medical society, also made an address.—Dr. Frank M. Dyer, Binghamton, addressed the Broome County Medical Society in Binghamton, October 9, on "The Tragedy of Appendicitis—The Other Side."—Dr. Anthony Bassler, New York, addressed the Dutchess-Putnam Counties Medical Society, Poughkeepsie, October 10, on chronic colitis.—Dr. Jean A. Aubry, Rochester, addressed the Ontario County Medical Society, Geneva, October 9, on "The Puerperium, with Special Reference to Prenatal and Postnatal Care."

New York City

Malnutrition Among School Children Declines.—A recent analysis of results of medical examinations of school children in the first half of 1934 compared with similar figures for previous years shows a distinct decline in malnutrition, the *Quarterly Bulletin* of the New York City Department of Health reports. Despite the fact that no satisfactory standard of measuring malnutrition has been devised, the fact that the examinations were made by practically the same inspectors over a period of years makes it likely that the changes noted are significant, the report says. For the first half of 1934 the percentage of children considered malnourished was 17.7. For 1933 the percentage was 19.9 and for 1932, 21.1. In 1929 the percentage was only 13.4.

Diseases Under Investigation at Rockefeller Institute.—Cases that bear on a limited number of subjects chosen for investigation may be referred to the Hospital of the Rockefeller Institute for Medical Research by physicians who are willing to cooperate, according to an announcement. The following diseases are now under investigation: acute lobar pneumonia and bronchopneumonia in adults; measles in the pre-eruptive stage, chickenpox; encephalitis following measles, vaccinia, chickenpox, whooping cough or common cold; rheumatic fever in any early acute form and sore throat in rheumatic subjects; advanced heart disease, especially in older persons; nephritis in initial acute stages, nephrosis, arteriosclerotic nephritis, essential hypertension; aplastic, idiopathic pernicious or severe microcytic anemia; sprue or severe glossitis and stomatitis without anemia. Physicians should communicate by telephone or by personal application before sending patients. No charge is made for any service.

NORTH CAROLINA

Personal.—Dr. Robert S. McGeachey, Greenville, health officer of Pitt County for four years, has been appointed to a similar position in Halifax County.—Dr. Clarence L. Guyton Jr. has been made head of the Ellen Fitzgerald Hospital, Monroe, succeeding the late Dr. Alto F. Mahoney.—Two new members have been added to the faculty of the University of North Carolina Medical School this year. Dr. Augustus S. Rose, formerly of the faculty of Harvard Medical School, will be associate professor of anatomy, and Dr. Walter Reece Berryhill, formerly of Western Reserve University School of Medicine, associate professor of pathology and physical diagnosis. Dr. Berryhill will also be chief of the medical staff of the university infirmary.

OHIO

Health Service at State University.—Reorganization of the medical and health service at Ohio State University, Columbus, with Dr. John W. Wilce as director, was recently announced. Dr. Wilce will hold the rank of professor of medicine in the medical school. Other members of the staff and their rankings on the medical faculty are Drs. Morse F. Osborn, associate professor; James A. Beer, Shirley Armstrong and Charlotte Winnemore, assistant professors, and James M. Foley, instructor.

Institute for Graduate Instruction.—Through the interest of Toledo alumni of the old Toledo Medical College, which was closed in 1914, it has been decided to use a fund set aside at that time by the retiring board of trustees to establish the Medical Institute of the University of Toledo for graduate medical education. The first annual presentation will be given November 2 at an all day meeting in the Doermann Auditorium, University of Toledo, at which Drs. Lawrason Brown, Saranac Lake, N. Y., and Everts A. Graham, St. Louis, will lecture on medical and surgical aspects, respectively, of diagnosis and treatment of pulmonary tuberculosis. The Toledo Academy of Medicine will meet with the institute for the closing evening lecture.

Personal.—Dr. Carl L. Spohr has been made acting head of the department of pathology, Ohio State University School of Medicine, Columbus, succeeding the late Dr. Ernest Scott.—Dr. John Uri Lloyd, Cincinnati, received the Procter International Award of the Philadelphia College of Pharmacy and Science at a ceremony, October 9, in recognition of contributions to pharmacy. The award, a suitably inscribed gold watch, is named in honor of William Procter Jr. (1817-1874), for many years a member of the faculty of the college.—Dr. T. Addison McCann, Dayton, was guest of honor at a dinner given by physicians of Dayton, September 25, at the Hotel Van Cleve, celebrating his seventy-fifth birthday.—Dr. James J. Marek, Cleveland, won the annual golf tournament of the Ohio State Medical Association in Columbus, October 3, with a score of 157 for thirty-six holes.—Dr. Abram L. Van Horn, Cleveland, has been appointed chief of the bureau of child hygiene of the state department of health, Columbus.

OKLAHOMA

Society News.—Speakers at the quarterly meeting of the Western Oklahoma Medical Society in Clinton, September 16, were Drs. Wallace J. Masters, on preventive pediatrics; Milton H. Glover, diagnosis and treatment of fractures, and Orman T. Kimbrough, urology. All are from Wichita Falls, Texas.—Drs. McClain Rogers and Roger L. Hickman, Clinton, addressed the Woods-Alfalfa Counties Medical Society, Alva, September 25, on disease of the gallbladder and tuberculosis, respectively.—Drs. Alfred L. Seal, Concho, and Myron S. Gregory, Oklahoma City, addressed the quarterly meeting of the Canadian County Medical Society, El Reno, October 6, on undulant fever and on paranoia, respectively.—At a meeting of the Jackson County Medical Society at Altus, June 22, speakers were Drs. William G. Husband, Hollis; Emory S. Crow, Olustee; John M. Allgood and Raymond H. Fox, both of Altus, on various aspects of appendicitis.

PENNSYLVANIA

State Medical Election.—Dr. Alexander H. Colwell, Pittsburgh, was named president-elect of the Medical Society of the State of Pennsylvania at the annual session in Wilkes-Barre, October 3. Vice presidents elected are Drs. Peter P. Mayoek, Wilkes-Barre; William G. Tillman, Easton; Thomas St. Clair, Latrobe, and Ward O. Wilson, Clearfield. Dr. Moses Behrend, Philadelphia, was installed as president and Dr. Walter F. Donaldson, Harrisburg, was elected secretary for the seventeenth year. The 1935 meeting will be held in Harrisburg.

District Meeting.—At the annual meeting of the second councilor district of the Medical Society of the State of Pennsylvania, three physicians who had been in practice for fifty years received testimonials from the state society, Drs. Alice Rogers Easby, Media; Robert G. Gamble, Haverford, and John K. Evans, Malvern. Among speakers at the meeting were Drs. John O. Bower, Philadelphia, on reduction of mortality from appendicitis; James W. McConnell, Philadelphia, on mental hygiene, and Leonard G. Rowntree, Philadelphia, on arthritis and its treatment.

Philadelphia

Weir Mitchell Oration.—Dr. Stephen W. Ranson, professor of neurology, Northwestern University Medical School, Chicago, delivered the S. Weir Mitchell Oration of the College of Physicians of Philadelphia, October 17, on "The Hypothalamus: Its Significance for Visceral Innervation and Emotional Expression."

Personal.—Dr. Moses Behrend, president of the Medical Society of the State of Pennsylvania, was the guest of honor at a dinner given by the staffs of Mount Sinai and Jewish hospitals, at the Locust Club, October 17.—Dr. Charles W. Burr has given a laboratory for biology to the Episcopal School, of which he is an alumnus and a trustee.—Dr. Edward L. Bauer has been appointed physician to Girard College to succeed Dr. Frank L. Greenwalt, who retired after thirty years'.

service.—Dr. Thomas C. Stellwagen Jr., professor of genito-urinary surgery, delivered the introductory lecture at the opening session of Jefferson Medical College, September 24, on "Cooperation and Loyalty."

Pittsburgh

Society News.—Speakers at the monthly meeting of the Allegheny County Medical Society, October 16, were Drs. William A. Bradshaw, on Malta fever; Joseph S. Baird, preventive treatment of measles, and Ellen J. Patterson, foreign bodies in food and air passages. The motion picture showing the work of the American Medical Association at headquarters in Chicago was shown by Dr. Austin A. Hayden, Chicago, secretary of the Board of Trustees.—Dr. George A. Holliday addressed the Pittsburgh Urological Association, October 8, on lymphogranuloma inguinale.

SOUTH DAKOTA

Society News.—Dr. Elexious T. Bell, Minneapolis, addressed the Seventh District Medical Society, Sioux Falls, September 11, on diseases of the kidney.—A symposium on cancer of the breast formed the program of the Black Hills Medical Society recently; speakers included Drs. Charles W. Hargens and Charles F. Morsman, both of Hot Springs.

WASHINGTON

Health Survey in Tacoma.—Carl E. Buck, Dr.P.H., field representative of the American Public Health Association, made a ten day survey of public health facilities in Tacoma in September. The survey was an award by the association to the city for a report made some months ago from which it was decided that Tacoma showed the greatest promise of making use of a survey by an expert in connection with the health contest sponsored by the U. S. Chamber of Commerce.

GENERAL

Changes in Status of Licensure.—At a recent meeting of the California Board of Medical Examiners, the following action was taken:

Dr. Egbert G. Johnson, Los Angeles, placed on probation for three years after a hearing of charges of alleged deceptive advertising.

Dr. Edward S. Moulton, Corning, placed on probation for five years without narcotic privileges based on the record of his conviction of violating the state poison law.

Branch Urologic Society Organized.—The Southeastern Branch Society of the American Urological Association was recently organized with the following officers: Drs. Montague L. Boyd, president; Edgar G. Ballenger, president-elect, and Earl H. Floyd, secretary; all are of Atlanta. Membership in the branch organization is open to physicians living in Alabama, Georgia, Florida, Louisiana, North Carolina, South Carolina and Tennessee. The first meeting will be held in Atlanta, December 7-8.

Automobile Fatalities in Four Weeks.—The bureau of the census, U. S. Department of Commerce, announced that eighty-six large cities in the United States reported 733 deaths from automobile accidents during the four weeks ended September 29, as compared with 708 deaths during the four weeks ended Sept. 30, 1933. Of the total number 536 occurred within corporate limits of cities. For the fifty-two week periods ended Sept. 29, 1934, and Sept. 30, 1933, the totals for all cities were respectively 8,691 and 8,005, which indicate a recent rate of 23.3 per hundred thousand population as against an earlier rate of 21.4.

Association for Cancer Research.—The twenty-eighth meeting of the American Association for Cancer Research will be held November 8 in New York at Memorial Hospital. The program is as follows:

Dr. James Ewing, New York, Fascial Sarcoma; Intermuscular Liposarcoma.

Dr. Leila Charlton Knox, New York, Synovial Sarcoma.

Dr. Alphonse A. Thibaudau, Buffalo, Myxosarcoma.

Dr. George H. Semken, New York, Surgical Treatment of Sarcoma of the Soft Parts.

Dr. Fred W. Stewart, New York, Neurosarcoma.

Dr. Joseph McFarland, Philadelphia, Malignant Myoma.

Dr. Traian Leucutia, Detroit, Radiotherapy of Sarcoma of the Soft Parts.

Dr. George Miller MacKee, New York, Idiopathic Multiple Hemorrhagic Sarcoma (Kaposi).

Dermatology Board Examination Canceled.—The American Board of Dermatology and Syphilology has postponed the meeting which was to have been held in San Antonio, November 13-16, at the time of the meeting of the Southern Medical Association until the Atlantic City session of the American Medical Association in June 1935. The oral examination for applicants in groups A and B will be held June 10 in New York City. The written examination for group B will be held, April

29, 1935, in various cities throughout the county. All applications for this examination should be filed in the office of the secretary before March 10, 1935. Application blanks and booklets of information may be obtained from the secretary, Dr. C. Guy Lane, 416 Marlborough Street, Boston.

Society News.—Dr. Lewis J. Moorman, Oklahoma City, was elected president of the Southern Tuberculosis Conference and Dr. Jesse B. Naive, Knoxville, Tenn., president of the Southern Sanatorium Association, at the annual joint meeting in Knoxville, October 11.—Dr. James C. Braswell, Tulsa, Okla., was elected president of the Aero Medical Association at the annual session in Washington, D. C., September 30. Regional vice presidents elected were Drs. Albert M. Mitchell, Terre Haute, Ind.; Francis C. Hertzog, Long Beach, Calif.; John R. Poppen, U. S. N., on duty at Washington, and Bernard L. Jarman, Washington, examiner for the Bureau of Air Commerce. Dr. David S. Brachman, Detroit, was reelected secretary.—Dr. Peer P. Johnson, Beverly, Mass., was elected president of the New England Surgical Society at the annual meeting in Burlington, Vt., September 29. Other officers elected were Drs. Channing C. Simmons, Boston, vice president, and John M. Birnie, Springfield, secretary, reelected. The 1935 meeting will be held in Manchester, N. H.

The 1934 Christmas Seal.—The National Tuberculosis Association commemorates with this year's Christmas seal the fiftieth anniversary of the building of the cottage that became the nucleus of Trudeau Sanatorium, Saranac Lake, N. Y. In 1882, on the publication of Koch's discovery of the tubercle bacillus, Dr. Trudeau began experimental work to prove Koch's work for himself, making his own apparatus. Dr. Trudeau lived till Nov. 15, 1915. He was the first president of the National Tuberculosis Association, in 1904. On the eighty-sixth anniversary of Dr. Trudeau's birth, October 5, officials of the New York state committee on tuberculosis and public health presented to the sanatorium a picture of the cottage, which is now used as a museum, in a ceremony attended by physicians from all parts of the state.



ALASKA

Dr. Murray Made Medical Director of Indian Service.—Dr. Vance B. Murray, surgeon, U. S. Public Health Service, has been detailed for duty as medical director for the Alaskan Medical Service under the office of Indian affairs, department of the interior. Dr. Murray, a graduate of Columbia University College of Physicians and Surgeons, was commissioned in the service in July, 1916. Recently he has been medical director of district number 2 of the Indian Service in Spokane, Wash.

PHILIPPINE ISLANDS

Society News.—Dr. Jose O. Nolasco presented a paper on "Perineural Injections with Antileprotic Drugs" and Drs. Alejandro Laureola and Casimiro B. Lara reported a case of agranulocytic angina at a meeting of the Culion Medical Society, July 26.—At a meeting of the Manila Medical Society, August 14, a symposium on food poisoning was presented by the following physicians: Drs. Jose Albert, Moises B. Abad, Luis Guerrero and Patricio Ignacio, the clinical point of view; Eugenio Hernando, epidemiology; Jose V. Punsalano, Trinidad P. F. Banuelos and Mariano Basaca, laboratory point of view; Liborio Gomez, Sixto de los Angeles and Pablo Anzuarez, pathology.

CANADA

Society News.—Dr. J. Arthur Jarry, Montreal, was elected president of the Congress of French Speaking Physicians of North America at the recent session in Quebec, and Dr. Amédée Granger, New Orleans, vice president. The next meeting will be in Montreal in 1936.—Dr. Gregoire F. Amyot, Vancouver, addressed the Vancouver Medical Association, Vancouver, B. C., October 2, on "Infection, Its Spread and Control." Dr. Clarence E. Brown will speak, November 6, on "Secretory Disturbances of the Stomach."

Changes in Provincial Hospitals.—Dr. George H. Stevenson, superintendent of the Ontario Hospital, Whitby, Ont., has been appointed superintendent of the Ontario Hospital, London, to succeed the late Dr. Fulton S. Vrooman. Dr. Stevenson will also be professor of psychiatry at the University of Western Ontario School of Medicine. Dr. Donald R. Fletcher, now at the Ontario Hospital, Brockville, succeeds Dr. Stevenson; Dr. Charles S. Tennant, superintendent at the provincial hospital at Woodstock, goes to Brockville; Dr. Daniel O. Lynch, superintendent at Penetanguishene, is transferred to

Woodstock, and Dr. Claude A. McClenahan, who has been acting superintendent at London, becomes superintendent at Penetanguishene.

University News.—Dr. Archibald B. Macallum has resigned after many years' service as dean of the University of Western Ontario Faculty of Medicine, London. Dr. Frederick J. H. Campbell, associate professor of medicine, is acting dean.—Dr. Brandur J. Brandon recently retired as professor of surgery at the University of Manitoba Faculty of Medicine, Winnipeg. He was the guest of honor at a dinner given by the honorary attending staff of the Winnipeg General Hospital, August 30.

LATIN AMERICA

Pan American Congress on Tuberculosis.—The Latin American Union of Tuberculosis Societies has organized the third Pan American Congress of Tuberculosis to be held in Montevideo, Uruguay, December 16-19. Five subjects have been chosen for discussion as follows: economic bases of the fight against tuberculosis in South America; pathogenesis and treatment of tuberculous empyema; medicosurgical collapse therapy of pulmonary tuberculosis; review of therapeutics of tuberculosis in Chile, and radiologic aspects of pulmonary tuberculosis.

Government Services

Testing Cattle for Bang's Disease

The testing of cattle for Bang's disease, or "contagious abortion," has been begun in twenty-two states under a federal emergency appropriation, the U. S. department of agriculture announces. Preliminary work indicates that about 15 per cent of the cattle will react to the agglutination test. Farmers in states cooperating in the campaign may sign agreements for testing in which they agree to market reacting animals for slaughter to maintain sanitary safeguards; to safeguard the herd in purchasing new animals and to retest at intervals. The government will pay indemnities up to \$20 for grade cattle and \$50 for pure bred registered cattle.

Gift for Medical Research

Associates of the late Dr. Edgar Orrin Crossman, medical director of the Veterans' Bureau, have presented a fund of \$900 to the U. S. Public Health Service for study, investigation and research into fundamental problems of disease, it was announced October 2. The gift, which was accepted by the Secretary of the Treasury on behalf of the government, was made as a tribute to Dr. Crossman's work in the care and treatment of former members of the naval and military forces. Dr. Crossman died in 1929.

Report on the Civilian Conservation Corps

President Roosevelt, in acknowledging a recent report from Robert Fechner, director of emergency conservation work, on the present status of the Civilian Conservation Corps, indicated that he will continue this project, in which 1,626 physicians have been engaged. As of September 30, there were in the camps 1,089 physicians who are members of the Medical Reserve Corps of the U. S. Army. In addition, 325 are employed on a full time contract basis; 84 on part time contracts; 37 medical officers of the regular army, and 91 medical officers of the Navy. It is estimated that total annual salaries of these physicians amounts to about \$4,500,000. A total of 780,000 men has been enrolled for various periods, the maximum number at any one time being 390,000. The report states that the health of the men is rigorously guarded and that their physical and mental condition is much improved. A check of 15,000 men picked at random revealed an average gain in weight of seven pounds per man. The men have been paid \$136,000,000, of which \$113,000,000 has been sent to their families. Men are now leaving the corps at a rate of about 10,000 per month, the report stated, to accept private employment or for other reasons. At the beginning of the fourth six months' period, October 1, the War Department was to enroll 100,000 additional men to fill vacancies caused by discharges during the previous six months. Officials of the forest service of the department of agriculture report that forestry programs have been advanced from five to fifteen years by the work of the conservation corps, which includes forest fire protection, preservation of forest covers on watersheds, protection against plant diseases, prevention of soil erosion, flood control and improvement of national parks.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 29, 1934.

A Test of a Vegetarian Diet

The efficiency and performance of a cyclist on a vegetarian diet have been tested at the Institute of Physiology, Glasgow University, in order to see how the strict omission of animal food affected the result. It is well known that athletes who specialize in contests demanding great endurance lay stress on an ample supply of protein in the diet. The persons who call themselves vegetarians usually take milk, eggs and cheese to secure this supply. In the present tests the subject was a man of 48 who had lived on a vegetarian diet for twenty-three years. For many years he had secured numerous prizes and records and was one of the British competitors at the Stockholm Olympics in 1912 and at Antwerp in 1920. He was put on a strictly rationed diet, which was varied in the course of the experiments as regards the source and amount of protein. He pedaled a stationary bicycle almost continuously for more than eight hours daily and each dietary experiment lasted a week. The work done was measured by special devices and an electrical break maintained the sort of resistance that would be experienced on a good level road. The speed was checked at frequent intervals during the tests, and determinations of the metabolism were made.

Four standard diets were employed, in which the protein varied from 39 to more than 200 Gm. derived from strictly vegetable sources. Actually the attempt to secure a really high protein diet from such sources was a failure, owing to the digestive troubles provoked, and this experiment showed the poorest performance of all. A fifth experiment was carried out with no restrictions and the subject chose the sort of food he would take in road racing. This included 5 pints of milk, eight eggs and 1 ounce of butter, in addition to strictly vegetable foods. This diet gave the best athletic performance of the series, with the highest speed records, although the "gross efficiency" (energy produced per unit of food energy) was less. The conclusion is that in prolonged hard muscular exercise the large supply of energy required can best be obtained in small bulk and in palatable form from protein-rich foods of animal origin.

Mental Health Services

In their report for 1933 the Board of Control (the official body which controls the mental health administration) states that satisfactory progress has been made in the development of the mental health service in spite of financial restrictions. The important advance of recent years is the development of voluntary treatment, in contrast to the previous certification and incarceration. The number of voluntary admissions to public mental hospitals shows a steady increase. There has also been a gratifying increase in the number of outpatient clinics, from which an improved voluntary admission rate may be expected. The board is convinced that outpatient work in cooperation with the local physicians is not only the surest way to encourage early inpatient treatment where it is needed but saves many from needing inpatient treatment at all.

During the year the number of persons suffering from mental disorder—voluntary, temporary and certified—in England and Wales was 150,266, an increase of 1,491 over the previous year. The average annual increase for the five years ended 1933 was 1,636. This increase has no necessary connection with the incidence of mental disorders in the general population. Other points brought out in the report are the importance of early treatment, the unhygienic practice still in vogue in certain hos-

pitals of allowing male patients to wear the same underclothing day and night, the suggestion that an interchange of troublesome patients between neighboring hospitals might often be in the interest of the patient and the hospital, and the desirability of the avoidance of printed forms in the replies sent by the authorities of the hospitals to inquiries from relatives. The total number of mentally defective patients in England and Wales in institutions and under guardianship at the end of 1933 was 38,843; in addition there were 31,921 under statutory supervision. The great value of scouting and guiding in the training of mental defectives is emphasized and tribute is paid to the authorities responsible for the control of this movement for their help in devising special tests suitable for mental defectives. The board observes that, apart from their recreational and disciplinary value, scouting and guiding help to vary the monotony of institutional life, while at the same time they increase self confidence and self respect and foster the sense of independence, which is so sadly lacking in most defectives.

Voluntary and Municipal Hospitals

As pointed out previously, the rise of the municipal hospital (supported by taxes) is a phenomenon of recent years. This has not been accompanied by any decline in the hospitals supported by voluntary contributions, which have long been a feature of English life. At the fourth annual conference of the British Hospitals Contributory Schemes Association, held at Bristol, a discussion took place on the relation of voluntary to municipal hospitals. Formerly the voluntary hospitals were purely charitable institutions, supported by philanthropic persons for the benefit of the poor. But the great financial changes of recent years, in the form of increased cost and diminished resources of those who used to give, have rendered charitable support inadequate. Resort has had to be made to provident schemes. These have been successful and there are now about four million contributors. Sir Arthur J. Atkinson, chairman of the Hull Voluntary Hospitals Council, read a paper in which he stated that a financial expert had told him that it would pay a public authority to subscribe to almost any extent to the support of a voluntary hospital to prevent its extinction, for this would mean a great increase of the taxes. But there was a not unimportant school of political thought which aimed at a state-regulated hospital service for all maintained entirely by taxation. If the voluntary hospitals met what was called "their inevitable fate," with their extinction would also disappear the contributory scheme movement and that amazing support which they had always received in the British Isles and which in 1932 amounted to \$76,000,000. In the discussion it was pointed out that local authorities had to build hospitals because of the gaps that existed. An adequate hospital service within reasonable distance of the homes of the people was necessary. Dr. Peter Macdonald, representing the British Medical Association, referred to the promotion of a scheme by his association to do for middle class people what the contributory schemes were doing for the working class. He was enthusiastically in favor of voluntary hospitals and did not think that, with certain exceptions, the municipal hospitals were as efficient.

The Evils of a Smoky Atmosphere

In his presidential address to the National Smoke Abatement Society, Dr. H. A. des Voeux asked whether the great increase that has recently been observed in the cases of cancer of the lung could be attributed to a smoke-laden atmosphere. It was known that tar, which is derived from coal, could produce cancer, and the substance that was responsible had been isolated by the chemists. According to evidence from Glasgow and Manchester, supported by the reports of nearly every health officer, fogs were prolific causes of bronchitis and con-

sequent heart disease, which caused 37 per cent of the deaths in this country. Darkness from the blotting out of sunlight by smoke was one of the chief causes of rickets, which crippled children. In these conditions also lay the ancillary cause of tuberculosis, which was almost impossible to cure without the assistance of clean air and sunshine. Dr. des Voeux commented on the futility of sanatorium treatment. He also spoke of the waste of fuel—the throwing into the atmosphere daily of tar, sulphur and oil to destroy buildings, clothes, books and furniture.

Dr. J. S. Owens, superintendent of observations for the Committee for the Investigation of Atmospheric Pollution, Department of Scientific and Industrial Research, read a paper on "The Measurement of Atmospheric Pollution." He said that ninety-six stations in Great Britain, where atmospheric pollution was measured, recorded an average fall of solid matter of 250 tons a square mile in 1933 and 240 tons in 1934. Mr. O. Cochran, secretary of the Scottish Flying Club, in a joint paper with Mr. W. J. Grassie, meteorological officer, Paisley, said that smoke was carried long distances in quantities sufficient to affect visibility. On many occasions, flying at Renfrew had been brought to a standstill by the smoke haze drifting from Glasgow. R. B. Smith, acting president of the Scottish Branch of the National Smoke Abatement Society, stated that in the United Kingdom nearly 250,000 tons of soot escaped into and polluted the atmosphere every year from domestic fireplaces alone. The only way to stop smoke was to stop the burning of raw coal and provide a better and cheaper means of heating.

Dr. J. J. Jervis, health officer of Leeds, said that the slum and the smoky coal fire were relics of a bygone and visionless age. England owed its reputation for rickety children more to lack of light than to anything else. The soot and grit in the atmosphere inactivated the ultraviolet rays. A feature of slum dwellings that transcended all others was the prodigal way in which coal was used. Dr. Jervis pleaded for the abolition of the smoky coal fire.

Another Death Due to Cinchophen

Cinchophen has been extensively advertised and sold in this country, under the trade name of "Atophan," as a remedy for gout and rheumatism. For some years the liability to the production of toxic jaundice, sometimes fatal, has been noticed. The intermittent administration of the drug, to avoid dangerous accumulation, is recommended. But it has been shown that, even when this method has been followed and only small quantities taken, fatalities still occur. However, this dangerous drug is still used and deaths continue to be recorded. The latest was the subject of an inquest at Birmingham. An electrician, aged 31, was prescribed Atophan for sciatica and gout. Jaundice developed and he died. "The necropsy showed acute yellow atrophy of the liver. His physician said that he had never known ill effects from the use of the drug. Dr. K. Douglas Wilkinson, professor of pharmacology, Birmingham University, gave evidence. He used the drug fairly frequently, but with considerable caution. There had been more than fifty recorded deaths, but there must have been more cases. He considered that the drug should be scheduled as a poison. The coroner said that a warning ought to be issued and that the drug should not be used under any circumstances except under the direct supervision of a physician. At present any one could obtain as much as he wanted from pharmacists.

A National Scheme of Dental Aid

A conference of representatives of charitable institutions interested in the provision of dental treatment has been held in London. It was decided to formulate a scheme for coordinating efforts in providing dental aid to poorer people, estimated

to number 6,000,000, at present not under the National Health Insurance Acts. The conference was convened by the Ivory Cross National Dental Aid Fund. Its object is to unite in a single cooperating body all the dental aid societies, with the object of raising a national fund which will place dental treatment at the disposal of the poor throughout England. Secondly, it is proposed to initiate a campaign of instruction and education in order to teach what the middle and upper classes realize—that care of the teeth is of the first importance in the preservation of health. Bad teeth are stated to be a menace to health, longevity and digestion, as they are a primary channel for many diseases. The report of the school medical officer for London shows a definite falling off in the number of children given dental treatment in the elementary schools. This is due not to any failure on the part of the dentist or the public authorities but to apathy of the parents. Turning to the financial aspect of the question, the sum available per head for dental treatment among the 15 million insured workers is only 66 cents, which is one fourth of the expenditure on medical treatment and about half the annual cost of drugs and bottles. Yet people with an income of \$2,500 and upward spend, on the average, three times as much on the care of their teeth as on medical care.

PARIS

(From Our Regular Correspondent)

Sept. 19, 1934.

Recent Complaints About the Quality of Bread

For years, controversies have developed among the agriculturists, the millers, the bakers and the physicians over the quality of bread. Learning all the manipulations to which bread is subjected, the public loses its appetite for bread, which aggravates the agricultural crisis. The main trouble is that the farmer produces too much wheat of mediocre quality. The farmers everywhere have sown wheat of an inferior species, which yields a large number of grains but which contains a low percentage of gluten and does not make good bread. Hence, some hard wheat rich in gluten, such as Manitoba wheat, must be imported and added to it. The demand for this inferior wheat is small. A law requires the miller to pay for the wheat the code price of 115 francs per hundredweight, whereas in foreign countries the price is about 55 francs. To maintain this artificial price, a prohibitive duty has been placed on imported wheat. But no one buys this wheat at the code price. The miller gets around the law by receiving as a present a certain number of supplementary sacks of wheat not mentioned in his bill. But, since the miller was able to produce only inferior flour with this wheat, he has sought to improve it artificially, and a large number of chemical products are sold for that purpose. The flour is whitened with chlorine products and benzoyl peroxide. But the ferments are thereby destroyed and the live yeasts can no longer raise the dough properly. They are therefore replaced by "chemical yeasts" with a base of ammonium persulphate, potassium bromate and magnesium carbonate, and chemical glutens with a base of ammonium persulphate and ammonium phosphate have been introduced. Dough thus prepared rises more rapidly and allows the addition of a larger quantity of water, thus reducing the amount of flour required. This constitutes a great saving for the miller and the baker but brings no profit to the agriculturist whose protection was sought. Such bread is doughy when fresh, and when it gets old it is as hard as cement. The rural population, in the habit of providing a supply of bread sufficient to last several days, refuses to accept it and hence eats more meat and drinks more alcoholic beverages. This poor bread has caused the number of persons with dyspepsia to increase throughout France. The French have always been a people that consumed much bread, and French bread used to be regarded as the best in the world.

The Academy of Medicine is aroused over the matter. It has condemned, in a sharp note, the use of all these ingredients, and demands a return to the normal bread, rich in gluten. The minister dominated by politics, and desirous, above all, of protecting the agriculturists, who constitute a large body of voters, responded in such a manner as to aggravate the situation. He modified the official regulations in regard to bolting so that only 70 per cent instead of 75 per cent of the wheat grain can be utilized for flour, which makes it necessary to employ more wheat for the same quantity of bread but diminishes, at the same time, the quantity of gluten in the flour, a larger part of the gluten than before remaining in the bran. The animals that eat the bran gain more therefore, from the standpoint of health, than does man. In addition, the minister has prohibited the introduction of a small quantity of bean flour that has commonly been added to wheat flour, which increased somewhat the gluten content of bread and kept it fresh longer. The addition of bean flour was the only form of adulteration that was unobjectionable. The agriculturists are so powerful politically that they have brought about also a limitation of the importation of rice into France under the pretext that it might compete with wheat, and already grave difficulties have arisen with the French colonies of the Far East, which depend chiefly on the cultivation of rice for their living.

Mitogenetic Radiations

Mitogenetic radiations were the subject of a recent research by Marinesco, Jonesco-Sisesti and Sager, the results of which they presented to the Academy of Medicine. It is alleged that all living beings, both animal and vegetable, emit radiations that will leave an impression on a photographic plate wrapped in black paper, as was demonstrated some time ago by Commandant Darget, and this radiation, which varies with the individual, can be measured as one measures radioactivity by ionization of the air between two armatures in the conductors of which an electric current is induced. Gourvitch proved the existence of a transmission, through the roots of vegetables, of an ultraviolet radiation that promoted multiplication of cells. That is what is called mitogenetic radiations. Marinesco and his collaborators measured the mitogenetic radiations of the blood by two different methods, which gave similar results. It appears that this radioactive potency varies in normal subjects with the age, being at its maximum in the child and diminishing steadily, becoming almost nil in aged persons. It also varies greatly with various types of disease, increasing in some and diminishing in others. Marinesco noted that in a divided nerve the central end is more radioactive than the peripheral end, which he explains by saying that the oxidizing process is more marked in the central end owing to a special influx from the nerve centers. It has been found that this power is increased in the rabbit by intense illumination of the fundus of the eye. These experiments will be continued.

Professor Léon Bernard

The death of Prof. Léon Bernard, at the age of 62, from a septicemia resulting from the opening of a simple dental abscess, is announced. Professor Bernard held a high place in French medicine owing to the stimulus that he had given to the organization of the crusade against tuberculosis. His career had been brilliant. While associate professor at the Faculté de médecine and physician to the "hôpitaux de Paris," he became the first appointee to a special chair for the study of tuberculosis. In the Hôpital Laennec he had organized the Léon Bourgeois dispensary for the detection of tuberculous persons. He was vice president of the Conseil consultatif d'hygiène de France. He was also the permanent representative of France to the health commission of the League of Nations. To the tribune of the Academy of Medicine he presented numerous communications.

ITALY

(From Our Regular Correspondent)

July 31, 1934.

Is There a Filtrable Tuberculosis Virus?

A convention on tuberculosis was recently held in Pistoia in Tuscany. Silvestrini, medical clinician of Perugia, in discussing certain forms of the virus, said that it may assume an actinomycotic, a streptococcic, a coccic or a bacillary form. The existence of a granular form, beyond the limits of visibility, cannot be excluded. Depending on the form it assumes, the tuberculous virus provokes diverse reactions in the tissues. Against the denial of the existence of filtrable portions in materials containing tuberculous virus, it is an established fact that something passes into the filtrates which is capable of producing in guinea-pigs a disease that is not typical tuberculosis but tuberculous disease without tubercle bacilli. This condition can be attributed to non-acid-resistant, non-gram-resistant filtrate particles that lie beyond the limit of visibility. These particles may reproduce themselves for a time in the ultravisible form, but, as they originated from bacilli and acid-resistant granules, they may return to these forms. To admit the existence of this filtrable virus is in harmony with the accepted views of the morphology of *Mycobacterium tuberculosis* and, on the other hand, takes account of observed facts in the field of pathology.

Petragnani, director of the Hygienic Institute of the University of Siena, spoke on methods for studying the tuberculous virus. After many years of research, he was inclined to speak conservatively. It is not known what is the true clinical and pathologic picture caused by the ultravirus, although death from cachexia and polyadenia may be an occasional observation. The results obtained by various investigators are not constant and are often contradictory. The existence of a filtrable type of virus has been, in recent years, denied by an ever increasing number of investigators.

Salvioli, director of the Pediatric Clinic in Siena, reported on his studies on the Petragnani anatuberculin in vaccinations on children. In the goutte de lait at Siena the mortality in the annexes, during the four years preceding 1933, was 33 per cent; in 1933, after the application of antituberculosis vaccination, the mortality was 14 per cent.

Fiore, director of the Pediatric Clinic in Pisa, affirmed that today tuberculous infection is not conceived as due solely to Koch's bacillus but as due to a complex virus, which, beginning with the granular and bacillary forms with varying cultural and pathogenic behavior, develops into the ordinary Koch bacillus. The tuberculous protogens show a marked affinity for the lymphatic system, provoke a disease susceptible of cure, do not necessarily elicit sensitiveness to tuberculin, and may develop an immunizing capacity toward the action of the Koch bacillus. To the infection resulting from tuberculous protogens may be assigned the term "pretuberculosis," but designating, according to the speaker, a well defined clinical entity; namely, the complex of all those manifestations that are evidenced in children through the direct action of the protogens. The speaker is convinced that immunity originates from pretuberculosis.

Raspi, of the Pediatric Clinic in Pisa, considered the possibility of increasing the virulence of the tuberculous ultravirus, by employing filtrates of twenty-day cultures in a Besredka fluid culture medium. If suspensions of inert substances capable of irritating the serosa and of provoking an active leukocytic exudation are previously injected into the peritoneum, the successive inoculation into the peritoneum of the filtrate causes in a more evident manner than in the controls the development of a morbid type characterized by glandular hyperplasia with a very rapid course. Raspi provoked a typical tuberculous

infection in guinea-pigs; then, by injecting the filtrate of the spleen and the lymph glands of such tuberculous guinea-pigs into other guinea-pigs he secured the experimental syndrome of the ultravirus. The fourth passage of glandular fluid into a tuberculous guinea-pig caused the rapid evolution of a typical Koch phenomenon.

As a result of successive experiments, the speakers are of the opinion that, in addition to the ultravirus, there are non-filtrable protogens in the cerebrospinal fluid of meningitis patients, which are capable of provoking the well known morbid picture due to the filtrable virus.

Gentili discussed the value of allergy in the diagnosis of tuberculous infections in children. Admitting that clinical manifestations of the ultravirus itself and of tuberculous protogens in a wider sense may be observed, he concluded that the tuberculin tests are losing ground as a diagnostic method.

The Crusade Against Malaria

The government recently experimented in the village of Ardea, in connection with the crusade against malaria. The village of Ardea was selected because it presented various features useful for the test: a small population (700 inhabitants), which was easily supervised; an abundance of stagnant water; houses without protecting screens; the collection of houses (*caseggiato*) located on a hill and hence isolated. The experiment was begun in May 1932. The choice of this village was based on the observation that pigpens attract, more than do the homes, the *Anopheles* mosquito. The area chosen for the experiment was bounded by an imaginary peripheral line connecting twenty-seven pigpens. In 1933, 628 *Anopheles* mosquitoes were caught in the dwellings, 24,961 in pigpens, and 1,068 in the stables of other animals. It is evident, therefore, that the mosquitoes preferred the blood of barrows to that of man.

In 1932 there were sixty-three malaria patients among the population, all of whom, with the exception of one, had a recurrence of the disease. In 1933, there were only forty-nine recurrent cases, and no new cases. None of the persons born during these two years had contracted malaria. The use of quinine had diminished, and the antimalaria prophylaxis station located in that area could be abolished.

Professor Ottolenghi

An acute disease that arose on the last day of his course of lectures caused the death of Prof. Salvatore Ottolenghi, director of the Institute of Legal Medicine of the University of Rome and of the Scuola superiore di polizia scientifica. Born at Asti in 1861 and graduated at Turin in 1884, Ottolenghi obtained, in 1893, by competitive examination, the chair of legal medicine at Siena. In 1896, he organized a university course in "polizia scientifica," which led to the foundation of the Scuola superiore di polizia scientifica. In 1903, he was transferred to the University of Rome. To Ottolenghi belongs the merit of having applied to police administration the technical methods introduced by Bertillon, Galton and Gross, and, further, of having introduced the experimental scientific method into all the functions of police administration. The method, based essentially on the criteria of psychologic anthropology, was used in connection with identification, in the study of clues obtained at the scene of a crime, in the securing of information and of testimony, in the questioning of persons suspected of crime, and, above all, in the practical objective study of the delinquent (biographic files) for the purpose of ascertaining how dangerous to society a delinquent may be, which is the basis of all measures of prevention. He published numerous treatises, the best known of which are that on forensic psychopathology (in collaboration with De Sanctis) and that on "Scientific Police Administration."

JAPAN

(From Our Regular Correspondent)

Sept. 21, 1934.

The Birth Rate and the Infant Mortality Rate

The statistical bureau of the cabinet has issued a report on births, deaths and marriages: The birth rate has shown a tendency to decrease in the last decade, although the population has been increasing. The recent large increase in population may be due to the decline in mortality.

Table 1, giving the number of births per thousand women in the child-bearing age, shows the decline of the birth rate.

TABLE 1.—*Births per Thousand Women in the Child-Bearing Age*

Year	From 15 to 45		From 20 to 29	
	Number	Index	Number	Index
1920.....	171	100	486	100
1925....	166	97	451	93
1930..	155	91	415	85

The following considerations throw light on whether the decline of the birth rate is due to the advance of the average age of married women or to the decrease of the number of births: More than 500,000 women married annually during the years from 1921 to 1927 and since then the number of marriages has been in the neighborhood of 400,000 annually. The decrease in marriages in spite of the great increase in the number of marriageable women since 1927 is due to the advance in age of those who marry, as is illustrated in table 2, giving the rate of married women per thousand women in the child-bearing age.

TABLE 2.—*Marriages per Thousand Women in the Child-Bearing Age*

Year	15 19	20 24	25-29	30 34	35-39	40 44
1920	166	649	857	894	881	846
1925	132	671	876	904	889	849
1930	110	637	886	914	916	864

The decline of the marriage rate of women in the age most favorable for child bearing causes the general decline in the birth rate. The decline in the number of marriages is due to unemployment, with a consequent difficulty in earning a livelihood. Infant mortality is also declining, as is shown in table 3.

TABLE 3.—*Infant Mortality*

Year	Mortality per 1,000 Births
1921.....	164
1922	166
1923	163
1924	156
1925	142
1926	137
1927	142
1928	138
1929	142
1930	124
1931	132

Early American Influence in Japan

The Japanese are aware, writes Dr. F. Shiga in a newspaper, that for the progress and prosperity of their empire they owe a great deal to their American friends. This is why they manifested such enthusiasm at the "Black Ship Festival" at Shimoda in celebration of the eightieth anniversary of the first American-Japanese treaty. The surprise visit of Commodore Perry in 1853 to appeal to the shogunate for com-

mercial intercourse between the two countries aroused the nation. His ship, being the first steamship that the Japanese ever saw, was then called "the black ship" on account of its color. It is not entirely out of place here to recall some of those American friends whose services have caused them to be enshrined in the hearts of the Japanese people.

In the realms of political economy, diplomacy, jurisprudence and postal service there were numerous benefactors. Although less widely known, the medical personages who came to this country from America cannot be forgotten. Dr. John Berry of Massachusetts came to Japan in May 1872 and established a public hospital at Okayama. He devoted himself later to improving health conditions in Japanese prisons. Dr. B. Simons came over in 1859 and opened a public hospital at Yokohama. He was a benefactor of Japanese children suffering from roundworm and came to be known as "Master Santonin" among Japanese parents. To Miss Richard, a Christian missionary, Japan owes the present development of hospital nurse training. Japan had no hospital nurses until Miss Richard arrived in 1883. She applied to the Japanese government on arrival with the support of the American Evangelical Association, for the initiation of a hospital nurse training service. Her movement was successful and in 1886 the first training school of Christian hospital nurses was established. This led to the creation of St. Luke's Hospital, and the nurses annually turned out by the school contributed to the present development of the Red Cross and Charity Hospital here. Mr. William Eliot Griffiths came here in 1870 and was employed as a teacher of the clansmen's children in Fukui province. Two years later he came to Tokyo as a university professor, and during his professorship he separated chemistry from pathology and made it an independent science in this country. Mr. Edward S. Maudslayi came over in 1877. He stayed only two years as professor of zoology and biology, but his contribution to scientific study in Japan was remarkable. He introduced Darwinism to Japan. He discovered the famous shell mound in Omori. He also established a course in anthropology in the Tokyo Imperial University. The list might be extended, but that given is sufficient to afford some idea of the part which American friends contributed to our development, and for which the Japanese nation will forever be grateful.

The Life Insurance Companies and Physicians

The life insurance companies are reported to have an intention to stop entrusting practitioners with physical examination of the persons to be insured. They expect to insure people without the usual physical examination. They intend to have instead an observer who will accompany the clerk and the insured, and estimate his health in a different way from that of the physician, inspecting only his outward appearance. For several years a certain company has been trying this new way with satisfactory results. They employed as observers the retired hospital sergeant majors of the army, who are so well accustomed to judging health. They are said to be able to discern intuitively even the extent, degree or nature of sickness through their many years of experience, never making a mistake. If this plan is successful, nothing would be more convenient for the companies. The military authorities have long been troubled about what to do with these sergeants when they are retired. Of course these observers will serve for ordinary occasions, but if a special examination is required a licensed physician will be sent for. The only question left unsettled is whether these observers should be permitted from the standpoint of insurance and medical regulations. The companies are at present believed ready to go so far as to revise their contract regulations with the sanction of the government. If this becomes general it will be a heavy blow to the practitioners, who already face many economic difficulties.

Marriages

RAY McARTHUR FREEMAN, Ogdensburg, N. Y., to Miss Verna Mae Lamphear of New York, October 6.

ASHBY STEELE, Jefferson Barracks, Mo., to Miss Myrne Moffit of Cedar Rapids, Iowa, September 8.

FREDERICK D. STUBBS, Wilmington, Del., to Miss Marion Virginia Turner of Philadelphia, June 2.

THOMAS JOSEPH CONLEY JR., Chicago, to Miss Elizabeth M. Cardwell of Evanston, October 10.

MIDDLETON ELLIOTT RANDOLPH to Miss Agnes Pickett Davis, both of Baltimore, October 6.

CHARLES LINCOLN STODDARD to Mrs. Nora C. Baehrig, both of San Diego, Calif., recently.

NED C. WATTS, Taylorsville, N. C., to Miss Gladys Ausmus of La Follette, Tenn., October 9.

MATTHEW JEROME MCNEELY to Miss Virginia McLeod, both of Berry, Ky., July 20.

JOHN W. STICKNEY to Mrs. Mabel C. Jennings, both of New York, September 1.

STEPHEN T. TURNER, Barberton, Ohio, to Miss Olga Zachar, September 15.

Deaths

Louis Gaston Labat ☉ New York; Université de Paris Faculté de médecine, 1920; clinical professor of surgery, New York University, University and Bellevue Hospital Medical College; member of the Associated Anesthetists of the United States and Canada; on the staffs of the Woman's, New York Orthopedic, Mount Sinai and Presbyterian hospitals; aged 56; died, October 1, at his summer home at Lake Mohegan, N. Y., of myocarditis.

Paul Galpin Shipley, Baltimore; Yale University School of Medicine, New Haven, 1913; associate professor of pediatrics, Johns Hopkins University School of Medicine; member of the American Pediatric Society and the American Society for Clinical Investigation; fellow of the American College of Physicians; on the staff of the Johns Hopkins Hospital; aged 46; died suddenly, September 12, of heart disease.

Edward Frank Ziegelman ☉ San Francisco; Jefferson Medical College of Philadelphia, 1912; member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological, Rhinological and Otolological Society and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; aged 50; died on the train, October 12, of angina pectoris.

Ernest Elmo Archer, Paintsville, Ky.; University of Louisville School of Medicine, 1910; member of the Kentucky State Medical Association; formerly mayor of Paintsville; served during the World War; aged 45; medical director and superintendent of the Paintsville Hospital, where he died, September 20, of heart disease.

Eugene P. King, Providence, R. I.; Jefferson Medical College of Philadelphia, 1880; member of the Rhode Island Medical Society; for many years second deputy superintendent and second deputy city registrar; aged 79; died, September 6, in the Jane Brown Memorial Hospital, following an operation for intestinal obstruction.

Alexander Nelson Booth, Bentleyville, Pa.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; past president of the Washington County Medical Society; for many years member of the board of education; aged 70; died suddenly, September 28, of heart disease.

Allen Donald McLean ☉ Medical Director, Captain, U. S. Navy, retired, San Diego, Calif.; Detroit College of Medicine, 1895; fellow of the American College of Surgeons; entered the Navy in 1903 and retired in 1928 for incapacity resulting from an incident of service; aged 60; died, September 29, of bronchiectasis.

Boyd Cline Bly ☉ Bryan, Ohio; Ohio State University College of Medicine, Columbus, 1925; past president and secretary of the Williams County Medical Society; aged 39; died, September 13, in a hospital, at Garrett, Ind., of heart disease, pulmonary abscess and acute nephritis.

William Alexander Clark, Trenton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1879; served

during the World War; on the staff of the Mercer Hospital; aged 77; died, October 2, of chronic myocarditis and occlusion of the coronary artery.

Homer Genung ☉ Freeville, N. Y.; Homeopathic Hospital College, Cleveland, 1884; since 1921 health officer of Dryden and Freeville; on the staff of the Tompkins County Tuberculosis Hospital, Trumansburg; aged 76; died, August 7, of coronary occlusion.

Henry Howitt, Guelph, Ont., Canada; Faculty of Medicine, Trinity College, Toronto, 1873; M.R.C.S., England, 1879; fellow of the American College of Surgeons; on the staffs of the Guelph General Hospital and St. Joseph's Hospital; aged 85; died, July 22.

Robert Bruce Stephenson, Libertyville, Iowa; Starling Medical College, Columbus, 1885; aged 77; died, September 15, in the Jefferson County Hospital, Fairfield, of injuries received when he fell from the porch while cutting a branch of a tree.

Lawrence Waldo Pence, Milwaukee; State University of Iowa College of Medicine, Iowa City, 1898; served during the World War; on the staff of the Veterans' Administration Facility; aged 59; died, September 21, of heart disease.

Robert Dennis Williams, Marked Tree, Ark.; Memphis (Tenn.) Hospital Medical College, 1898; formerly sheriff of Senatobia, Miss.; aged 67; died, August 5, in the Baptist Hospital, Memphis, Tenn., following a gallbladder operation.

Cecil Clair Davis, Albuquerque, N. M.; George Washington University School of Medicine, Washington, D. C., 1918; member of the New Mexico Medical Society; aged 43; died, July 31, of hypertension, myocarditis and uremia.

George Bonnie Wheeler, Lexington, Ky.; College of Physicians and Surgeons, Baltimore, 1912; aged 50; died, September 12, in a hospital at Charleston, W. Va., following an operation for cirrhosis of the liver with ascites.

William G. Kiger, Brunswick, Miss.; University of Louisiana Medical Department, New Orleans, 1876; member of the Mississippi State Medical Association; formerly member of the state legislature; aged 87; died, July 19.

Chauncey Fairfield Brown, Hengchow, Hunan, China; Cornell University Medical College, New York, 1920; medical missionary; aged 45; died, September 24, following an operation for partially strangulated inguinal hernia.

Ambrose C. Herman, Lansdale, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; aged 76; died, August 31, of carcinoma of the rectum.

Charles Foster Campbell, Sunbury, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1893; formerly on the staff of the Mary M. Packer Hospital; aged 66; died, September 10, of myocarditis and spondylitis.

Edward Worthington Connolly, Vancouver, B. C., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1900; M.R.C.S., England, 1913, and L.R.C.P., London, 1913; aged 60; died, August 30, of heart disease.

Frank Edwin Wolfe ☉ New Albany, Ind.; Kentucky School of Medicine, Louisville, 1897; on the staff of St. Edward's Hospital; aged 58; died, September 21, of arteriosclerosis, coronary occlusion and uremia.

William Miley Rivers, Yemassee, S. C.; University of Oklahoma School of Medicine, Oklahoma City, 1915; member of the South Carolina Medical Association; served during the World War; aged 43; died, July 20.

Ramon Ruiz-Arnau, San Juan, P. R.; Universidad Central de España Facultad de Medicina, Madrid, Spain, 1897; member of the Medical Society of the State of New York; aged 60; died, June 1, of angina pectoris.

John Henry Gosnell, Manchester, Wash.; University of Oregon Medical School, Portland, 1920; aged 42; died, September 14, in the Virginia Mason Hospital, Seattle, of diverticulitis with perforation and peritonitis.

Phillip Leslie McClure, Paris, Ky.; Louisville (Ky.) Medical College, 1891; member of the Kentucky State Medical Association; aged 64; died, August 30, in the W. W. Massie Memorial Hospital, of heart disease.

James Hudson Smart, Dallas, Texas; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; formerly city health officer; aged 66; died, September 17, of angina pectoris.

William Landis Heilman, Sterling, Neb.; Ensworth Medical College, St. Joseph, Mo., 1897; member of the Nebraska State Medical Association; formerly a pharmacist; aged 79; died, July 16, of heat stroke.

Willard Carl Barnes Feld, St Louis; University of Pennsylvania School of Medicine, Philadelphia, 1892, aged 73, died, August 30, in the City Hospital, of a skull fracture sustained when struck by a street car.

John James Dever, Glens Falls, N. Y., Albany (N. Y.) Medical College, 1896; for twenty years county coroner, on the staff of the Glens Falls Hospital, aged 63; died, September 21, of chronic nephritis.

William Tally Baines, Blountsville, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888, aged 73, died, September 24, in St Vincent's Hospital, Birmingham, of carcinoma of the prostate.

Harry Dudley Bell, Oakland, Calif., Cooper Medical College, San Francisco, 1904, aged 55, died, August 4, in the Peralta Hospital, of myocarditis, coronary occlusion and operation for hyperthyroidism.

Hall M. Eddleman, Gastonia, N. C., College of Physicians and Surgeons, Baltimore, 1886, member of the Medical Society of the State of North Carolina, aged 76, died, September 23, of nephritis.

Frank John Novak Sr., Chicago, Rush Medical College, Chicago, 1885, on the staff of the Frances E. Willard Hospital, aged 70; died, October 3, at his home in Riverside, Ill., of coronary thrombosis.

Willard Bryant Carpenter, Columbus, Ohio, Hahnemann Medical College of Philadelphia, 1879, aged 78, died, September 19, in the Grant Hospital, of diabetes mellitus and hypertrophy of the prostate.

William George Kleinstuber, Graterford, Pa., Jefferson Medical College of Philadelphia, 1893, aged 63, died, August 15, in the Temple University Hospital, Philadelphia, of peptic ulcer and myocarditis.

Julius B. H. Day, Social Circle, Ga., University of Louisville (Ky.) School of Medicine, 1891, member of the Medical Association of Georgia, aged 66, died, September 7, of carcinoma of the colon.

William Herbert Riley, Vandalia, Ohio, Long Island College Hospital, Brooklyn, 1885, member of the Ohio State Medical Association, at one time bank president, aged 75, died, July 27.

Harry A. Oftel, Cambridge, Minn., Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1902, aged 55, died, August 10, of coronary sclerosis.

Lewis M. Bryson, Paradise, Pa., Jefferson Medical College of Philadelphia, 1879, member of the Medical Society of the State of Pennsylvania, aged 84, died, July 28, of coronary stenosis.

Woodbury F. Cleveland, Eastport, Maine, Hahnemann Medical College of Philadelphia, 1881, member of the Maine Medical Association, aged 78, died, September 14, of angina pectoris.

Robert Howell Baker, Watertown, Tenn., University of Nashville Medical Department, 1873, Pulte Medical College, Cincinnati, 1881, Civil War veteran, aged 87, died, September 29.

Arthur F. Schellschmidt, Red Bud, Ill., Hospital College of Medicine, Louisville, 1892, aged 64, on the staff of St. Clement's Hospital, where he died, September 17, of pneumonia.

Levi A. Van Pelt, Paola, Kan., Medico-Chirurgical College of Kansas City, 1900, county health officer and county coroner, aged 69, died suddenly, September 6, of heart disease.

Joshua Edgar Jeter, Nashville, Tenn., Vanderbilt University School of Medicine, Nashville, 1904, aged 54, was instantly killed, September 7, when he was struck by an automobile.

William J. Griffin, Seattle, Rush Medical College, Chicago, 1901, member of the Washington State Medical Association, aged 62, died, August 20, of cerebral hemorrhage.

Douglas Nebraska Harris, Prentice, Ill., Northwestern Medical College, St. Joseph, 1887, member of the Illinois State Medical Society, aged 80, died, September 8, of uremia.

John L. Moore, Richmond, Va., College of Physicians and Surgeons, Baltimore, 1886, served during the World War, aged 70, died, September 8, of coronary thrombosis.

James Welker Geist, Wilkes-Barre, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1890, aged 70, died, September 18, in a local hospital, of nephritis.

Robertson A. Whitaker, Dallas, Texas (licensed in Texas under the Act of 1907), aged 74, died, September 7, in a local hospital, of gangrene of the right lower extremity.

Frederick Anthony Hahn, Santa Fe, N. M., Harvard University Medical School, Boston, 1928, aged 31; died, September 6, when he fell from a third story porch.

Joseph Battle Philips, Middlesboro, N. C.; University of Maryland School of Medicine, Baltimore, 1903, aged 54, was found dead, September 21, of heart disease.

William Henry Kasten, Lansford, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; died, June 5.

James Napoleon Ketchersid, Hope, Kan., University of the City of New York Medical Department, 1873; aged 84, died, September 30, of cerebral thrombosis.

Frederick C. Senn, Oshkosh, Wis.; College of Physicians and Surgeons of Chicago, 1885; aged 79, died, September 19, of arteriosclerosis and mitral regurgitation.

Noah Welzy Murphy, Vincennes, Ind., Medical College of Indiana, Indianapolis, 1905, formerly a druggist, aged 56, died, August 28, of carcinoma of the liver.

Edmund L. Shirley, Apache, Okla.; St. Louis College of Physicians and Surgeons, 1887, Civil War veteran, aged 90, died, August 30, as the result of a fall.

George S. Dudley, New Brunswick, N. J., Hahnemann Medical College and Hospital of Philadelphia, 1890, aged 68, died, September 16, of diabetes mellitus.

James Hervey Galloway, Roseland, La., Tulane University of Louisiana School of Medicine, New Orleans, 1914, aged 44, died, June 8, of heart disease.

George E. Andrews, Bay City, Mich., University of Pennsylvania School of Medicine, Philadelphia, 1887; aged 79, died, August 31, of chronic nephritis.

Burton W. Seymour, Jamestown, N. Y., University of Buffalo School of Medicine, 1884, aged 80, died, September 15, of acute dilatation of the heart.

Wylie Joseph Stewart, Coraopolis, Pa., Western Pennsylvania Medical College, Pittsburgh, 1900, aged 61, died, August 26, of coronary occlusion.

Jeremiah Calfer Wilson, Greenville, Ill., St. Louis College of Physicians and Surgeons, 1883, aged 74, died suddenly, September 9, of heart disease.

Joel Jasper Howell, Nashville, Tenn., Vanderbilt University School of Medicine, Nashville, 1884; aged 85, died, August 28, of chronic myocarditis.

John Robert Barnes, South Carrollton, Ky., University of Louisville School of Medicine, 1892, aged 76, died, September 14, of heart disease.

Rufus C. Pennywitt, Dayton, Ohio; Louisville (Ky.) Medical College, 1896; aged 62, died, September 18, in Manchester, of heart disease.

Fred Danziger, Chicago; University of Illinois College of Medicine, Chicago, 1929, aged 33, died, October 12, of carcinoma of the rectum.

Henry C. Mathis, Taylorsville, Ky., St. Louis Medical College, 1860, aged 98, died, September 2, of cerebral hemorrhage.

Charles F. Bush, Colquitt, Ga., University of the South Medical Department, Sewanee, Tenn., 1909, aged 46, died, August 14.

Mary Helen Thompson, Philadelphia, Woman's Medical College of Pennsylvania, Philadelphia, 1882, aged 80, died, August 3.

Arthur B. Woolner, Chattanooga, Tenn., Chattanooga Medical College, 1902, aged 65, died, July 27, in the Erlanger Hospital.

Emmett H. Bobbitt, Franklinton, N. C., University of Maryland School of Medicine, Baltimore, 1877, aged 81, died, July 30.

James Buchanan Pound, Bucklin, Mo., College of Physicians and Surgeons, Keokuk, Iowa, 1897, aged 62, died, July 23.

Jeremiah C. Ellsworth, Van Wert, Ohio, Homeopathic Hospital College, Cleveland, 1871; aged 85, died, July 14.

Adolph F. Schulz, Fort Wayne, Ind. (licensed in Indiana in 1897), aged 80, died, September 18, of heart disease.

Daniel O. Menasco, Whitehaven, Tenn., Memphis Hospital Medical College, 1891, aged 67, died, July 30.

Abner Walter Mann, Oak Grove, Mo., Missouri Medical College, St. Louis, 1883, aged 82, died, July 18.

Julian C. Carson, Frankfort, Ind. (licensed in Indiana in 1897), aged 72, died, July 27, of heart disease.

Elbert J. Lee, St. Louis (licensed in Missouri in 1881) Civil War veteran, aged 90, died, July 25.

Bureau of Investigation

THE GERMAN FRUIT SALTS FRAUD

H. Landgraf of Philadelphia is Debarred
from the Mails

For the past year or two Herman Landgraf of 1233 West Huntingdon Street, Philadelphia, has been selling through the mails what he has variously called "German Fruit Salts" or "Fruit Salts Biological Elektrolyt." On July 30, 1934, the Acting Postmaster General, on the recommendation of Judge W. E. Kelly, Solicitor for the Post Office Department, issued a fraud order debaring H. Landgraf from the use of the United States mails.

If one were to believe Mr. Landgraf, his panacea was good for practically every pathologic state to which the human body might be subject. So crudely was the nostrum exploited that it would seem that Landgraf was more ignorant than fraudulent. So little did he appreciate the inherent humbug involved in the sale of his "patent medicine" that he applied to the Council on Pharmacy and Chemistry of the American Medical Association for acceptance of his "Fruit Salts" in "New and Nonofficial Remedies." To quote *verbatim et literatim* from one of his letters to the Council:

"It is a biological method and theory to heal diseases with a specific diet which physiologically influences all diseases by dissolving physiologic, metabolic poisons, destroying bacteria, binding physiologic acids and by irritation of the finest blood vessel nerves, regulates the circulation.

"It creates electric currents splitting the molecules into Iones, which by physical oscillations produce oxygen, hydrogen, phosphorus and sulphurous Iones, which by friction produce electric currents and an artificial atmosphere. In this manner the sympathetic and parasympathetic nerves through reflexes are put into action and thus the disturbance to the blood vessels are eliminated, so that a cure can be accomplished of any disease."

The Council emphasized that one of the first requirements that physicians made before using a new remedy was a knowledge of its composition. Mr. Landgraf replied:

"Concerning your request for a quantitative statement, this cannot be furnished, it being part of the secret, personal process of the manufacture by the discoverer."

Later, however, Mr. Landgraf admitted that the composition of the "Fruit Salts Biological Elektrolyt" was:

Sodium citrate.....	19.5 per cent
Sodium tartrate.....	20.5 per cent
Sodium phosphate.....	25.9 per cent
Sodium sulphate.....	34.1 per cent

From this it appears that 60 per cent of the so-called "Fruit Salts" consists of a mixture of Glauber's salts and sodium phosphate—substances that by no stretch of imagination can be called salts derived from fruits.

In his literature Mr. Landgraf listed alphabetically some of the diseased states for which his "salts" were recommended. He named only 138 conditions, but prefaced the list with the statement: "If you cannot find listed what you are looking for, please write, it is impossible to name every disease on a circular"—which seems obvious. But the alphabetical list was a noble one, from Apoplexy, through Blood poison, Cancer, Diabetes, Epilepsy, Fistula, Glaucoma, Heart disorders, Impotence, Kidney stones, Leucemia, Milk leg, Neuritis, Paralysis, Rupture, Sciatica, Tuberculosis, Ulcers, Varicose veins and Whooping cough to Yellow jaundice. The names of diseases beginning with "X" and "Z" were omitted; they would doubtless be furnished on request.

Landgraf, by offering to pay fifty cents for the names of sufferers from diabetes and some other conditions should the victims purchase his nostrum, obtained mailing lists. A physician in a small town in Pennsylvania sent to the Bureau of Investigation a letter that a patient of his had received from Landgraf. The patient had a young son with diabetes. Landgraf's letter read in part as follows:

"I am told that you have Diabetes. I import GERMAN FRUIT SALTS, specialize in Diabetes producing PERMANENT RESULTS, overcoming conditions that doctors fail in, as for instance

STOP PAINS	STOP ITCHING
STOP GANGRENE	STOP BLINDNESS
STOP NUMBNESS	STOP HARD HEARING
STOP INSULIN	STOP AMPUTATION
HEAL SORE TOES	HEAL GANGRENOUS SORES OR OTHERS

"Doctors claim diabetic sores do not heal, Salts have healed the SEVEREST sores in 10 days to 4 weeks. Salts stop the use of Insulin which neither cures nor make sugar free, but may cause blindness, hard hearing, and will poison the whole organism, so stated by german medical authority, its use will cause irreparable damage.

"I enclose a circular showing a FEW OF HUNDREDS of cases, ALL HAVE BEEN TREATED BY DOCTORS WITHOUT SUCCESS.

"For details and proof RETURN THIS LETTER BY NECT MAIL."

The doctor who sent in the letter reported that the lad's father was "much worried" since his boy was receiving rational medical treatment. No wonder! Such pernicious falsehoods regarding the rational treatment of diabetes by means of insulin, while patently absurd to physicians, were not so obvious to the layman. Here again one must believe that Landgraf's quackery was actuated more through ignorance than malice. But, as Goethe has so well said: "Nothing is more dangerous than active ignorance."

[After this article had gone into the pages, the Bureau of Investigation received a letter from Dr. L. E. Baker of Espy, Pa., reporting that H. Landgraf had come to that town allegedly as an agent for the "Hilton Chemical Company," 2626 North 12th Street, Philadelphia. Signs have been put up at small stores reading: "DIABETES. Any Disease Relieved by New System of Medicine from Europe." The storekeepers have been instructed to refer prospective patients—or victims!—to the Hilton Chemical Company. This would appear to be Landgraf's method of attempting to circumvent the fraud order issued by the United States Post Office Department.]

Correspondence

URTICARIA DUE TO COLD

To the Editor:—Under current comment, September 29, you discuss physical allergy, noting the reporting of cases of urticaria due to cold in 1905 by Fraser and by Osler. I would call attention to an article on the etiology of urticaria by George Henry Fox in 1883 (*J. Cutan. & Ven. Dis.* 1:108, 1883).

He wrote: "Munchmeyer (*Berl. klin. Wchnschr.*, May 17, 1875) relates the case of a soldier who suffered from urticaria upon every exposure to a cold wind. It usually appeared in the form of three large circular wheals upon the cheeks and chin. Ungar (*Berl. klin. Wchnschr.*, Nov. 28, 1881) reports the case of a patient who, after a short stay in the open air, suffered from an extensive eruption of urticaria, followed in a few minutes by an attack of bronchial asthma. Upon return to a warm atmosphere, the shortness of breath gradually subsided and the urticarial wheals vanished."

It appears that observations of physical allergy, as manifested by urticaria due to cold, had found their way into medical literature at least thirty years before the reports of Fraser and of Osler.

RICHARD L. SUTTON JR., M.D., Kansas City, Mo.

PHOTOGRAPHIC ILLUSTRATION IN MEDICINE

To the Editor:—For a number of years I have paid particular attention to the illustrations that appear in textbooks and the various medical journals. Generally speaking, the standard of photographic illustrations in this country is low. This summer I reviewed one year's subscription of five standard medical journals for the quality of the photographs illustrating the articles.

From my observation of a total of 3,600 photographs which appeared in these journals I compiled the following statistics: 864, or 24 per cent of the illustrations, were poor; 1,218, or 34 per cent, were only fair; 1,518, or 42 per cent, were good or excellent.

I might mention that on looking over these illustrations I took into consideration the difficulty of photographing certain

clinical subjects and the usual loss of detail that is encountered in the preparation of cuts. I noticed many beautiful photographs of roentgenograms. However, I feel safe in saying that in general the illustrations showing roentgenograms had the poorest average of the various types of photographs studied. It was especially interesting and gratifying to note that articles issued from institutions in which members of the Biological Photographic Association are employed were illustrated by photographs of a decidedly better quality and invariably fell into the good or excellent class.

A letter of inquiry was sent to the editors of journals that were reviewed regarding their policy for the acceptance of photographic material for publication.

Each reply states that a high standard is maintained and that poor prints are often returned or the negatives requested so that better prints may be made. Considering the efforts on the part of the editors to publish only photographs of better quality, it is rather discouraging to note that only 42 per cent are only good or excellent. I fully appreciate the fact that no definite conclusion can be drawn from a study of one year's subscription. Nevertheless it affords a fairly good idea of the type of photographs that appear in the medical journals.

Why are the illustrations of a low standard? First, too many physicians who have little or no knowledge of the principles of photography are attempting to illustrate their own cases. I am fully aware of the fact that a great deal of very fine photographic work is being done by various members of the medical profession. However, these men are by far in the minority.

If medical men want to do this sort of work, they should take the time to learn to do it properly. Good medical photography is not a snap, snap proposition. It requires more than a clinical camera outfit. A broad knowledge of photography plus the skill to apply this information to biologic subjects is most essential. So far as helping to overcome this condition, I would suggest that whenever possible members of the Biological Photographic Association offer courses of instruction to groups of medical men who are especially interested in this work. Such opportunities present themselves particularly in medical schools and large hospitals.

During my last two or three years in the photographic department of the Yale Medical School, courses in clinical photography were given to the interns in pathology each winter and they proved highly successful. Similar courses have been carried on at the Veterans' Administration Facility, Hines, Ill.

The average physician should be more critical regarding the photographs that are to illustrate an article into which he has put long hours of exacting work.

Another reason for the poor quality of the pictures that are seen in medical journals is the fact that in many institutions it is assumed that because the x-ray technician deals with light, films and developer he naturally has all the qualifications of an expert clinical photographer. We have in the Biological Photographic Association men who are skilled experts in both x-ray work and biologic photography. However, this is an exception rather than the rule.

As far as I know, Mr. Carl D. Clarke of the University of Maryland was the first to mention the possibility of a school in which one could receive special training in biologic photography. If such an idea could be worked out satisfactorily, there is no doubt that it would be a great step forward, and as a result, the photographic illustrations would be considerably improved.

RALPH P. CREEER, Veterans' Administration Facility,
Hines, Ill.

Senior Clinical Photographer; President,
Biological Photographic Association.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CHRONIC APPENDICITIS

To the Editor.—I have under my care a newly married woman, aged 26, who has been complaining of pain in the right lower quadrant of the abdomen. This pain has been present almost daily for the past two months and at times there is some gastric upset without any vomiting accompanying the pain. Although the pain is quite severe, the patient is able to continue her work as a secretary. She has noticed that the pain is more severe after exercise and along toward evening. Examination reveals some tenderness on deep palpation over McBurney's point. Examination of the pelvis is negative save for a mild leukorrhea, which, the patient states, has existed since she was a child. Menstruation has been fairly regular, although it is sometimes a few days late and lasts only two or three days. There is no dysmenorrhea. A roentgenogram taken after the ingestion of an opaque meal showed a retrocecal appendix and the transverse colon markedly spastic. Would you please tell me the proper way to treat this case? Are all retrocecal appendixes pathologic? If so, what would be the proper treatment for a patient who refused operation? Would a spastic large bowel give this train of symptoms? Please omit name.

M.D., Connecticut.

ANSWER.—The symptoms are strongly suggestive of a subacute or so-called chronic appendicitis. Stomach symptoms are a frequent accompaniment.

The local tenderness over the region of the appendix is quite characteristic of a diseased appendix.

An important condition to differentiate in this case is a spastic colitis. As a rule, when the symptoms are due to a spastic colitis the tenderness is not localized over the appendix but is more diffuse, extending over the ascending colon, and in nearly all instances it is present over the sigmoid colon. In thin persons the sigmoid may be palpated and felt to be slightly rigid, thickened and definitely tender.

Both conditions may be present, but in the absence of more definite changes one would be inclined to treat a case showing tenderness over the sigmoid and ascending colon as an irritable bowel.

One should consider other conditions causing tenderness in the right lower quadrant and should look for kidney disorder, obstructing bands from so-called Jackson's membrane, a regional ileitis, omental bands, pelvic disease, and other conditions accessible through a muscle-splitting incision.

At present it is impossible to say that all retrocecal appendixes are pathologic, but they are frequently kinked and subject to stasis, fecaliths and consequently attacks of inflammation.

In this case one would believe that operation is indicated, with careful exploration through a muscle splitting incision. The risk in good hands is almost negligible.

Nonoperative treatment would consist of a diet that avoids irritation to the bowel and above all constipation. There should be plenty of well cooked or thoroughly ground vegetables with a well balanced diet. Liquid petrolatum may be of value.

The patient should be warned of the danger of an acute appendicitis and the great frequency of perforation and peritonitis within the first twenty-four or forty-eight hours, with its resulting high mortality.

URTICARIA AT MENOPAUSE

To the Editor.—Will you kindly tell me the relationship of the menopause to urticarial skin lesions and whether endocrine therapy is of any value? What is the status of autohemotherapy in the treatment of hives, and what is the best dosage and interval of treatment? Kindly omit name.

M.D., California.

ANSWER.—The ovarian deficiency at the menopause may lower the threshold of irritability so that urticaria may result from slight causes, less than sufficient to evoke it at other periods of life. On the other hand, according to Engelbach (Endocrine Medicine, Springfield, Ill., and Baltimore, C. C. Thomas, 1932), urticaria may be a symptom of nearly any of the forms of endocrine excess. It was part of the clinical picture in 20 of 351 cases of thyroidism, 27 of 492 cases of pituitarism, 5 of 160 cases of thyropituitarism and 23 of 504 cases of gonadism. Women with a preceding endocrinism do not respond normally to the menopause. The symptoms of this change in such patients are not caused by a simple reduction in ovarian activity. To interpret them the preceding endocrine abnormality must be determined. This requires careful study, and after the correct diagnosis is made the response to treatment may be slow or unsatisfactory in such old cases.

Autohemotherapy is often successful in terminating chronic urticaria for which no cause has been found. The dosage varies ordinarily from 5 to 20 cc., at five day intervals. Immediately after the blood has been drawn it is injected deeply into the buttock. A slight febrile reaction after the first or one of the early injections need not cause surprise.

CEREBRAL INJURY AND SUGAR METABOLISM

To the Editor:—Last November a man, aged 48, was taken to the hospital suffering from a sudden attack of unconsciousness, which was diagnosed as spontaneous subarachnoid hemorrhage. Spinal tap showed blood and xanthochromia. He had a chronic hypertensive condition. There were no especially significant urinary changes. There was no sugar in the urine. The blood sugar was 102 mg. per hundred cubic centimeters of blood. After about ten days his condition improved and he went home feeling quite well. There was no paralysis. Three weeks ago a urinalysis showed no marked abnormalities. A week ago he again became unconscious. A period of about two hours elapsed from the onset until unconsciousness was complete. He had passed urine early that morning and nearly two pints was removed by catheterization from a distended bladder. Breathing was stertorous. The reflexes were lowered. The pupils were medium, fixed and unequal. A spinal tap withdrew 6 cm. of bloody fluid under moderate pressure, 12 mm. of mercury. The blood pressure was 270 systolic, 145 diastolic. There was no sugar in the urine. The blood sugar was 275. No diacetic acid was reported. The same diagnosis was made as for the first attack. The patient died about twelve hours after the onset of the attack without regaining consciousness. Because of the history and absence of diacetic acid I am assuming that the high blood sugar was the result of cerebral irritation from the hemorrhage. If it was of cerebral origin, what effect if any would the high blood sugar have on the progress of the case and how, if at all, should treatment be modified by its presence? Is there any use for insulin in this condition? Also dextrose? Please omit name.

M.D., Pennsylvania.

ANSWER.—Cerebral injury, if it affects the subthalamic regions of the brain, is frequently accompanied by hyperglycemia and glycosuria. As a rule the disturbance of carbohydrate metabolism produced by this means is transient. There is no evidence that the supply of insulin is disturbed, and it is presumed that the effect like that following puncture of the floor of the fourth ventricle, the Claude Bernard procedure, is to stimulate the glycoscretory sympathetic fibers to the liver. However, injected insulin will counteract the resulting glycolysis and thus reduce the blood sugar to normal and stop the excretion of sugar.

It is also possible in cases of severe hypertension to have a hyperglycemia and some glycosuria without there being any cerebral injury. This, possibly, is to be attributed to overfunction of the suprarenals.

In neither of these conditions is the control of hyperglycemia and glycosuria of much importance clinically. At worst, the diabetic conditions resulting are not severe or accompanied by much, if any, ketosis. It is not considered probable that the hyperglycemia in this patient affected the progress of the case or that its treatment would have modified the course.

FOOD ABSORPTION FROM RECTUM

To the Editor:—I should like to know to what extent dextrose (5 per cent solution), peptonized milk and whisky are absorbed from the rectum. References to the literature will be appreciated. Kindly omit name and address.

M.D., New York.

ANSWER.—The question of the absorption of dextrose from the rectum is still a controversial matter (Collens, W. S., and Boas, L. C.: Absorption of Dextrose by Rectum, *Arch. Int. Med.* 52:317 [Aug.] 1933. Bauer, J., and Monguio, J.: Sugar Metabolism in Relation to Resorption of Sugar Administered by Rectum, *Klin. Wchnschr.* 11:1820 [Oct. 29] 1932. Scott, E. L., and Zweighaft, J. F. B.: Blood Sugar in Man Following Rectal Administration of Dextrose, *Arch. Int. Med.*, 49:221 [Feb.] 1932. Julesz, M., and Winkler, E.: Effect of Rectal Administration of Concentrated Dextrose Solutions on Blood Sugar, *Ztschr. f. d. ges. exper. Med.* 80:823, 1932. Perusse, G. L.: The Solution of Choice in Proctoclysis, *Gynec. & Obst.* 54:770 [May] 1932). The amount absorbed is certainly not great enough to be of much importance for purposes of nutrition. The use of peptonized milk is no doubt an error (Van Noorden, Carl: Ueber rectale und parenterale Ernährung, *Therap. Halbmonatsh.* 34:1 [Jan. 1], 40 [Jan. 15] 1920), for the fat is not absorbed, nor the lactose to any great extent. The peptone is probably the most important ingredient, and this might more rationally be administered in 10 or 20 per cent solution in physiologic solution of sodium chloride. Alcohol is quite readily absorbed from the rectum, best from a 10 per cent solution (Hauzlik and Collins: *J. Pharmacol. & Exper. Therap.* 5:185, 1913).

POSTGONORRHEAL INFECTIONS

To the Editor:—A man, aged 35, presented himself six months ago with the complaints of frequency, nocturia, backache and a clear urethral discharge. He stated that for the six weeks prior to that he had had a thick yellow discharge and burning on urination. He had received no treatment for this condition. On examination the prostate was enlarged and extremely painful, but soft. Smears made were negative for the gonococcus. He was given prostatic massage, gently at first, and then gradually posterior instillations were added. Preparations so used were silver nitrate, strong silver protein and neosilvol. All the symptoms gradually left, and he is now feeling very well again. Only one thing is still not as I wish it. His urine, only the first specimen passed, is loaded with small threads of mucus and always contains six or eight large threads. The urine is clear and normal otherwise. I have been massaging the prostate and instilling neosilvol up to 10 per cent and silver nitrate up to 0.4 per cent every other day, but the threads persist. The prostate, although now of normal size, is still a bit tender. After a month's rest he returned with no improvement. Can you suggest any further treatment to clear up the urine? Please omit name.

M.D., Missouri.

ANSWER.—It is not uncommon for a patient at this stage to have shreds containing gonococci with the condition of a latent or carrier-like state, although usually but not always there is clinical activity after the instillation of silver nitrate. Also, about 10 per cent of postgonorrheal infections are due to colon bacilluria and respond favorably, as a rule, to high acidification as obtained by the ingestion of from 4 to 6 Gm. of ammonium chloride daily, in divided doses, combined with the administration of methenamine or methenamine salicylate, from 2 to 4 Gm. daily. Finally, many patients with the condition described will show on urethroscopic examination infection of dilated prostatic ducts which, if present, require eradication by electrical excision or cauterization transurethrally.

VINCENT'S INFECTION OF MUCOUS MEMBRANES

To the Editor:—In Vincent's angina do ulcers develop on any other membranes than the membranes of the mouth or throat? Are the organisms found in cases of infection in the vagina? All the books that I have which make reference to Vincent's infection speak only of the mouth and throat as the location of the ulcers.

C. L. PEARCY, M.D., Salem, W. Va.

ANSWER.—Fusospirochetal (Vincent's disease) infections of parts of the body other than the oral cavity have been described repeatedly. Davis and Pilot (Studies of Bacillus Fusiformis and Vincent's Spirochete, *THE JOURNAL*, Sept. 16, 1922, p. 944) reported a number of cases of a gangrenous condition of the penis presumably caused by these organisms. Cases of putrid gangrenous abscesses of the lungs and brain are even more numerous in the literature. A recent monograph (Smith, D. T.: Oral Spirochetes and Related Organisms in Fusospirochetal Disease, Baltimore, Williams & Wilkins Company, 1932) discusses this subject in great detail. According to Smith, most of the reported fusospirochetal infections in the female genital region are of the gangrenous or noma type, rather than ulcerative, and are relatively rare. On the other hand, "fusiform bacilli and spirochetes are commonly found about the clitoris of normal women but are usually absent in smears from the vagina. Women of the prostitute class become carriers of the infection." Balanitis in the male may be traced in many instances to cohabitation with women in the last group.

BCG INOCULATIONS AGAINST TUBERCULOSIS

To the Editor:—It is my understanding that the Chicago Board of Health has some method of inoculating against pulmonary tuberculosis. I have been unable to find in any of the recent medical journals information concerning any such remedy which is certain enough to be used in as massed quantity as the Chicago Board of Health seems to be going to use. Possibly I have overlooked this news, but if possible would you kindly send me such information as may be at hand concerning the treatment as intended to be used by the Chicago Board of Health.

GEORGE H. WATERS, M.D., Des Moines, Iowa.

ANSWER.—The question was referred to the president of the Board of Health of Chicago, who writes: "The Chicago Board of Health is not using any method of inoculation for the prevention of pulmonary tuberculosis. It is evident that this inquiry refers to the contemplated use of BCG vaccine by the Municipal Tuberculosis Sanitarium. At present there is no unanimity of opinion as to the value of BCG vaccination nor is the evidence absolutely definite that the vaccine may not have certain dangers. S. A. Petroff, director of research and clinical laboratory of the Trudeau Sanatorium, Trudeau, N. Y., seems to be the chief opponent of this method of vaccination in the United States. Dr. William Park evidently believes that it may have value in protection of infants in contact with tuberculous parents. The board of health could not consider the use of this method until there is some general agreement as to its value and safety."

BLOOD IN SEMEN

To the Editor:—A man, aged 28, single, in the past two months has noticed blood in the semen, detected in removing a condom after intercourse. The amount is small but sufficient to notice. No gross blood appeared in the urine voided a few minutes later. He states that an anterior gonorrheal urethritis occurred eight years ago, which responded to treatment in three weeks and was without complications and recurrences. The Wassermann and urine tests are negative. The prostate and entire urinary system are entirely normal so far as I can tell. A prostatic smear is negative for gonococci. Please omit name if published.

M.D., Tennessee.

ANSWER.—Blood in the semen may be due to a number of causes: (1) tuberculosis of the lower end of the genital tract; (2) stones in the seminal vesicles; (3) papilloma or other neoplastic growths in the posterior urethra in the region of the ejaculatory ducts; (4) granulations in the lower end of the genital tract. A study directed to these parts will usually establish a diagnosis. The differentiation can be made only by a combined laboratory and visual examination of the parts mentioned.

ROENTGEN TREATMENT OF TONSILS

To the Editor:—Will you kindly tell me the merits of shrinking the tonsils with x-rays as compared with regular tonsillectomy? Kindly omit name.

M.D., Georgia.

ANSWER.—Some years ago there was considerable furor regarding applications of the x-rays in the endeavor to remove the tonsils. As a matter of fact the tonsils were diminished in size owing to changes in the lymphoid structures, but the epithelium lining the crypts was not destroyed. The tonsils themselves were merely diminished in size but not caused to disappear. Sterilization of the crypts was effected, but it lasted for only a few days after irradiation. In a word, the recurrence of tonsillitis was not prevented and many patients had to be operated on later in the usual manner. Roentgen treatment of the tonsils is no substitute for tonsillectomy. If chronic tonsillitis is present, complete removal of the tonsils by one method or another is the proper procedure.

POSTOPERATIVE CARE OF CUTANEOUS CARCINOMA

To the Editor:—A woman, aged 45, presented a small epithelial growth, the size of a pea, on her forehead. I removed the growth under local anesthesia, taking out some normal surrounding tissue to make certain that I had removed it completely. Microscopic examination showed a cornified epithelial surface; subjacent structures show nests of epithelial cells, with slight variation of size and shape and occasional mitotic figures. The microscopic diagnosis by the pathologist was basal cell carcinoma. Please advise me whether high voltage roentgen therapy is indicated now in this type of case. Please omit my name and address if this is published.

M.D., Maine.

ANSWER.—When dealing with small superficial basal cell epitheliomas that have been excised, the consensus is that it is not necessary to irradiate the area. It is advisable, however, to inspect the area about twice a year for a few years.

TREATMENT OF SYPHILIS

To the Editor:—In "Standard Treatment Procedure in Early Syphilis" and in the part corresponding to a "Scheme of Treatment for Early Syphilis" (THE JOURNAL, April 21), I find the indication of 20 centigrams of bismuth. I wish to know whether this refers to a bismuth salt or to metallic bismuth. I also wish to know the doses of potassium iodide and of the mercuric ointment mentioned in the part to which I refer. It also would interest me to obtain the schedule of treatment referring to it.

J. E. CAVELIER, M.D., Bogota, Colombia.

ANSWER.—The 20 centigrams of bismuth refers to a bismuth salt, the salicylate. The doses of potassium iodide suggested are an average of 1.3 to 2 Gm. (from 20 to 30 grains) three times daily. The dose of mercurial ointment is 4 Gm. of the 50 per cent U. S. P. ointment. The instructions are given at the rate of six each week, with the usual technic of application.

TREATMENT OF BEE STINGS WITH EPINEPHRINE

To the Editor:—In the answer to the query as to the effective treatment for bee stings, in THE JOURNAL, September 22, p. 937, the June 1934 issue of *Bees and Honey* is cited as recommending the use of epinephrine intramuscularly or intravenously in a dosage of 1 cc. of 1:1,000 solution. Having had experience in the intravenous use of epinephrine 1:1,000 in peracute attacks of bronchial asthma, I would suggest that its use intravenously in the dosage recommended would be highly dangerous. If the emergency is such that epinephrine 1:1,000 must be used intravenously, it should be used in small doses of from 0.05 to 0.20 cc., well diluted with saline solution and injected very slowly.

JEROME GLASER, M.D., Rochester, N. Y.

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 12; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 13. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science.* Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, Nov. 13. Sec., Dr. L. J. Marshall, 820 W. 14th St., Little Rock. *Homeopathic.* Fayetteville, Nov. 13. Sec., Dr. Allison A. Pringle, Eureka Springs.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 5. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 13-14. *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdoch, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

KANSAS: Topeka, Dec. 11-12. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 4-6. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 11-14. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 3. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Reciprocity.* Oklahoma City, Dec. 11. Sec., Dr. J. M. Byrnum, Mainmott Bldg., Shawnee.

OREGON: *Basic Science.* Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozier, 505 Saluda Ave., Columbia.

TEXAS: Galveston, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 12-14. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WEST VIRGINIA: Martinsburg, Oct. 29-31. State Health Commissioner, Dr. Arthur E. McClure, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 15. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Louisiana June Report

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written and practical examination held at New Orleans, June 7-9, 1934. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and three candidates were examined, all of whom passed. Five physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Medical School	.....	(1926)	85.2
Medical School	.....	(1933)	89.1
Medical Center	.....	(1934)	79.8*
	* 84.2,* 84.3,* 84.7,* 84.9,*		
	* 86.5,* 86.8,* 87,* 87.2,*		
	87.7,* 88.4,* 89*		
Tulane University of Louisiana School of Medicine	.....	(1931)	82.3,
(1933)	82.6, 87.5, (1934) 80.3, 80.6, 81.2, 81.2, 81.3,		
	81.8, 82, 82.1, 82.1, 82.2, 82.3, 82.3, 82.7, 83.2, 83.3,		
	83.4, 83.4, 83.5, 83.6, 83.6, 83.7, 83.9, 84, 84.2,		
	84.2, 84.4, 84.5, 84.6, 84.6, 84.7, 84.8, 84.8, 84.9, 84.9,		
	84.9, 85, 85, 85.1, 85.3, 85.3, 85.4, 85.4, 85.5, 85.5,		
	85.6, 85.6, 85.7, 85.7, 85.8, 85.8, 85.9, 85.9, 86,		
	86.3, 86.3, 86.4, 86.7, 86.8, 87,* 87,* 87.1, 87.2,		
	87.5, 87.6, 87.6, 87.7, 87.9, 87.9, 88.4, 88.5, 88.7, 89		
University of Tennessee College of Medicine	.....	(1933)	79.8
Medical College of Virginia	.....	(1932)	82.7

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine	(1923)	Georgia
University of Louisville School of Medicine	(1926)	Texas
Tulane University of Louisiana	(1934)	Texas
Meharry Medical College	(1913)	Arkansas
Baylor University College of Medicine	(1931)	Texas

* This applicant has received his M.B. degree and will receive his M.D. degree and Louisiana license on completion of internship.

† License has not been issued.

Book Notices

Summary of Pennsylvania's Poor Relief Laws Affecting Care of Indigent Sick. A Digest of Laws and Practices with Supplements Discussing the Pennsylvania Plan for Emergency Medical Service to Those on Unemployment Relief and Pennsylvania's Work Relief Compensation Fund. Paper. Pp. 100. Harrisburg: Medical Society of the State of Pennsylvania, 1931.

In a concise, well prepared, handy volume, the Medical Society of the State of Pennsylvania conveys to the reader facts, experiences and suggestions pertaining to the medical phase of relief to the indigent. The booklet was prepared for distribution to county poor authorities, social workers, county medical society officers and others interested in providing minimal adequate medical service to the indigent. It brings together, for easy reference, county reports giving the type of organization responsible for poor relief, the methods used in providing medical care, the amount paid for medical services to the indigent, and suggestions for improvement of these services. A section is devoted to a digest of the poor relief laws and practices of Pennsylvania in which important definitions and procedures are clearly set forth.

It is logical that in connection with the discussion of general poor relief some attention be given to the recent development of emergency medical service to those on unemployment relief. The Pennsylvania plan, including rules and regulations, fees and suggestions for its operation, is given in detail. An interesting and instructive table on page 94 gives for five counties separately, and for the entire state, the extent and costs of medical services and the ratio of these services to the number of relief cases. A brief discussion of medical service under Pennsylvania's Work Relief Compensation Fund indicates the interest that is being taken in the medical phase of workmen's compensation by the Medical Society of the State of Pennsylvania.

A compilation of information such as that contained in this publication is sure to assist materially in improving the general understanding on an important phase of medical practice. With the facts thus clearly set forth it should be possible more easily to effect improvements in the medical services to the indigent wherever such improvements seem indicated. A similar compilation of state poor laws and practices in other states would be a valuable assistance to those who are interested in and responsible for this work.

Thérapeutique médicale. VII: Vaisseaux et reins. Par M. Loeper. Avec la collaboration de MM. A. Lemaire, M. Debray, A. Zimmern, M. Villaret, Pasteur Vallery-Radot et J. Cottet. Paper. Price, 50 francs. Pp. 339, with 26 illustrations. Paris: Masson & Cie, 1934.

This is the seventh volume published by the chair of therapeutics of the Medical Faculty of Paris, under the leadership of M. Loeper; it deals with the blood vessels and the kidneys. Like the other volumes of this series, it is the result of the collaboration of a number of authors. One might deplore the occasionally uncritical display of erudition, which, starting with premises not definitely established, and probably erroneous, builds on this a program of action that is highly logical but unfortunately suffers from the fault that it does not accomplish the result. Thus Loeper, writing on arteriosclerosis, concentrates the fire of his heavy therapeutic artillery on the calcium and the cholesterol deposited in the diseased vessels, as though these chemical bodies, instead of their presence being the result, were the cause of the changes in the blood vessels. He proposes a low calcium and low cholesterol regimen, "detransfusing" medicaments, such as sodium silicate and sodium iodide, and, because calcium precipitates in an alkaline medium, the administration of phosphoric and lactic acids, apparently oblivious to the fact that the bones furnish an almost inexhaustible mine of available calcium that is actually tapped by acidifying the system. He has great faith in tincture of garlic (50 drops daily) and still more especially in its active principle, diallyl disulphide (0.02 Gm. in 1 cc. of oil), which is quite powerful in temporarily reducing blood pressure. Unfortunately, the transient effect of these rather painful injections cannot be expected to produce any important impression on the course of arteriosclerosis. Obviously, in therapeutics as in many other ways the French, with their therapeutic optimism, are diametri-

cally opposite in their tendency to their hereditary enemies, the Germans, with their therapeutic nihilism. Which is the better awaits the decision of the question as to whether it is better to have a "doubtful remedy than none" or "better no remedy at all than a doubtful one." Loeper has a good word to say for crataegus (Hawthorn berries, fluidextract 0.3 cc. twice daily) as a remedy to calm cardiac excitability in patients with a tendency to angina pectoris. In arterial hypertension, acetylcholine is spoken of along with the nitrites and yohimbine, which latter is shown to be capable of increasing the duration of the fall in blood pressure produced by acetylcholine. The indications of general and local bloodletting are discussed. The diuretics are taken up under two headings: the extrarenal, including water, salts, and digitalis bodies, and the renal diuretics, with the xanthine series, the mercurials and tincture of onion. The methods of treating nephrolithiasis, of hematuria and of renal tuberculosis are all taken up in a most practical manner. There is a chapter on urinary antiseptics. Kidney substance is believed to be a remedy of possibly special value in the anemia of kidney disease, though in other anemias it is undoubtedly inferior to liver. The book concludes with a symposium on the dietetics and the physical therapy of these diseases, including—as is the custom with European works of this kind—an evaluation of the national mineral spring resources, a matter in which we of this country are sadly remiss.

The Prospective Mother: A Handbook for Women During Pregnancy. By J. Morris Simons, M.D., Professor of Obstetrics and Gynecology, University of California. Third edition. Cloth. Price, \$2. Pp. 311. New York & London: D. Appleton-Century Company, Inc., 1934.

In the present edition, which appears thirteen years after the second edition, the chief changes include the hormone tests for the diagnosis of early pregnancy, the value of the x-rays for greater accuracy of diagnosis, new treatments for the ailments of pregnancy, the gain in weight during pregnancy, and the more recent methods for the relief of pain during labor. The author accurately and in simple language answers all questions that women generally ask during pregnancy. This book explains what goes on not only in the uterus but in the entire body during gestation. The advice given is helpful and will allay the fears many women have of the ordeal of childbirth. The technical terms used throughout the book are defined in a glossary at the end. A few minor criticisms may be mentioned. Among the methods for reviving a new-born child, the author advocates dipping the child alternately into warm and cold water. The latter may prove harmful to some babies. Simons speaks of a "final examination" after delivery. This term should not be used, because it is a mistake to give women the impression that the examination made six or eight weeks after a baby is born is the final contact with their physician until another pregnancy supervenes. Repeated visits are particularly important for women who have had toxemia, nephritis or other complications during pregnancy, but even women who have had no complications should visit a physician at least once a year after a child is born. The author uses the terms caesarean and anaesthesia instead of the simplified spelling. Without doubt the present edition, like the two previous ones, will prove to be highly popular with prospective mothers.

Essays on Chronic and Familial Syphilis. By Griffith Evans, M.A., D.M., F.R.C.S., Hon. Surgeon, Caernarvonshire and Anglesey Infirmary. Cloth. Price, \$3. Pp. 91, with 13 illustrations. Baltimore: William Wood & Company, 1932.

This series of nine papers is in part a collection of previous journal publications and the essays awarded the gold medal of the Hunterian Society in 1932. It deals with that "penumbra of doubt" at the confines of established diagnostic and clinical syphilology which deserves sincere consideration as knowledge of the pathologic mechanisms of the disease widens under the granular stage concept and the observations and opinions of Warthin. The leading topics are syphilis and nervous dyspepsia, and syphilis as a factor in chronic conditions of the abdomen, in nervous dysphagia, in anemia and glossitis with dysphagia, in finger nails and tongues, and in carcinoma. The author's familiarity with recent literature on syphilis is noteworthy and pleasing. Some of the applications have the overbalanced quality of the French fourth generation school (syphilis héréditaire larvée). The pitfalls of nonspecific effect in therapeutic

testing seem largely disregarded. As a summary of impressions that often press on the syphilis-alert clinician yet preserve a ghostly intangibility and a defiance of exact analysis, this little book is a thought-provoking and interesting contribution. Its defiance of the negative Wassermann reaction is timely. As the comment of a surgeon on the borderland of what is too often a sturdily ignored field when operative considerations claim the stage, it is in a happy sense unusual.

Ergebnisse der gesamten Tuberkuloseforschung. Herausgegeben von H. Assmann, H. Beltzke und H. Braevning. Band VI. Paper. Price, 60 marks. Pp 736, with 107 illustrations. Leipzig: Georg Thieme, 1934.

This book is divided into eleven parts, each written by a different author. The work is presented in logical sequence, beginning with the allergy that results from the first attack with tubercle bacilli, as well as the tuberculous focus itself. A discussion of the literature on primary tuberculosis precedes the presentation of material. This chapter is beautifully illustrated with x-ray films, which show all the stages of primary pulmonary tuberculosis from the inflammatory area about the focus to the formation of Ghon tubercles with calcium in the hilar lymph nodes. For this type of tuberculosis the author gives a good prognosis. In the discussion of the secondary infiltration he points out that the prognosis is not so favorable. Good illustrations of miliary tuberculosis and descriptions of tuberculous meningitis are presented. One chapter is devoted to the pathologic anatomy and in another there is an extensive discussion of hematogenous tuberculosis, which includes almost all the organs that may be involved. Various phases of surgery of the chest are presented by Roloff and by Sauerbruch and Fick. These chapters are profusely illustrated with drawings and reproductions of x-ray films, showing the results of phrenic exeresis and all modern surgical procedures. One chapter is devoted largely to rehabilitation, in which attention is called to the various kinds of work tuberculous patients are capable of doing. Some space is given to a discussion of the Potts Memorial Hospital of New York for that purpose. Other schemes, such as that at Papworth village, are fully discussed. Finally, a part is devoted to pleurisy by J. Adolph Frederiksen. In this chapter, all forms of pleurisy are discussed. Each part of this volume contains an extensive list of references. The long index impresses on one the large number of subjects covered.

Medicine in Persia. By Cyril Elgood, M.D., M.R.C.P. No. XIV, Clio Medica: A Series of Primers on the History of Medicine. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$1.50. Pp. 105, with 11 illustrations. New York: Paul B. Hoeber, Inc., 1934.

German Medicine. By W. Haberling M.D., Professor of the History of Medicine, Academy of Düsseldorf. Translated by Jules Freund, M.D. No. XIII, Clio Medica: A Series of Primers on the History of Medicine. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$1.50. Pp. 160, with 9 illustrations. New York: Paul B. Hoeber, Inc., 1934.

Japanese Medicine. By Y. Fujikawa, M.D. With a chapter on the Recent History of Medicine in Japan by Kageyas W. Amano, M.D. Translated from the German by John Rührich, M.D. No. XII, Clio Medica: A Series of Primers on the History of Medicine. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$1.50. Pp. 114, with 8 illustrations. New York: Paul B. Hoeber, Inc., 1934.

These three volumes are part of an extensive series of works on the history of medicine, which is being developed by the Hoeber Press.

The medical history of Persia begins with the fourth of the kings of Persia. The earliest references are to surgery and the use of anesthesia. Darius had Egyptian physicians, but it was to a Greek that he owed the saving of his leg. Dr. Elgood, the author, was himself physician to the British legation in Persia and he writes with a fine understanding of Persian tradition. His consideration takes up the story in chronological order, bringing the account down to 1927. It is his conclusion that Persia has played a glorious part in history but that in recent years has been only an imitator.

The story of German medicine is told by the professor of the history of medicine in Düsseldorf. He begins with a modest preface in which he points out that few phases in the history of medicine were created by the Germans but that German medicine must be correlated with the developments of medicine throughout the world. He also takes up the story of medicine chronologically, listing the many great names in the history of German medicine. His book was written in October 1933, yet

he does not fail to give full credit to the tremendous contributions of Jewish physicians to medicine in Germany. In bringing his story down to date he perhaps wisely avoids any consideration of the peculiar trend which German medicine has taken in the last year. Two deeply significant paragraphs are found in his concluding pages:

The financial status of the medical profession became much weakened in 1883 by the introduction of the compulsory public sickness insurance (Krankenkasse). The physician's salary for the immense amount of work required under this system is most inadequate; the insurance covers a large part of the population: workmen, clerks and their families, and so on. At first the insured persons did not have the privilege of choosing their physicians but as a result of the efforts exerted by the "Verbande der Ärzte Deutschlands" this has been changed and now the patients do have the privilege of selecting their physicians.

In 1901 an unfortunate change was made in medical education over the protest of the medical profession. It is now no longer required to finish the gymnasium in order to be admitted to the medical school, thus lowering the general educational level of physicians. The number of medical students has increased excessively, and the number of female students has doubled since the war (female students were first admitted in 1898).

The book by Kujikawa is an expansion of a short history of Japanese medicine written in 1911, to which is added an essay bringing the history of medicine in Japan down to the present. The book is so condensed as to represent practically a chronology, which indeed is repeated in a special appendix. The concluding chapter on the recent history of Japanese medicine points out how great has been the Japanese contribution and how much it depends on the German medical education which most Japanese leaders had in the last generation. There are at present twenty-seven medical schools, including two for women, in Japan. There are eighteen class A medical schools, of which fifteen are under the control of the department of medical education.

The Anaemias. By Janet M. Vaughan, D.M., M.R.C.P., Assistant Clinical Pathologist, the Royal Northern Hospital. With notes on Normal and Pathological Erythropoiesis. By Hubert M. Turnbull, D.M., F.R.C.P., Director of the Bernhard Baron Institute of the London Hospital. Cloth. Price, \$4. Pp. 248, with 24 illustrations. New York & London: Oxford University Press, 1934.

The author has attempted to review the present knowledge concerning the various forms of anemias and, in doing so, has successfully embodied all the pertinent data and information available at the time. H. M. Turnbull has contributed careful, intimate descriptions of the anatomy of normal erythropoiesis and of the pathologic anatomy of some of the anemias. The first chapter is devoted to discussion of the normal standard values and of normal erythropoiesis. To the reader it seems ambiguous to edit "mean corpuscular volume" and "mean corpuscular hemoglobin" as topics 4 and 5 respectively under the heading of "Infants" (page 7), for the standard figures given apply to the older and adult groups. Based on their etiology, the anemias are classified into four large groups: dyshematopoietic, posthemorrhagic, hemolytic and, finally, the unclassified anemias. The different forms of anemia are then discussed according to synonyms, definition, geographic distribution, race, sex, age hereditary factors, symptoms, clinical signs, blood picture, van den Bergh reaction, gastric analysis, pathologic anatomy, treatment, etiology and differential diagnosis. The authors believe that "leuko-erythroblastic anemia," a designation which they apply to the form occurring in carcinomatosis with deposits in the bones, in myelomatosis, in osteosclerosis and in Cooley's erythroblastic anemia, is not to be ascribed to crowding out of hematopoietic marrow by abnormal tissues; rather, they are inclined to believe that it may be a deficiency anemia. Acholuric jaundice is discussed at considerable length, twenty pages being devoted to it. Detailed description of the pathologic anatomy with necropsy reports on the marrow in six cases forms a large part of this section. Although the author considers liver therapy valueless, and while splenectomy remains the treatment of choice, recent reports point more favorably to the virtue of liver extract in cases in which splenectomy is contraindicated. Photomicrographs of the blood and of the marrow are conspicuous by their absence. To the general practitioner or to one not well grounded in hematology, such additions would prove of great assistance and would enhance the usefulness of this work. On page 29, discussing hypochromic anemia of infants, the author says "From experimental observations . . . it would appear that the

presence of anemia in the mother on a natural diet deficient in factors essential for erythropoiesis, especially iron, results in anaemia in the offspring." In man, however, Strauss and Castle (*Am. J. M. Sc.* 185:539 [April] 1933) found that, no matter how anemic the mother is, the infant is born with normal hemoglobin and a normal erythrocyte count. Notwithstanding these few critical remarks, the author has indeed achieved her objective in an admirable fashion and has presented this great mass of literature in a concise, easy, lucid style. This work may be considered a worthy contribution to the field of hematology.

Surgery of a General Practitioner. By Arthur E. Hertzler, M.D., Chief Surgeon, Halstead Hospital, and Victor E. Chesky, M.D., Chief Resident Surgeon, Halstead Hospital. Cloth. Price, \$10. Pp. 602, with 472 illustrations. St. Louis: C. V. Mosby Company, 1931.

The authors aim to reduce treatment to its simplest terms, recommending one time-tried measure for each lesion. They have paid special attention to the early recognition of lesions that may later become malignant. The contents include discussions on wounds and hemorrhage, general infection, non-suppurative lesions, traumatic local infections, lesions of the scalp and cranium, diseases and injuries of the face, nose, nasal pharynx, trachea, ears, mouth, jaws, tongue, regions of the neck, chest, mammary glands, anal region, male and female genitalia, superficial injuries of the extremities, tumors of the extremities, infection, deformity, vascular lesions, gangrene and ulcers. Part III includes general surgical therapy; namely, surgical technic, closure of wounds, bandaging and general therapeutic measures. The illustrations are well chosen and well reproduced. The authors' statement that sciatica is a painful disorder of the sciatic nerve which has nothing to do with the sacro-iliac joint is definitely open to question. No mention is made of serum in the treatment of gas gangrene. The authors state that when the general practitioner cared for the ailing public there was no complaint about the high cost of hospital care. They have tried to make the book a practical one for the general practitioner.

L'opération de Bassini pour la guérison radicale de la hernie inguinale. Par le Docteur Attilio Catterlina, professeur de médecine opératoire, Université de Gênes. Cloth. Pp. 57, with 16 illustrations. Paris: Librairie Félix Alcan, 1934.

This monograph is lavishly illustrated with large colored plates, which were painted by Dr. Orazio Gaigher. The unusual combination of a surgeon able to paint has given a striking series of illustrations. The work consists solely of a description in minute detail of the technic of the Bassini operation for hernia. The author was a former pupil of Bassini and can speak with authority on his original technic, which has been modified only slightly. These modifications consist first of the resection of the covering of the cord in order to permit tighter closure of the ring. The only other departure from Bassini's original operation consists of the section of the transversalis fascia in the floor of the canal. In the text this is described as sutured down to Poupart's ligament, although in the illustrations the stitches are not shown to include the sectioned transversalis fascia. In the last twelve pages of the book there is a discussion of various complications of hernia or scrotal abnormalities that may be encountered when the inguinal canal is laid open and the operative measures taken for their cure. While this book is a valuable contribution to the library of the specialist, one cannot help but deplore the undue emphasis on the Bassini operation, which in the opinion of many surgeons today requires considerable modification to meet all the demands in the repair of various pathologic conditions encountered in different sorts of hernia.

Security Analysis. By Benjamin Graham, Investment Fund Manager; Lecturer in Finance, Columbia University, and David L. Dodd, Assistant Professor of Finance, Columbia University. Cloth. Price, \$5. Pp. 725. New York: Whittlesey House, McGraw-Hill-Book Company, Inc., 1934.

This is an interesting book of its type, and the authors appear to know their business. One of them seems to be experienced on the practical and the other on the theoretical side of finance and they have blended their ideas into a logical and coherent whole. They treat investment principles for all types of securities, from the best grades of government bonds down to the most speculative of common stocks. Also the book is replete

with examples that back up their recommended standards of safety. Further, an attempt is made to show where the information needed for proper analyses may be found, and to give the reader some facility in the interpretation of balance sheets and income statements. To condense this material into a single volume, it was apparently necessary to assume that it would be read by those who have at least some knowledge of finance. Consequently, while the uninitiated may find in the book a good background for the discussion of securities, they must not hope that it will obviate the need of a consultant trained in this field. Probably the professional analyst will feel about this book much as the medical men felt about the "doctor book" so popular some years ago; in certain circumstances, a little knowledge is more dangerous than no knowledge at all.

A Textbook of Bacteriology with a Section on Pathogenic Protozoa. The Application of Bacteriology and Immunology to the Etiology, Diagnosis, Specific Therapy and Prevention of Infectious Diseases for Students and Practitioners of Medicine and Public Health. By Hans Zinsser, M.D., Professor of Bacteriology and Immunology, Harvard University Medical School, and Stanhope Bayne-Jones, M.D., Professor of Bacteriology, Yale University Medical School. Seventh edition. Cloth. Price, \$8. Pp. 1226, with 174 illustrations. New York & London: D. Appleton-Century Company, 1934.

It will repay any one to read the nineteen page outline of the history and scope of bacteriology that is the opening chapter in this book. It takes one as it were to a mountain peak from which one sees the most prominent discoveries in this field of science without having the attention drawn to myriads of technical details. It takes one back to ancient days, when the rising of bread and the transformation of grape juice into wine excited wonder. It leads then to mere opinions and theories of the causes of disease, some of which later were proved correct, following the discovery of the compound microscope by Jansen in Holland and Galileo in Italy, early in the seventeenth century. Then Leeuwenhoek discovered bacteria and Pasteur completed his studies on fermentation and established the principles of scientific investigation, which have influenced research ever since. Then came the discoveries of Koch in Germany and of investigators in other countries regarding the causes of infectious diseases. Then came the discovery of porcelain filters, filtrable viruses and the toxicity of bacterial filtrates, out of which grew the science of immunology. The authors acknowledge their debt in writing this historical outline to Bulloch's History of Bacteriology, which they say is the most reliable and valuable account of the history of bacteriology. The remainder of the book is more than a textbook of bacteriology. It has been the authors' purpose to develop the work into a manual of infectious diseases. The two purposes have been held in just balance in the same volume. In rewriting and revising there has been some material omitted that was uncertain and a great deal of new material added. The present plan of the authors has made this work more helpful and of great practical value.

Le barbiturisme aigu et les antidotismes gardenal: strychnine, coramine, alcool. (Recherches expérimentales). Par G. Carrière, professeur de clinique médicale à la Faculté de médecine de Lille, Claude Huriez, chef de clinique médicale à la Faculté de médecine de Lille, et P. Willoquet. Paper. Price, 30 francs. Pp. 164, with illustrations. Lille: Imp. A. Durant, 1934.

This little volume deals with the clinical and pathologic symptoms of barbiturate poisoning, such as coma, fever, blood changes and tissue lesions. It is demonstrated that the toxic effects of barbiturates are not restricted to the central nervous system but that the heart, liver and kidneys, as well as other structures, are affected. In addition, the treatment of this intoxication by means of strychnine, coramine and alcohol is discussed. The literary data are collected and supplemented by observations from experiments on twenty laboratory animals. It is pointed out that the antagonism between barbiturate and strychnine is rather incomplete and irregular and that in certain phases, as for instance in regard to the heart, there may be some synergistic action; that the antagonism with coramine, on the other hand, is quite complete, and the dangers of untoward results less imminent. The authors suggest the possibility of using intravenous injections of 30 per cent alcohol in the treatment of barbiturate poisoning. For the efficiency of this treatment, some experimental data and clinical evidence are submitted.

Medicolegal

Workmen's Compensation Acts: Disability Following Administration of Antityphoid Inoculation Compensable.

—The defendant company maintained in its mill a first aid station, with a trained nurse in charge. The nurse, among her other duties, administered antityphoid inoculations to employees. The plaintiff-employee in this case, Smith, suffered a paralysis of his left arm and serious and permanent impairment of his "shoulder and right side, abdomen, and hip," following the third injection of the "serum." He was denied compensation in proceedings brought under the workmen's compensation act of Louisiana and appealed to the court of appeals of Louisiana, second circuit.

Smith's right to compensation, said the court of appeals, depends on whether or not the disability following the third injection constituted an accidental injury that arose out of and in the course of his employment. The puncture of the skin with the hypodermic needle and the forcible injection into the system of the "serum" was an act of violence to the physical structure of the body. The act itself was contemplated but the results directly attributable to the act happened suddenly and were wholly unforeseen and unexpected. That the injection caused the disability was admitted, continued the court, but the medical testimony was in conflict as to whether the unfortunate results were attributable to an idiosyncrasy on the part of the employee or to injury to the musculospiral nerve. The court concluded, however, that there had been a destruction of the musculospiral nerve by the injection of the "serum" into the area of the nerve, causing direct injury and shock. This finding was based on the facts that the employee had felt a tingling sensation in his fingers within a few hours after the injection, because the paralysis developed within twelve hours thereafter, because of the absence of any rash or skin eruption, and because of the fact that no injurious effects followed the two previous injections.

The nurse in this case, said the court, was not employed by the company from any altruistic motives but because her presence and the services rendered by her were a direct benefit to the employer. Insurance rates were reduced thereby and loss of time from work by employees was minimized. The employee owed a duty to his employer to avail himself of the facilities offered to prevent illness and absence from work. A typhoid epidemic would have been disastrous to the industry. It was consequently in the interest of the employer to have administered to employees the antityphoid "serum." While the evidence shows, continued the court, that employees of the company were not ordered or required to take the inoculations at the mill, the wording of the notices that were posted may well have been interpreted by the average employee as such a requirement. The employee in this case testified that he understood that he was required to accept the treatment and that he was so told by the company physician. The court of appeals concluded, therefore, that the injury constituted an accidental injury arising out of and in the course of employment. Judgment was rendered accordingly for the employee. —*Smith v. Brown Paper Mill Co., Inc. (La.)*, 152 So. 700.

Evidence: Admissibility of Testimony Based in Part on Roentgenograms Neither in Evidence Nor Identified.

—In proceedings instituted under the Oklahoma workmen's compensation act, the employee called his attending physician, who testified that he had been unable to determine the nature and extent of the employee's injuries without roentgenograms and accordingly had sent him to another physician to have roentgenograms taken. The attending physician was not present when the roentgenograms were taken. The roentgenologist did not testify nor were the roentgenograms offered in evidence. The attending physician was permitted, over the objection of the employer, to testify as to the extent of the injuries, his testimony admittedly being based in part on examination of the employee and in part on examination of the roentgenograms. To review an award of compensation to the workman, the employer brought an action in the Supreme Court of Oklahoma.

The principle involved in this case, said the Supreme Court, is the same as the one that was involved in *Bartlesville Zinc Company v. Fisher*, 60 Okla. 139, 159 P. 476, wherein it was said:

The admission of x-ray plates in evidence rests fundamentally on the theory that they are the pictorial communication of a qualified witness who uses this method of conveying to the jury a reproduction of the object of which he is testifying, this being true, the x-ray plates must be made a part of some qualified witness' testimony and the witness should qualify himself by showing that the process is known to himself to give correct representations and that it is a true representation of such object.

The problem in the Bartlesville Zinc Company case, continued the court, was whether the roentgenograms were admissible without proper identification. The question here presented is whether medical testimony based on roentgenograms was admissible in evidence in the absence of a showing that the roentgenograms were authentic. Obviously, the value of the testimony of the attending physician depended on whether or not the roentgenograms on which the testimony was partly based were authentic. No evidence being introduced to establish the authenticity of the roentgenograms, the testimony of the attending physician should not have been admitted. The Supreme Court accordingly vacated the award of compensation to the employee and directed the industrial commission to retry the claim. —*Southwestern Cotton Oil Co. v. State Industrial Commission (Okla.)*, 29 P. (2d) 122.

Evidence: Opinion of Expert Based on Hypothetical Question Including Testimony of Other Witnesses.—The better practice, says the Court of Appeals of Maryland, is to incorporate in a hypothetical question all the facts on which an expert witness is asked to give an opinion. The hearing or reading of the testimony of other witnesses is accepted as an imperfect substitute for the formal hypothetical question in furnishing the data for inference by the expert witness. But it is clearly improper to admit an expert's conclusion based on the reading or hearing either of all or of a specified part of the testimony in the case if such whole or part is conflicting with respect to material facts. The reason is that, when there is a conflict of testimony on material facts, no conclusion can be reached by the expert witness until he first determines which of the facts in conflict are true, and in making that determination he must necessarily invade the province of the jury and pass on the credibility of witnesses and the weight of evidence. —*Quimby v. Grechawick (Md.)*, 171 A. 59.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, New York, Oct. 30-31. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.
- American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meloney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.
- Association of American Medical Colleges, Nashville, Tenn., Oct. 29-31. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Nov. 1-3. Dr. Ralph A. Reis, 104 South Michigan Boulevard, Chicago, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 2-3. Dr. Lawrence D. Thompson, 3720 Washington Boulevard, St. Louis, Secretary.
- Inter State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing Director.
- Omaha Mid West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puv, 230 Grand Avenue, Oakland, Secretary.
- Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Kolenson, Box 3403, Santurce, Secretary.
- Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
- Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

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- *Studies Relating to Time of Human Ovulation. R. Kurzrok, Irene J. Kirkman and Margaret Creelman, New York.—p. 319.
- Nonconvulsive Types of Toxemias in Late Pregnancy. O. H. Schwartz, St. Louis.—p. 334.
- Ventricular Cerebral Hemorrhage in the New-Born Infant: Pathologic and Etiologic Study of Twenty Cases. F. A. Hemsath, New York.—p. 343.
- *Treatment of Uterine Hemorrhages Due to Benign Lesions, with Radium and Roentgen Rays. H. Schmitz, Chicago.—p. 355.
- Value of Postoperative Roentgen Irradiation in Carcinoma of Ovary. J. B. Montgomery and J. T. Farrell Jr., Philadelphia.—p. 365.
- Radium Methods and Statistics of Cancer of Cervix. H. S. Crossen, St. Louis.—p. 378.
- Experience with Radiation Therapy in Cancer of Cervix. W. P. Healy, New York.—p. 386.
- Primary Carcinoma of Fallopian Tubes. M. E. Kahn, Buffalo, and S. Norris, Toronto.—p. 393.
- Treatment of Unilateral Urinary Fistulas by X-Ray Destruction of Kidney: Clinical and Experimental Study. N. P. Sears, Syracuse, N. Y.—p. 402.
- Treatment of Fibroids: Report of Series of Four Hundred and Forty-Three Cases. W. C. Danforth, Evanston, Ill.—p. 409.
- Need for Uniformity in Reporting Maternal Mortality and Morbidity Rates. H. J. Stander, New York.—p. 421.
- Symphoblaiomas of Vagina (Two Cases). Margaret Castex Sturgis, Philadelphia.—p. 425.
- Further Observations on Effect of Female Sex Hormone on Blood of the New-Born. J. C. Hirst, Philadelphia.—p. 431.
- Choriocarcinoma of Uterus. T. C. Peightal, New York.—p. 435.
- Avertin in Gynecology. R. B. Schlutz, Kansas City, Mo.—p. 439.
- Seasonal Trend in Conception of Malformations. W. F. Petersen, Chicago.—p. 443.
- Treatment of Gonorrhea of Cervix. S. D. Breckinridge and A. J. Whitehouse, Lexington, Ky.—p. 445.
- Pyelonephritis of Pregnancy Due to Bacillus Dysenteriae. Report of Case with Survey of Literature and Comment. G. R. Cheatham, Endicott, N. Y.—p. 448.
- Unruptured Utero-Interstitial Pregnancy at Term. E. T. Hull, New York.—p. 452.
- Full Term Tubal Pregnancy Removed at Operation Two Years After Expected Date of Confinement. H. W. Fink, Chicago.—p. 454.
- Cephalothoracopagus (Double Monster). G. C. Finola, Chicago.—p. 455.
- Terminal Itelitis Resembling Clinically Ovarian Cyst with Twisted Pedicle. C. Culbertson, Chicago.—p. 456.
- Congenital Postnasal Polyp in the New-Born Causing Cyanosis. E. Haback, Milwaukee.—p. 457.
- Prolapse of Female Urethra. J. K. Ormond, Detroit.—p. 458.

Time of Human Ovulation.—Kurzrok and his associates observed the daily excretion of the follicle stimulating factor of the anterior pituitary-like principle in ten young women over extended periods of time. Sudden excretion of this hormone occurred at about the middle of the menstrual cycle and had a definite tendency to recur at about the same time in the following cycle. This sudden secretion of the principle from the anterior pituitary is considered to be the stimulus to the ovaries to induce ovulation. Evidence is given in support of the view that ovulation follows the excretion of the principle in about twenty-four hours. It is believed that ovulation cannot occur without this stimulus. The presence of this substance is not, however, evidence that ovulation has occurred. The time of ovulation as suggested by this method is in complete agreement with the results of all other methods used in the study of this problem. The greatest incidence of the excretion of the principle was between the tenth and thirteenth days and hence the greatest incidence of ovulation was between the eleventh and fourteenth days. One case suggests the possibility of menstruation without ovulation and another of ovulation without previous menstruation. Two of the patients thus studied who became pregnant while under observation show the early appearance of a positive Aschheim-Zondek test; on

the twenty-fifth and twenty-seventh days from the onset of the last menstrual period, or two days before and one day after the expected onset of the next menstruation. The sudden conversion from a positive Aschheim-Zondek test to a positive follicle stimulating factor of the anterior pituitary-like principle reaction at the end of pregnancy is suggestive of a multiplicity of the gonadotropic hormones from the anterior pituitary.

Treatment of Uterine Hemorrhages with Radium and Roentgen Rays.—Among 433 cases of uterine hemorrhages due to benign causes and treated by radiation, Schmitz observed that about one fourth of the cases presented myomas, the youngest patient being 27 and the oldest 68. The greatest frequency is between 36 and 50 years of age. The radium dose that assures invariably complete amenorrhea is about 1,800 mg. element hours. When this dose was used, repetition of treatment was never necessary. If roentgen rays are used, the dose of 450 roentgens should be applied, through two fields at the seat of the ovaries. Diagnostic curettage should precede application of radiation in all cases. If presumptive signs of a malignant condition are present and microscopic diagnosis does not corroborate the clinical diagnosis, massive irradiations should be employed as recommended for radiation treatment of uterine carcinomas. The good end results of irradiation in myomas of the uterus were 90.14 per cent. The mortality in myomas was three. One patient died from a septic peritonitis, following dilation, curettage and radium insertion, and two cases showed malignant changes, one and three years afterward respectively, so that the entire mortality in the myomas was 2.48 per cent. Malignant manifestations after irradiation were seen in less than 1 per cent of the 433 cases. In the bleeding uterus, the good end results from radiation were 98.66 per cent. Radiation therapy is the method of choice in well selected, uncomplicated cases of uterine hemorrhages due to benign causes.

American Journal of Ophthalmology, St. Louis

17: 787-882 (Sept.) 1934

- Biomicroscopy of Limbus Corneae in Trachoma and Other Conjunctival Diseases. P. Thygeson, Iowa City.—p. 787.
- Primary Tumors of Optic Nerve: Report of Case. P. DeLong, Philadelphia.—p. 797.
- Visual and Orthoptic Training. J. I. Pascal, New York.—p. 801.
- Subconjunctival Iron Deposits After Adrenin Injections. T. Gunderson, Boston.—p. 807.
- Cataract Extraction by Undetached Conjunctival Bridge Method After Preliminary Iridectomy: Fifty-Four Operations. R. O'Connor, San Francisco.—p. 809.
- Chlorine Content of Aqueous, Vitreous and Serum: Comparative Study on Oxen. P. W. Salit, Iowa City.—p. 818.
- Newer Knowledge of Bacteriology Applied to Ophthalmology. G. H. Gowen, Chicago.—p. 820.
- Tangent Screen with Artificial Daylight Illumination. C. Berens, Dorothy Kern and B. F. Payne, New York.—p. 826.
- Possibilities of Orthoptic Training: Further Report. G. P. Guilbor, Chicago.—p. 834.
- *Studies on Crystalline Lens: Role of Tetany in Parathyroid Cataract. Everett I. Evans, Chicago.—p. 840.

Crystalline Lens.—Evans thyroparathyroidectomized young dogs kept on a special bread-sour milk-liver diet for a month after weaning. Tetany was not seen to occur in any of the young dogs so treated. Examination of the lenses of these animals indicated that there was a characteristic change in the lenses of the young parathyroidectomized dog similar to that described by Goldmann. The chief difference between Goldmann's experiments and the author's is that Goldmann noted no lenticular change if tetany was not allowed to occur. In these dogs, characteristic lens changes occurred although no tetany was seen. So far as the author can determine, these experiments offer conclusive evidence that the tetany which usually occurs during a state of parathyroid deficiency plays no part in the development of the cataract. The toxin theory of parathyroid deficiency presented by Luckhardt and by Dragstedt is not popular, because of the seemingly overwhelming evidence in favor of the calcium theory. Nevertheless, the author believes that in the search for the cause of parathyroid and senile cataract one should pay more attention to the possible rôle of toxins. It is difficult to understand how glutathione could have disappeared partially from these cataractous lenses unless toxins do play a part in parathyroid deficiency.

American Journal of Public Health, New York

24: 925-1004 (Sept.) 1934

- Epidemic Cerebrospinal Meningitis in China. W. W. Cadbury, Canton, China.—p. 925.
- Relation of Soil Fertilization with Superphosphates and Rock Phosphate to Fluorine Content of Plants and Drainage Waters. E. B. Hart, P. H. Phillips and G. Bohstedt, Madison, Wis.—p. 936.
- Should Public Health Administrative Practice Include Medical Relief Activities? J. J. Sippy, Stockton, Calif.—p. 941.
- Dermatitis in Oil Refining Industry. L. Schwartz, New York.—p. 948.
- What Can We Learn from Child Health Conditions in Europe? R. A. Bolt, Cleveland.—p. 951.
- Nutritional Aspects of Milk Pasteurization. E. V. McCollum, Baltimore.—p. 956.
- Studies in Ventilation: I. Skin Temperature as Related to Atmospheric Temperature and Humidity. E. B. Phelps and A. Vold, New York.—p. 959.
- Storage Battery Plants, New York State, 1933. J. D. Hackett, Albany, N. Y.—p. 971.

Archives of Surgery, Chicago

29: 337-526 (Sept.) 1934

- Removal of Cerebellopontile (Acoustic) Tumors Through Unilateral Approach. W. E. Dandy, Baltimore.—p. 337.
- Myokinetic Studies of Transplanted Muscles About the Knee. T. H. Vinke, Cincinnati.—p. 345.
- Intussusception in Infancy and Childhood: Report of Three Hundred and Seventy-Two Cases. W. E. Ladd and R. E. Gross, Boston.—p. 365.
- *Influence of Local Excess of Calcium and Phosphorus on Healing of Fractures: Experimental Study. K. O. Haldeman and J. M. Moore, San Francisco.—p. 385.
- Comparative Value of Intravenous Sclerosing Substances. A. Ochsner and H. Mahorner, New Orleans.—p. 397.
- *Thoracogenic Scoliosis: Influence of Thoracic Disease and Thoracic Operations on the Spine. J. D. Bisgard, Omaha.—p. 417.
- Healing of Fractures: Its Influence on Choice of Methods of Treatment. C. R. Murray, New York.—p. 446.
- Quantitative Study of Rate of Healing in Bone: II. Normal Rate of Healing. W. T. Peyton, W. Copenhaver and L. Arey, Minneapolis.—p. 465.
- Ambulatory Treatment of Varicose State by Combined Ligation and Thrombosis by Injection: Study in End Results. N. J. Howard, San Francisco.—p. 481.
- Thyroid Disorders: VI. Suprarenal Factor in Reactions to Thyroidectomy. E. Goetsch and A. J. Ritzmann Jr., Brooklyn.—p. 492.
- Fifty-Fourth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 511.

Influence of Calcium and Phosphorus on Healing of Fractures.—Haldeman and Moore used monocalcium, tricalcium and dicalcium phosphate and calcium glycerophosphate in determining the effect of a local excess of calcium and phosphorus in the healing of fractures of the radii in seventeen rabbits. Healing was delayed in five and uninfluenced in seven; two rabbits died in the first week after operation, and in three, in which tricalcium phosphate was added, the healing was delayed on both sides, although complete union eventually resulted on the treated side, while the control defects went on to typical nonunion. The reason for this delay is not apparent. However, the conclusion seems justified that in certain cases of delayed union tricalcium phosphate is an aid to union. None of the calcium and phosphorus compounds used in excess seemed capable of accelerating the normal rate of healing. In this respect the results fail to follow the well recognized chemical law that increasing the concentration of the reacting substances speeds up the reaction. Because of this fact, it is probable that the process of ossification is more than the purely chemical equation which certain authors describe.

Thoracogenic Scoliosis.—Bisgard presents a study of the influence on the spinal column of thoracic disease in 518 cases and of the surgical operative treatment of thoracic disease in 336 cases. While lateral deviations of the thoracic spine had developed in a large proportion of the cases in both groups, in only eleven cases were the deviations great enough to give rise to a deformity of major clinical importance. Deforming curvatures occurred in only a few cases with extensive chronic pleuritis and in an occasional case in which successful treatment necessitated an extensive Schede thoracoplasty or lobectomy. These deformities occurred only in children and young adults. Most pleural scolioses may be prevented by the early cure of the pleural disease and by constant maintenance of correction or overcorrection of the spine by postural wedging. Also, many instances of thoracoplasty scolioses may be prevented by constantly wedging the spine straight until it becomes fixed. For the control and treatment of certain severe and

progressive curvatures, internal fixation by fusion of the vertebral column is recommended. Every patient less than 20 years of age who has had chronic infection of the pleural cavity or has been treated by extensive thoracoplastic operations should be observed frequently for at least a year, and, if the curvature shows a tendency to progress despite conservative treatment, the spine should be fused to prevent the development of a severe deformity.

California and Western Medicine, San Francisco

41: 145-216 (Sept.) 1934

- Hypertension: Role of Infections Therein. J. T. King Jr., Baltimore.—p. 145.
- Cancer of Stomach. J. H. Woolsey, Woodland.—p. 148.
- Röntgenologic Changes in Malacic Disease of Bone. J. D. Camp, Rochester, Minn.—p. 152.
- Reaction Following Blood Transfusion: Report of Unusual Case. C. E. Smith and J. O. Haman, San Francisco.—p. 157.
- Deafness: Its Humanitarian Problems: Plea to Otologists. G. E. Coleman, San Francisco.—p. 161.
- Contused Injuries of Peripheral Nerves: Value of Early Surgical Treatment. H. A. Brown, San Francisco.—p. 166.
- Treatment of Trichomonas Vaginitis. S. M. Gospe, San Francisco.—p. 172.
- Child Guidance and Mental Hygiene. A. R. Timme, Los Angeles.—p. 174.
- Compulsory Health Insurance. F. L. Hoffman, Philadelphia.—p. 177.

Canadian Public Health Journal, Toronto

25: 359-410 (Aug.) 1934

- Development of Public Health in British Columbia. J. T. Marshall, Victoria, B. C.—p. 359.
- Value of Accurate Statistics in Study of Cancer. Madge Thurlow Macklin, London, Ont.—p. 369.
- Slaughter Houses and Their Evils. A. R. B. Richmond, Toronto.—p. 374.
- Survey of Health Habits Among School Age Children. J. T. Phair, Toronto.—p. 380.

Florida Medical Association Journal, Jacksonville

21: 89-134 (Sept.) 1934

- Fractures in Region of Elbow. A. H. Weiland, Coral Gables.—p. 99.
- *Perineorrhaphy. G. H. Edwards, Orlando.—p. 101.
- Prevention of Puerperal Infection. L. L. Dozier, Tallahassee.—p. 106.

Perineorrhaphy.—Edwards, in repairing the lacerated perineum, has the upper part of the vagina well packed with gauze and the lower part of the vagina and the perineum prepared by the use of an antiseptic solution. An incision is made on each side of the laceration into the mucocutaneous border, extending outward to a point of election. A flap of the vaginal mucosa is dissected, with avoidance of any buttonholing, above the point where the levator ani fibers first meet in the recto-vaginal septum. The vaginal flap is not only held at its edge by Allis clamps, so as to inflict little contusion, but is steadied by the fingers of the hand holding the clamp and a thin flap is attempted by the use of scissors and gauze on the fingers of the right or left hand. The muscular bands are picked up, preferably with the fascia, and brought together in firm approximation. The tenacula grasp these muscles or fascial edges at the points of election and number 2 chromic gut is passed deeply into them and a figure of eight suture is made after the technic of Holden. The suture does not embrace the skin. One interrupted or figure of eight suture is placed high above the point of the usual appearance of a rectocele. A continuous chromic suture is passed back and forth from one side to the other; deep bites of the perineal tissue are taken; it is drawn firmly together, and a thick heavy new perineum is built up. Usually a portion of the redundant vaginal flap is excised and continuous number 1 chromic gut is placed in the mucosa beginning at the upper angle, every second bite taking up a portion of the newly acquired perineal body so as to prevent any dead space, and is tied at the former mucocutaneous margin. One silkworm gut suture is inserted deeply into the face of the perineum, one-third inch from the edge of the incision, entirely surrounding the mass of tissue held by chromic gut sutures and coming out on the opposite side again one-third inch from the edge, and a single knot of four or five turns, placing a bar across the line of suture, is tied judiciously to avoid enough pressure to cut into the skin of the perineum. Two, three or four metal clips approximate the skin. The clips may be removed in from five to seven days, while the silkworm gut may remain from seven to ten days.

Illinois Medical Journal, Oak Park

66: 201-300 (Sept.) 1934

- Generalizations Concerning Heart Disease. R. B. Prehle, Chicago — p. 219.
- Whither Goest Thou? C. G. Farnum, Peoria — p. 223.
- Facilities for Teaching Legal Medicine to Students in Chicago. S. A. Levinson and C. W. Muehlberger, Chicago — p. 228.
- *Cow's Horn for Fixation of Fractures: Its Stimulating Effect on Callus Formation and Simplified Technic. E. B. Fowler, Evanston — p. 231.
- Role of Hypophysis in Thyroid Syndromes. H. R. Rouy, Chicago — p. 234.
- Why the Medical Commission? T. B. Williamson, Mount Vernon — p. 239.
- Use of Base in Prism in Treatment of Myopia. P. A. Graves and O. B. Nugent, Chicago — p. 241.
- Indigent Relief. C. Bennett, Champaign — p. 246.
- Efficiency of Orthoptic Training in Strabismus. J. L. Biessler and Katherine H. Chapman, Chicago — p. 249.
- Allergic Management of Vasomotor Rhinitis. M. Zeller, Chicago — p. 255.
- Early, Diagnosis of Pulmonary Tuberculosis. J. L. McCorvie and M. Pollak, Peoria — p. 259.
- Allergy in General Practice. S. M. Feinberg, Chicago — p. 264.
- Pneumothorax Treatment of Lobar Pneumonia. H. J. Isaacs, I. C. Udesky and A. DePinto, Chicago — p. 267.
- And What Happened After Employee's Accident? K. Garve, Los Angeles — p. 270.
- Surgical Complications of Peptic Ulcer. R. C. Sullivan, Chicago — p. 276.
- Results of Glandular Therapy in Mongolian Idiots. I. N. Radef, Dixon — p. 279.
- Infant Nutrition: Some Principles for Infants and Adults. J. R. Gerstley, Chicago — p. 280.
- High Voltage (200 KV) Versus Super Voltage (700 KV) X-Ray Treatment of Carcinoma. R. T. Pettit, Ottawa — p. 283.
- Fundamentals of Infant Feeding. C. G. Grulee, Chicago — p. 288.
- Treatment of Fractures of Lower Limb by Fixed Traction. C. Papik, Chicago — p. 292.

Cow's Horn for Fixation of Fractures.—Fowler employed cow's horn in nine patients who required open reduction with fixation. Prompt abundant callus and bony union occurred without complications. An incision was made somewhat to the side of the fracture selected for the drill hole. A good sized hole was drilled carefully through the cortex into the medullary channel at a distance of from 1 to 3 inches from the fracture. The hole was then reamed obliquely toward the fracture so that the horn could be passed or gently driven through the oblique hole along the medullary canal well beyond the fracture. Usually the medullary spaces require some reaming before the horn can be passed into the medullary canal and well beyond the break. The distance necessary will vary from one to several inches, depending on the size and length of the bone involved. In the thirty cases, including the author's, in which horn has been used for internal fixation of fractures, it seems to have been an ideal material for strength, elasticity, absorbability and ease of sterilization. In addition it was found to be nonirritating, mildly bactericidal and stimulating to callus growth. The author believes that his simplified technic diminishes trauma and shock.

Journal of Biological Chemistry, Baltimore

106: 431-814 (Sept.) 1934. Partial Index

- Vital Need of Body for Certain Unsaturated Fatty Acids: VI. Male Sterility on Fat-Free Diets. H. M. Evans, S. Lepkovsky and Elizabeth A. Murphy, Berkeley, Calif — p. 445.
- Modification of Method for Determining Methionine in Proteins. H. D. Baerstein, Madison, Wis. — p. 451.
- Studies of Acidosis: XXII. Application of Henderson-Hasselbalch Equation to Human Urine. J. Sendroy Jr., S. Seelig and D. D. Van Slyke, New York — p. 463.
- Studies on Oxidation Reduction: XXI. Phthiocol, Pigment of Human Tubercle Bacillus. E. G. Ball, Baltimore — p. 515.
- Vitamin C Content of Human Tissues. M. Yavorsky, P. Almaden and C. G. King, Pittsburgh — p. 525.
- Effects of Moderate Doses of Viosterol and of Parathyroid Extract on Rats. Agnes Fay Morgan, Louise Kimmel, Rachel Thomas and Zdenka Samisch, Berkeley, Calif. — p. 531.
- Monosaccharide d-Xyloketose: Preliminary Note. P. A. Levene and R. S. Tipson, New York — p. 603.
- Study on Keratin. D. R. Goodard and Leonor Michaelis, New York — p. 605.
- Extraction Studies on Adrenal Cortical Hormone: I. Methods of Preparation. J. J. Paffner, H. M. Vars and A. R. Taylor, Princeton, N. J. — p. 625.
- Zinc Hydroxide Powder for Preparation of Protein-Free Filtrates of Blood. T. V. Letonoff, Philadelphia — p. 693.
- Influence of Removal of Parathyroid Glands on Development of Rickets in Rats. J. H. Jones, Philadelphia — p. 701.

- Lipids of Milk: I. Fatty Acids of Lecithincephalin Fraction. F. E. Kurtz, G. S. Jamieson and G. E. Holm, Washington, D. C. — p. 717.
- Availability of Copper in Various Compounds as Supplement to Iron in Hemoglobin Formation. M. O. Schultze, C. A. Elvehjem and E. B. Hart, Madison, Wis. — p. 735.
- Micromethod for Determination of Free and Combined Cholesterol. R. Schoenhemer and W. M. Sperry, New York — p. 745.
- Synthesis of Hexuronic Acids: VII. Synthesis of l-Glucuronic Acid and Resolution of dl Galacturonic Acid. C. Niemann and K. P. Link, Madison, Wis. — p. 773.
- Ultramicromethod for Determination of Oxygen Content of Blood. J. S. Donal Jr., Philadelphia — p. 783.

Journal of Pharmacology & Exper. Therap., Baltimore

52: 1-120 (Sept.) 1934

- Pharmacologic and Toxic Action of Digoxin. A. C. White, Beckenham, Kent, England — p. 1.
- Effect of Epinephrine on Excised Terrapin Sino Auricular and Auricular Apex Strips. Note. C. M. Gruber, Philadelphia — p. 23.
- Ethyl Alcohol and Strychnine Antagonism. H. Gold and Janet Travell, New York — p. 30.
- Quantitative Studies on Absorption and Excretion of Certain Resorcinols and Cresols in Dogs and Man. B. H. Robbins, Nashville, Tenn. — p. 54.
- Acetyl-β Methyl Choline. Note. R. Hunt, Boston — p. 61.
- Studies on Barbiturates. IV. Effect of Barbiturates in Experimental Nephrosis. W. S. Murphy and T. Koppanyi, Washington, D. C. — p. 70.
- Id. V. Action of Barbiturates in Sauropsida. T. Koppanyi, W. S. Murphy and P. L. Gray, Washington, D. C. — p. 78.
- Id.: VI. Elimination of Iso-Amyl-ethyl Barbituric Acid ("Amytal") and N-Butyl-ethyl Barbituric Acid ("Neonal"). T. Koppanyi and S. Krop, Washington, D. C. — p. 87.
- Id.: VII. Experimental Analysis of Barbituric Action. T. Koppanyi and J. M. Dille, Washington, D. C. — p. 91.
- Some Physiologic Properties of Certain N-Methylated β-Phenylethylamines. A. M. Hjort, Tuckahoe, N. Y. — p. 101.
- *Comparative Effects of Intravenous Administration to Man of Acetylcholine and Acetyl-β Methylcholine. Soma Weiss and L. B. Ellis, Boston — p. 113.

Comparative Effects of Intravenous Administration of Acetylcholine and Acetyl-Beta-Methylcholine.—Weiss and Ellis state that the general and the cardiovascular responses in normal human subjects to the continuous intravenous infusion of acetylcholine and acetyl-beta-methylcholine are similar, but that the latter drug is approximately 200 times as potent as the former. Both compounds can be infused at a rate producing definite symptoms for prolonged periods without evidence of cumulative action. The velocity of the blood flow remains essentially unchanged during the intravenous administration of varying amounts of each substance sufficient to produce effects varying from minimal to marked. These observations indicate that the cardiac output can be measured with the acetylene method under the conditions described.

Michigan State M. Society Journal, Grand Rapids

33: 479-532 (Sept.) 1934

- Treatment of Intestinal Obstruction. C. R. Davis, Detroit — p. 496.
- Newer Methods of Treatment in Syphilis of Childhood. A. R. Woodburne, Grand Rapids — p. 503.
- Medical Participation in Public Health. S. Pritchard, Battle Creek — p. 508.
- Pitfalls in X-Ray Diagnosis of Bronchiectasis with Iodized Oil Injections. C. K. Hasley and W. A. Hudson, Detroit — p. 511.
- Arsenic Paste in Cancer of Skin. C. K. Valade, Detroit — p. 513.
- *Study of Neurocirculatory Instability. Ruth Herrick, Grand Rapids — p. 516.
- Pseudosyphilides of Infancy (Napkin Eruptions): Case Reports. D. O. Poth, Ann Arbor — p. 518.

Neurocirculatory Instability.—Herrick applies the designation of neurocirculatory instability to a heterogeneous group of organically normal people presenting diversified skin conditions: neurodermatitis, dyshidrosis, urticaria and pruritus of the anus and vulva, that is, diverse skin conditions, the common element of sympathetic nervous system maladjustment creating excessive pruritus. These people are of the type who exhaust the reserves of nervous energy and show this fatigue. In such patients local treatment is only palliative, and permanent relief is obtained by aiding each person to solve his own situation by frankly understanding the cause and the factors involved, and, in addition to local therapy, presenting for his acceptance a logical program of daily relaxation. This is not easy, but usually patients of this group are intelligent and have passed from doctor to doctor with much futile local therapy, and they do respect a thoughtful analysis of their problems. Many such patients have no demonstrable pathologic condition

but have lived for years under exhausting nervous tension and some time in their career the weakest link has given way. Neurocirculatory instability is a functional diagnosis.

Minnesota Medicine, St. Paul

17: 501-562 (Sept.) 1934

- Progress in 1934 F J Savage, St. Paul—p 501
Diabetes in Minnesota W A Stafne, Rochester—p 503
Diabetic Deaths in Duluth Statistical Study E C Bartels, Springfield, Ill., and B Blum, Rochester—p 512
Surgery in Diabetes W Walters, H W Meyerding, C S Judd and R M Wilder, Rochester—p 517
Spontaneous Hypoglycemia J F Briggs, St. Paul—p 526
Laboratory Technician K Ikeda, St. Paul—p 534
Accessory Scaphoid P W Gicssler, Minneapolis—p 537
Simplified Method of Uvula Amputation G M Koepeke, Minneapolis—p 540

Nebraska State Medical Journal, Lincoln

19: 321-360 (Sept.) 1934

- *What Does Primary Tuberculous Infection Prevent? C A Stewart, Minneapolis—p 321
Federal Funds for Physicians Rendering Services to the Indian B F Lorange, Auburn—p 325
Pulsion Esophagopharyngeal Diverticula W J Arrasmuth, Grand Island—p 330
Idealism in Medical Profession E G Zimmerer, Lincoln—p 333
Abdominal Hodgkin's Disease Case Report J M Neely, Lincoln—p 336
Thyroid Disease Complicated by Pregnancy Report of Two Cases H E Harvey, G W Covey and C Andrews, Lincoln—p 339
Progress of Surgery Review of Literature of First Half of 1934 H H Davis, Omaha—p 343
Electric Arc Welding Etiologic Factor in Aplastic Anemia O C Nickum, Omaha—p 347

Primary Tuberculous Infection.—Stewart's concept relative to the evolution of tuberculosis in the human lung from the first infective phase to the final stage of far advanced phthisis implies that the first infection makes possible rather than prevents the development of the adult type of tuberculosis. When other serious reinfective forms of the disease are considered, these conditions which develop as the result of the discharge of bacilli from pre-existing primary foci of disease, are seen to be caused often by the dissemination of direct descendants of the initial infective dose of tubercle bacilli that entered the body. There is no form of tuberculosis to which man is susceptible that is prevented by the first invasion of the tissues by tubercle bacilli. In fact, the primary infection is the first step along the path which leads too often to the development of all the serious reinfective varieties of tuberculosis that menace the human race. As a result of several years' study the Lymanhurst staff considers a negative tuberculin reaction superior to a positive one and looks on the nonallergic, uncontaminated person as occupying a more advantageous position than is possessed by infected patients so far as future experiences with tubercle bacilli are concerned. The prediction is ventured that in the near future an initial infection with tubercle bacilli will be generally accepted as a hazardous liability rather than a protective asset, and a deeper appreciation will arise relative to the soundness and value of campaigns fostered by national, state and local tuberculosis associations directed toward the prevention and control of tuberculosis.

New England Journal of Medicine, Boston

211: 431-478 (Sept. 6) 1934

- Clinical Interpretation of the Electrocardiogram L M Hurxthal, Boston—p 431
Certain Aspects of Bronchiectasis, with Especial Reference to Diagnosis and Treatment F T Lord, Boston—p 437
Studies in Agranulocytosis IV Report of Two Cases of Agranulocytosis Following Use of Diminophenol W Dameshek and S I Gargill, Boston—p 440
Purpura Hemorrhagica with Profuse Bleeding from Mucous Membranes Following Treatment of Syphilis with Bismarsen J L Grund, Boston—p 443
Studies in Tuberculin Reactions Scarification, Multiple and Single Puncture Technic E Friedman and J B Hawes 2d Boston—p 446
Spontaneous Meningeal Hemorrhage Case Report R C Eley, Boston—p 449
Essential Public Health Services K Emerson, New York—p 451
Foreign Body in Arm J W Sever, Boston—p 456
Regional Ileitis Case K T Phillips, Putnam, Conn—p 457
Medical Secretary Curriculum at Westbrook Junior College, Portland, Maine Ruth E Irwin, Portland, Maine—p 458

New York State Journal of Medicine, New York

34: 751-788 (Sept. 1) 1934

- Relations of Inereta of Adenohypophysis to Clinical Disturbances of Growth, Development and Other Physiologic Functions L F Barker, Baltimore—p 751
Obstructive Uropathy Obstructions to Upper Urinary Tract F N Kimball, New York—p 756
Id Obstructive Uropathy, Pertaining to Bladder J N. Vander Veer, Albany—p 762
Id Urethral A H Paunc, Rochester—p 768
Prevention of Hard of Hearing F J O'Connor, Syracuse—p 771
Biopsychic Approach to Diseases of the Mind Its Dependence on Neurology and General Medicine F Kennedy, New York—p 777
Plastic Surgery in Removal of Excessive Cutaneous Tissues Obstructing Vision K Kahn, New York—p 781

Northwest Medicine, Seattle

33: 301-342 (Sept.) 1934

- Carbon Monoxide Poisoning H M F Behrman, San Francisco—p 301
Some of Newer Local and General Anesthetic Agents Methods of Their Administration J S Lundy and R M Tovell, Rochester Minn—p 308
*Some Chemical Secrets of Subarachnoid Space During Spinal Novocain Anesthesia G R Velrs, Salem, Ore—p 311
Use of Narcotics in Washington J E Hunter, Seattle—p 319
Inunctional Uterine Hemorrhage, with Especial Reference to Hyperplasia Endometri and Relation to Menstruation Consideration of Its Etiology, Treatment K H Martzloff, Portland, Ore—p 322
Mucocoele of Appendix Report of Two Cases R F Peterson, Butte, Mont—p 328
Mastoiditis with Facial Paralysis in Infant G C Saunders, Portland Ore—p 330
Erysipeloid Report of Case S E Light, Tacoma, Wash—p 331
Coarctation of the Aorta J F Beatty, Everett, Wash—p 332

The Subarachnoid Space During Procaine Hydrochloride Anesthesia.—Velrs believes that the use of the lateral recumbent and flexed posture is superior to the dorsal decubitus in fixing nerves with procaine hydrochloride, because in this posture the dural sac has no obstructing curvatures, while in the latter the dural sac has varying lumbosacral curvatures. The fixation of nerves and diffusion by procaine hydrochloride is so well controlled through the use of this method that it deserves a critical study and a continued usage. Deprocaminization by aspiration of the spinal fluid from the dural sac attenuates the subarachnoid concentration of the procaine and lessens the time of nerve block. The spinal fluid that is removed in deprocaminization of the dural sac permits procaine free fluid from above to attenuate further the remaining procaminized fluid. A study of the chemistry of anesthetic drugs in the spinal and cisternal fluid is necessary to establish their safety and to act as a control in establishing the proper methods of administration. A study of the lumbosacral curvatures will assist one in the control of nerve block in the use of dorsal decubitus.

Southern Surgeon, Atlanta, Ga.

3: 165-250 (Sept.) 1934

- Study of Cervical Erosion and Its Relation to Cancer P C Schreier, Memphis, Tenn—p 165
Pathologic Physiology of Liver and Gallbladder Five Points in Surgery of Gallbladder and Ducts G Crile, Cleveland—p 171
Perineal Repair W C Jones, Miami, Fla—p 181
Precepts in Traumatic Surgery J J Moorhead, New York—p 189
Diagnosis of Surgical Hyperinsulinism S Harris, Birmingham, Ala—p 199
Surgery in Treatment of Hyperinsulinism H E Simon, Birmingham, Ala—p 211
Recognition, Surgical Treatment and Prognosis of Organic Lesions of Large Bowel F W Rankin, Lexington, Ky—p 227
Anatomic Importance of Fascia in Abdominal Wall A O Singleton Galveston, Texas—p 235

West Virginia Medical Journal, Charleston

30: 385-432 (Sept.) 1934

- Coronary Disease G R Maxwell, Morgantown—p 385
Acute Appendicitis W R Laird, Montgomery—p 393
Occiput Posterior Presentations Their Diagnosis and Treatment W W Point, Charleston—p 399
Diagnosis and Treatment of Acute Poliomyelitis J. L. Blanton, Fairmont—p 403
Child Hygiene in Coal Mining Community G Fordham, Pocillon—p 408
Cisterna Magna Puncture Its Technic and Uses R B Easley, Huntington—p 411
Do Normal Cells Change to Cancer Cells Under Hormone Influence? P Jaisohn, Media Pa—p 414
Prenatal Care F J Humphrey, Huntington—p 416

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

15: 193-286 (Aug.) 1934

- Choline and Liver Fat. D. L. MacLean and C. H. Best.—p. 193.
Envelop Antigen of Bacillus Pestis and Its Antibody. H. Schütze.—p. 200.
Existence of Growth-Promoting and Growth-Inhibiting Properties (in Vitro) of Serums and Plasma of Mice Naturally Immune or with Acquired Resistance to Tar Sarcoma. F. C. Pybus and E. W. Miller.—p. 207.
Effect of Malignant Tumors on Hypophysis. C. S. McEuen, H. Selye and D. L. Thomson.—p. 221.
Growth of Walker Rat Tumor in Young and Old Animals. C. S. McEuen and D. L. Thomson.—p. 224.
*Hypervitaminosis D Rickets: Action of Vitamin D. A. W. Ham and M. D. Lewis.—p. 228.
*Possible Influence of Injury in Genesis of Tumors of Gonads: Experimental Study. R. A. Willis.—p. 234.
Purification of Tuberculin. G. A. C. Gough.—p. 237.
Developmental Forms of Psittacosis Virus. S. P. Redson and J. O. W. Bland.—p. 243.
Studies on B Virus: I. Immunologic Identity of Virus Isolated from Human Case of Ascending Myelitis Associated with Visceral Necrosis. A. B. Sabin.—p. 248.
Id.: II. Properties of Virus and Pathogenesis of Experimental Disease in Rabbits. A. B. Sabin.—p. 268.
Cortical Lipoid of Suprarenal in Mice (1) with Infectious Ectromelia, (2) in Starvation, (3) Exposed to Heat and (4) Fed on Cholesterol. R. Whitehead.—p. 279.

Vitamin D in Hypervitaminosis D Rickets.—Ham and Lewis observed that young rats receiving daily large doses of vitamin D showed rachitic lesions in their long bones after three weeks. As the matrix which formed in the bones during the experiment was calcified poorly, it was concluded that the administration of large amounts of vitamin D inhibited the normal calcification process in bone. As osteoclasts did not form a prominent part in the histologic picture, the poor calcification of bone could not be attributed to them. The authors explain the phenomena observed in their experiment by the theory which considers that vitamin D acts by increasing in some way the attraction of the blood for calcium. The results are compatible with, although they do not support directly, the theory that vitamin D acts through the intermediary of the parathyroid mechanism to control a fraction of the serum calcium.

Influence of Injury in Genesis of Tumors of Gonads.—Willis carried out experiments on the testicles and ovaries of rats to determine by some form of traumatic or chemical stimulation whether it was possible to evoke teratomatous growth in gonadal tissue. He reasoned that if this was possible his experiments would provide evidence in favor of the view that teratomas are the products of some kind of parthenogenic or epibogonic proliferation of germ cells. The experiments on male rats consisted of injections into the testicles through a hypodermic needle. In female rats the ovaries were reached through a midline laparotomy. Oxidizing, reducing, coagulating and necrosing agents as well as simple mechanical trauma, the introduction of silica and the introduction of blood were employed. The animals were kept for periods ranging from twenty-five to thirty-five weeks thereafter. The changes observed in the damaged organs were those of necrosis and its sequelae; no tumors appeared. The experiments afford no evidence that local injury is capable of evoking neoplasia in gonadal tissue. The result obtained served to strengthen the suspicion that injury and inflammatory processes play no more than a coincidental part in the histories of patients with testicular or ovarian tumors.

East African Medical Journal, Nairobi

11: 141-176 (Aug.) 1934

- Intentional Improvement of Backward Tribes. H. L. Gordon.—p. 143.
Significance of Splenic Enlargement in East Africa. D. B. Wilson and Margaret E. Wilson.—p. 156.
Plasmodium Ovale in an East African Native: Case. H. D. Tonking.—p. 166.

Glasgow Medical Journal

4: 41-88 (Aug.) 1934

- Place of Neurotic Symptoms in Physical Disease. R. S. Gibson.—p. 41.
Madness in Literature and Life. H. C. Marr.—p. 49.

Indian Medical Gazette, Calcutta

69: 421-480 (Aug.) 1934

- Malaria in Treatment of Indian Strains of Malaria. R. N. Chopra, B. Sen and S. K. Ganguly.—p. 421.
Glabeilar Presentation, Its Incidence and Termination. A. L. Mudaliar.—p. 424.
Tinea Imbricata (Tokelau) in Bengal. H. W. Acton and L. M. Ghosh.—p. 426.
Hot Weather Ear: Clinical Entity. F. J. Palmer.—p. 430.
"Backdoor Drainage": Antimalarial Measure Designed to Meet Particular Physiographic Situation in Sylhet District, Assam. C. Strickland and D. Gibson.—p. 432.
Antimalarial Work on Group of Tea Estates in South Sylhet. R. A. Murphy.—p. 437.
Form of Generalized Edema Attended with Malnutrition Which Is Becoming Increasingly Common in Rangoon. M. L. Kundu.—p. 439.
Diagnostic Significances of Urobilinuria in Cases of Pyrexia. J. R. Dogra.—p. 440.

Journal of Laryngology and Otology, London

49: 493-556 (Aug.) 1934

- Tuberculoma of the Brain Associated with Ear Disease. J. P. Stewart.—p. 493.
*Facial Paralysis "a Frigore," Cured by Decompression: Two Cases. P. G. H. Sander.—p. 503.

Facial Paralysis Cured by Decompression.—Sander points out that many different clinical conditions may cause compression of the facial nerve in the fallopian canal. Congestion of the periosteum or neurilemma, hemorrhage, inflammatory exudation within or without its sheath, production of fibrous tissue or hypertrophy of bone—all would act as a compression factor. An exceptional anatomic position of the nerve in a narrow, rigid and comparatively long canal and attachments of its sheath to the periosteum make the adjustment of the nerve to this condition difficult, impede their elimination or absorption and tend to maintain the localization of the compression factors. Every case of spontaneous Bell's palsy of "unknown origin" that does not show any tendency to a definite improvement within a few days after its onset should pass into the realm of surgery, regardless of its relation to the severity of the condition of the middle ear. The earlier the decompression is done, the better are the prospects of the operation. Both the complete and definite paralysis of the facial nerve and the incomplete recovery, with subsequent contractures, abnormal twitching and sympathetic movements are most distressing conditions, and any attempt to prevent them by a decompression operation should be fully justified. There is a striking analogy between this question and the problem of glaucoma. The symptom complex of glaucoma is probably a deeper mystery than Bell's palsy. But the high value of hypotonizing operations aiming at the relief of the symptom of intra-ocular pressure on the optic nervous system is now generally recognized. The operations for glaucoma are now a routine procedure in the hands of every ophthalmic surgeon, to the great benefit of many thousands of patients. The same principle induced Worms to devise his operation for decompression of the optic nerve in the optic canal to relieve the condition of optic neuritis, regardless of its etiology. The author presents two cases of facial paralysis cured by decompression.

Journal of Oriental Medicine, South Manchuria

21: 13-24 (Aug.) 1934

- Endocranial Bifurcations of Middle Meningeal Artery in the Chinese. N. Toida.—p. 13.
Nucleinic Acid and Its Derivatives: Part I. Effect of Yeast Nucleinic Acid and Its Derivative, Purine Compounds, in Lowering Blood Pressure and Antidotal Action of Liver Against It. K. Kashiwabara.—p. 15.
Contribution to Knowledge of Mesenteric Cystomas. Y. Matsuo.—p. 16.
Pigment Production of Bacillus Procyaneus and Bacillus Prodigiosus on Agar Mediums Composed of Mackerel or Bean-Cake. K. Fukumoto.—p. 17.
Constitution of Anemarrhena Asphodeloides Bunge I. J. Kodama.—p. 18.
Control of Malaria in Fushun Mines in 1933. E. Kitabatake, Y. Yamamoto and W. Murase.—p. 19.
Plague Epidemic at Nungan in Kirin-Province, Manchoukuo in 1933. H. Hiroki.—p. 20.
Dermatomycoses in New Independent State of Manchoukuo and Their Mycologic Studies: III. Communication. T. Terai.—p. 23.
Statistics of Dermato-Urologic Diseases During Ten Medical Inspections in Manchoukuo. M. Murayama.—p. 24.
Basic Experiment of Prophylactic Inhalation Against Scarlet Fever. G. Ishiyama.—p. 24.

Archives des Maladies du Cœur, Paris

27: 453-516 (Aug.) 1934

*Quantity of Circulating Blood and Its Behavior in Chronic Cardiac Insufficiency. A. Landau, Mlle. M. Markson, T. Goliborska and I. Lewicki.—p. 453.

Basal Metabolism and Specific Dynamic Action in Cardiac and Hyperthyroid Patients. A. Berland and T. Donskova.—p. 510.

Quantity of Blood and Cardiac Insufficiency.—Landau and his collaborators used the method of Keith, Geraghty and Rowntree with the technical modifications of Seyderhelm and Lampe for determining the quantity of circulating blood. In twenty-eight cases of compensated but disordered circulation it was determined that myocardial degeneration and arterial hypertension were accompanied by a normal circulating blood value, mitral lesions and pulmonary emphysema with an increased volume. In pulmonary emphysema, this increased volume carried with it an increased proportion of erythrocytes. Albuminuria in hypertension, progressive endocarditis or a syphilitic etiology lower the polycythemia. The studies of the amount of circulating blood in fifty-two patients with decompensation were brought into relation with the minimum body weight after disappearance of the edema. The average amount of circulating blood in these cases was 118 cc. per kilogram of body weight, that of the plasma 53 cc. and the hematocrit index therefore (ratio of erythrocytes to total blood) 53 per cent. Those cases of myocardial insufficiency with edema and circulatory slackening are characterized by increased volume produced by the plasma and especially the erythrocytes. Greater polycythemia occurs following insufficiency of the right side of the heart due to pulmonary edema than in myocardial degeneration or in mitral or aortic lesions. In seventeen patients the quantity of circulating blood was determined several times in order to study the influence of compensation and loss of edema. After compensation the quantity of circulating blood diminishes, but it differs in individuals. The average quantity was 122 cc. per kilogram of body weight and 104 cc. after disappearance of edema. The authors could not find, however, any relationship between the quantity of circulating blood and basal metabolism.

Gynécologie et Obstétrique, Paris

30: 113-208 (Aug.) 1934

Directed Labor (Efficacy and Harmlessness of Some Procedures Devised to Direct Course of Labor). J. Voron and H. Pigeaud.—p. 113.

*Toxic Factor of Placenta Praevia. P. Nubiola.—p. 132.

Blood Transfusion in Some Gynecologic Conditions. M.-G. Serdukoff and M.-K. Leviskaia.—p. 139.

Colon Bacillosis in Gynecology (Enterogenital Syndrome): Ways of Infection; Their Clinical Manifestations. A. Guillemin.—p. 158.

Toxic Factor of Placenta Praevia.—In placenta praevia, Nubiola believes that there is a toxic factor derived from the placenta and affecting the fetus and mother. Following an anatomic study of the placenta of three cases, he believes that the toxic factor is produced by the liquefying of the placental cells and that this is reflected in the blood of the mother and especially of the fetus. The mechanism is due to an alteration of the villi, which become swollen and ruptured and end by dissolution of their cellular elements. The deposits of fibrin and other lesions previously studied are the results of placentalolysis. These placental changes are not peculiar to placenta praevia but are similar to those observed in uteroplacental apoplexy and nephritic placentas. Analogous disorders are observed in red and white infarcts and even in apparently normal placentas but are limited in these to small regions and are of low degree. Confirmation of these results may have a clinical interest as an indication for early intervention.

Minerva Medica, Turin

2: 385-416 (Sept. 22) 1934

Gastric Function of Aged. D. Cantone and P. Croce.—p. 385.

Variations of Amount of Circulating Blood Determined by Application of Thermal Mud. C. Angeleri, S. Battistini and A. Robecchi.—p. 392.

*Leukocytometric Formula in Typhoid. A. Parini.—p. 397.

Devitalization of Periosteum in Thoracoplasty. R. Mariani.—p. 402.

Leukocytometric Formula in Typhoid.—Parini found that the diameters of neutrophils in normal healthy persons vary from 10.85 to 15.5 microns. Those of the lymphocytes run from 6.2 to 12.4 microns. There is a prevalence of larger forms in women. Of nineteen patients presenting typhoid,

seventeen showed a deviation to the right of the leukocytometric formula during the incipient stage of the disease. The deviation became marked during the second stage but began to diminish during the period of defervescence. Two cases evincing a deviation to the left resulted in death. The author states that macrocytic leukocytosis is due to a lack of diminutive mitoses of Dustin, whereas microcytic leukocytosis may be attributed to an excess of these mitoses.

Archiv für Kinderheilkunde, Stuttgart

102: 193-256 (July 31) 1934

*Cerebral Disturbances During Childhood and Their Encephalographic Diagnosis. K. Rupilius.—p. 194.

Chloride Content of Capillary and Venous Blood and Serum During Nursing Age. G. Török and L. Neufeld.—p. 217.

Oxyuria and Oxyuriasis. F. Hamburger.—p. 223.

Cerebral Disturbances During Childhood.—Rupilius's paper is based on the clinical histories of all children with disorders of the central nervous system who were observed in the children's clinic in Graz in the last fifteen years. He divides the material into nine groups: acute encephalitis, cerebral paralysis, weakmindedness without paralysis, hydrocephalus, microcephalus, deaf-mutism, cerebral syphilis, cerebral tumors and other cerebral lesions. He points out that the incidence of acute encephalitis seems to have increased in recent years, and that there was in nearly all groups a slight preponderance of boys. A differentiation according to age groups disclosed that the incidence of cerebral disturbances was highest in children less than 2 years old. The history revealed difficult delivery in a high percentage of cases. The incidence of premature births corresponded in most of the groups to the usual ratio of approximately 10 per cent. The incidence of disturbances in the intelligence was rather high, but imbecility was twice as frequent as idiocy. Paralytic symptoms were present in more than 50 per cent of the cases. Hydrocephalic and microcephalic deformities of the cranium were present not only in children in whom the disorder was diagnosed as such but also in some who had other disorders. In a large percentage of cases the cerebral disturbances were accompanied by epileptiform and other convulsive attacks. The cerebrospinal fluid was examined in more than half of the cases, but pathologic changes were observed in only 25 per cent of the examined cases. The highest incidence of pathologic cerebrospinal fluids was observed in the cases of acute encephalitis. Following a report of certain observations made in the course of necropsies, the author discusses the causes of the cerebral disturbances, showing the rather high incidence of an acute or a former encephalitis (27 per cent, or 150 out of 548 cases). Trauma sustained during birth was found responsible in only sixty-two cases, although the history revealed a difficult birth in 149 cases. A differentiation of the prenatal disturbances into those of endogenous and of exogenous origin did not succeed entirely.

Beiträge zur klinischen Chirurgie, Berlin

160: 113-224 (Aug. 8) 1934

Operating Under Roentgenoscopic Control After Method of Grashey. L. Drüner.—p. 113.

Cardiac Function After Suture of Heart. K. Horsch.—p. 132.

*Mode of Action of Roentgen Rays on Diseased Human Thyroid. P. Sunder-Plassmann.—p. 138.

*Heterotopic Intestinal Mucosa in the Stomach and Its Role in Genesis of Gastric Ulcer. F. Clar.—p. 145.

Extragenital Endometriosis. W. Schär and S. Scheidegger.—p. 161.

*Anatomopathologic Considerations on Origin and Prevention of Thrombosis. H. Havlicek.—p. 174.

Mode of Action of Roentgen Rays on Diseased Human Thyroid.—Sunder-Plassmann points out that there is no unanimity of opinion as to the mode of action of roentgen irradiation on the diseased thyroid. His observations of a large series of histologic studies of both irradiated Basedow thyroids and nonirradiated thyroids in the surgical clinic of the University of Münster led to the conclusion that no definite alterations are to be found in the parenchymal cells of the gland after irradiation. Definite changes, however, were observed in the interglandular vegetative nervous apparatus. These studies demonstrated an extraordinary richness of the peripheral sympathetic nervous supply of the thyroid. The sympathetic nerve fibers enter the gland together with the

branches of the recurring nerve and of the superior laryngeal nerve, and with the fibers that run in the walls of the blood vessels. Immediately on entering the gland these nonmedullated nervous elements form plexuses, which enter each parenchymal cell and there break up into a fine meshwork—the terminal nervous reticulum. This reticulum is so fine that in order to obtain a photomicrograph of it the greatest magnification under the oil immersion lens is required. The fibers of the reticulum never terminate but are seen to be continuous with the protoplasm of the neighboring cells, binding all the cells into one neuromuscular functional unit. These fibers continue in the walls of the capillaries and the walls of the larger blood vessels, the combination suggesting a “neurovascular regulating mechanism.” The same pathologic alterations were observed after irradiation in the terminal nervous reticulum in cases of simple colloidal or cystic goiter as in hyperthyroidism. The difference in the two is that in the latter the irritating impulse is of central nervous origin. This irritation alters the nature of the secretion and this in turn brings about the degenerative changes in the terminal reticulum. The sympathetic terminal reticulum may be intact in the early cases of thyrotoxicosis. It is therefore possible, in the author's opinion, to terminate a beginning hyperthyroidism by a timely cervical sympathectomy. Roentgen irradiation can accomplish the same result. That explains some of the successes with roentgen therapy. The effect of the rays in paralyzing the terminal sympathetic reticulum may bring about cessation of the morbid process. The roentgen rays affect these fibers because of certain pathologic alterations in the colloid of the neurofibrils. On the other hand, the well developed exophthalmic goiter presents an irreversible process, which can no longer be affected by irradiation. The timely irradiation of the hyperthyroid may be regarded as a “bloodless resection of the cervical sympathetic.” The author is of the opinion that irradiation may likewise influence beneficially the refractive residual symptoms after a resection, particularly the exophthalmos. He considers hyperthyroidism an irreversible process best cured by a subtotal resection of the gland.

Heterotopic Intestinal Mucosa in Stomach and Gastric Ulcer.—Clar examined the stomachs of fifteen fetuses from 6 to 9 months of age. The stomachs of all the fetuses up to the seventh month presented, on histologic studies, either single or grouped typical intestinal crypts. Of three full-term infants, heterotopic intestinal mucosa was found in only one stomach. Heterotopic intestinal mucosa was not found once in a study of twelve cadavers without a history of gastric disease, or in twenty-six stomach specimens resected for the cure of a duodenal ulcer. The observations of these heterotopic islands in diseased stomachs is a common experience. Thus, the author found it six times in ten stomachs resected for gastric ulcer, and once in three specimens resected because of pyloric ulcer. Gastritis was not present in any of the cases in which the author found heterotopic islands of intestinal mucosa. These islands were found by the author, as well as by other observers, to be located most frequently in the pyloric, the prepyloric and the lesser curvature regions. On the basis of his observations the author considers heterotopic intestinal mucosa in the stomach a congenital displacement and not of metaplastic origin. He admits the possibility of secondary epithelization of defects in the gastric mucosa by preexisting intestinal cells. The intestinal mucosa may be digested by gastric juices. The peptic action of the gastric juice may lead to an erosion of the displaced intestinal mucosa and the latter, in the presence of other predisposing factors, may develop into a chronic peptic ulcer. Stomachs containing islands of heterotopic intestinal mucosa are particularly predisposed to inflammatory and ulcerative processes.

Origin and Prevention of Thrombosis.—Havlicek makes an effort to consider synoptically the three probable causes of thrombus formation: the slowing of the blood current, the damage to the wall of the vessel and the chemical changes in the blood. The present views regarding the peripheral circulation fail to explain satisfactorily the velocity of the venous current. The author points out that there are numerous localizations in the peripheral circulation in which exists the possibility of shunting the arterial blood directly into the venous

circulation. The author refers to arteriovenous anastomoses. The anastomoses differ from both the arteries and the veins in their structure. The characteristic anatomic feature of these “short cut” vessels is that they are lined by what the author chooses to call “hydraulic” cells. The latter possess the property, when acted on by a number of autogenous as well as heterogenous substances, to swell and thus to shut the lumen of the vessel, or to empty and thus to open up the vessel. The effect of the opening of the arteriovenous anastomoses is to cause oxidation of the venous blood, to impart pulsation to veins and to accelerate the venous blood current. The chemical changes supposedly responsible for thrombus formation suggest the possibility of mixing of the peripheral venous blood with blood from the portal circulation. The portal system is not entirely separated from the peripheral venous system. There exist numerous anastomoses between the branches of the portal vein and those of the vena cava. Such an anastomosis exists between the inferior hemorrhoidal vein and the extensive pelvic plexuses that belong to the general circulation, the superior hemorrhoidal vein, a branch of the portal system. There also exist numerous anastomoses between the two systems at points of attachment of the intestine to the posterior abdominal wall. The author demonstrated these portal-caval anastomoses in cadavers by filling the two venous systems with a luminescent fluid and illuminating the latter with ultraviolet rays. The author further cites his studies that demonstrate the striking differences in the blood of the peripheral veins and that of the portal veins so far as the leukocyte count, the sedimentation rate of the red cells, the viscosity and the globulin fraction are concerned. A comparison of the ability to resist sclerosing effects by the arteries, the peripheral veins and the mesenteric veins reveals that the vessels which drain the toxic substances of the intestine, the vessels of the portal system, are most resistant. It is the author's opinion that the vomiting, retching, coughing and meteorism occurring after an operation may cause the passage of the blood from the portal vein into the branches of the vena cava by way of the portal-caval anastomoses. The blood laden with noxious substances may thus reach the femoral and even the saphenous vein. The mixing of the two kinds of blood, one of which, in addition to a difference in physical and chemical characteristics, contains toxic substances, leads to agglutination, to changes in the wall of the vessel and thus to formation of a thrombus. In the last five years the author has adopted the method of exposing the operative field to ultraviolet rays and has not had a single case of thrombosis or embolism. He theorizes that the effect of ultraviolet rays on tissues is to release histamine. The latter has a stimulating effect on the arteriovenous anastomoses, which in turn accelerates the venous current and prevents venous stasis. The author believes that, by exposing the intestine to ultraviolet rays in cases of acute peritonitis, splanchnic stasis can be prevented.

Strahlentherapie, Berlin

50: 369-528 (July 14) 1934. Partial Index

- Methods Employed at Women's Clinic in Erlangen in Roentgen Therapy of Carcinomas of Female Genitalia. F. Wittenbeck.—p. 399.
Primary Morbidity and Mortality in Intensive Therapy of Carcinoma of Uterine Cervix (Particularly Radium Compared to Surgical Treatment). H. Kirchhoff and J. Drenckhahn.—p. 428.
Roentgen Irradiation of Carcinoma. H. Chaoul.—p. 446.
*Results of Roentgen Treatment of Hay Fever. H. T. Schreus.—p. 462.
Definition of Dose in Roentgen Rays. H. Behnken.—p. 476.
Definition of Absolute Unit of Roentgen-Ray Dose. L. Grebe.—p. 484.
Measurement of Ultraviolet Radiation in Absolute Units. W. W. Cohlentz.—p. 487.
Shadowless Spherical Ionization Chambers. E. Mielnickel and B. Rajewsky.—p. 499.

Roentgen Treatment of Hay Fever.—Schreus says that roentgen therapy has effected desensitization in various allergic disturbances, such as allergic bronchial asthma and eczema. His method of roentgen treatment of hay fever consists in two or three applications of 15 or 20 per cent of the unit skin dose to the nose. The fields are 6 by 8 cm., and the rays are filtered through 0.5 mm. of copper. Follow up of patients who received this treatment from 1930 to 1933 revealed that the treatment was more or less effective in twenty-two of thirty-five. The other thirteen patients were not influenced. The author thinks that a combination of the injection of pollen

extracts with roentgen irradiation may produce more favorable effects, in that the general desensitizing effect of the injections is promoted by the local action of the roentgen rays. He suggests that in this manner it might prove possible to shorten the rather long and expensive injection treatment. The author does not expect much from a combination with other local treatments but thinks that calcium and dietary treatments may be helpful adjuvants.

Wiener klinische Wochenschrift, Vienna

47: 985-1008 (Aug. 10) 1934

Rheumatism and Occupation. L. Teleky.—p. 985.

*Protein Economy and "Dextrose Effect," with Especial Consideration of Existence in Oxygen Deficiency. H. Elias.—p. 988.
Theory and Practice of Disinfection of Urinary Passages. R. Herbst.—p. 990.

Sterile Meningitis After Contrast Filling with Iodized Sesame Oil. M. Fossel.—p. 994.

*Alcohol and Liver Function. R. Bauer and O. Wozasek.—p. 995.

*Prophylaxis of Diphtheria by Active Immunization. G. Pöeh and C. N. Leach.—p. 998.

Abscess of Great Omentum: Idiopathic Epiploitis. B. Chazkelson.—p. 1001.

Internal Treatment of Syphilis with Acetarsone. M. Oppenheim.—p. 1001.

Protein Economy and "Dextrose Effect" in Oxygen Deficiency.—Elias gives a summary report of studies on the metabolism under negative pressure. He gave especial attention to the behavior of protein metabolism during oxygen deficiency and to its modification by sugar. Animals were kept for several days under negative pressure, while controls were kept under normal atmospheric pressure and were left to starve and suffer from thirst. Compared to the latter group of animals, those kept in oxygen deficiency showed great loss of water and of protein, while the loss in fat and glycogen was comparatively slight. Further tests proved that the liver of these animals showed a relative increase in nitrogen, and since the peripheral portions of the animals had lost nitrogen and there had been no food intake, nitrogen must have gone from the periphery to the liver. Studies on the blood revealed a decided inspissation and an albuminemia, and both these factors must result in an increase of the oncotic pressure. Certain observations on epileptic persons and the fact that nervous symptoms appear in persons at high altitudes led to studies on the galvanic irritability of animals that had been under negative pressure for three days, and a considerable increase was found. Since all these tests were made on animals that received neither water nor food, a new series of tests was made, one group of animals receiving water, another fat, a third protein and a fourth sugar. It was observed that in case of administration of water the nitrogen rest in the blood (indicator of the protein changes) increased considerably, although not quite as much as formerly. Administration of fat reduced the nitrogen rest only slightly more than did the water intake, while protein increased it considerably. The administration of dextrose, however, effected only a slight increase in the nitrogen rest and thus approached in this respect the normal protein metabolism. Administration of dextrose to animals kept under negative pressure produced nearly a normalization of the red and white blood pictures. Thus not only the disturbances in the water and protein exchanges had to be cleared up but also this so-called dextrose effect. The author relates further studies on the changes in the water and protein exchanges under oxygen deficiency and stresses that the most interesting factor is the modification of these changes by dextrose. In summarizing the effects of the administration of dextrose he points out that (1) it reduces the increased nitrogen rest and brings the pathologic protein exchange closer to the normal status; (2) it prevents the inspissation of the blood; (3) it decreases the galvanic irritability, which is increased during oxygen deficiency, and (4) it prevents to a large extent the changes in the blood picture. If the dextrose administration influences such widely different processes, its point of attack must be at a superordinated center. The author considers it possible that abnormal protein metabolism may be the common cause of all other disturbances and that dextrose regulates the protein exchange and thus counteracts simultaneously all the secondary phenomena. He admits, however, that this is only a hypothesis, which might eventually be replaced by a better one.

Alcohol and Liver Function.—Bauer and Wozasek found that in normal persons alcohol effects a considerable impairment in the assimilation of galactose. This action of alcohol can be graduated in that greater doses of alcohol effect a more severe galactosuria. In patients with liver disease, particularly in those with acute damage to the parenchyma, the effect of alcohol is paradoxical. The galactosuria caused by parenchymal impairment is not further increased by the administration of alcohol. On the contrary, a larger dose of alcohol produces a reduction in the elimination of galactose. This paradoxical behavior of the diseased liver in response to a substance like alcohol that ordinarily injures the liver is inexplicable. Considering the complex action of alcohol on parenchymal and nerve cells and on the vascular system, an explanation is as yet impossible.

Prophylaxis of Diphtheria.—Pöeh and Leach show that it is possible to conduct a campaign against diphtheria in rural districts and give consideration to all legally required control measures. Their studies were made on 4,879 children, between 2 and 8 years of age. Of this number 1,746 (or 56 per cent of those with a positive Schick test) were given three subcutaneous injections of toxoid. The doses were 0.5, 1 and 1.5 cc, and the intervals between injections ten or fourteen days. The toxoid never caused undesirable complications. Repeated Schick tests revealed that 12 per cent remained positive in spite of vaccination. The morbidity ratio of the vaccinated and non-vaccinated was 4:9, which proves that the toxin protection had not sufficiently developed. In one locality, in which the diphtheria epidemic was especially severe, 19 per cent of the vaccinated children and 39 per cent of those who had not been vaccinated contracted the disease. Moreover, the fact that not one of the vaccinated children had a severe form of diphtheria and that all fatalities occurred among the nonvaccinated is a further proof of the protective action of vaccination against diphtheria.

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Hyperthermic Factor in Malarial Therapy of Dementia Paralytica.—Pogibko treated fifty patients suffering from dementia paralytica with malarial therapy. He obtained a primary and a secondary remission in 50 per cent of the cases, and a third remission in 28 per cent; 12 per cent were not influenced by the treatment and 10 per cent of the patients died. The greatest number of favorable remissions was obtained in the early stage of the disease (neurasthenic), and next in the exalted stage. The earlier treatment is begun, the higher is the percentage of remissions. The percentage of first- and second remissions in cases of from one to two months duration amounted to 72.8 per cent. These figures emphasize the desirability of early malarial therapy. The number of first and second remissions increases with the increase in the total number of hours of febrile temperature. The author likewise noted that the quality of temperature exerted a definite influence on the permanence of the results. Better remissions were obtained with an increase in the number of hours of temperature above 102.2 F. This was particularly true in the exalted group. The author is of the opinion that the hyperthermic factor is not alone responsible for the curative effects. In all probability there exist biologic factors in malaria. In the evaluation of the malarial therapy the number of febrile hours and the height of temperature are probably as important as the number of malarial attacks. The author computed on the basis of his material that the best results are obtained from a total number of febrile hours ranging from a minimum of 101 hours to 200, and that of the total number of febrile hours there should be from 51 to 100 hours above 102.2 F.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 18

CHICAGO, ILLINOIS

NOVEMBER 3, 1934

VALUE OF CALMETTE VACCINATION IN PREVENTION OF TUBERCU- LOSIS IN CHILDHOOD

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In a critical survey of the reports on experimental vaccination on human beings I attempted in 1926 to draw up some principles for carrying out an anti-tuberculous vaccination. Tentatively I began working along these lines and as the experiment seemed to turn out well I have continued along the path struck. In 1928 I published in *THE JOURNAL* a preliminary account of my experiments,¹ and I now submit the results achieved up to the present.

The history of the production of the BCG vaccine is no doubt well known and I shall therefore content myself . . . that the vaccine is composed of an . . . strain of bovine tubercle bacilli, which by means of certain methods of cultivation has been made very nearly avirulent. To be approved, a vaccine of this kind should fulfil at least these two primary conditions: It should be free from any element of danger and it should be effective.

With regard to the first of these requirements I dare say that the majority of my auditors are well aware that opinions have differed rather widely. The charge has been made that the vaccine or some bacillary agents contained therein are virulent, and in proof of its danger the report of one unfavorable instance after another has been published. A careful and critical study of the available literature shows, however, that up to the present not a single one of the million children who have been vaccinated has suffered any evident harm from a correctly prepared and correctly employed vaccine. From this it would seem that one is justified in drawing the conclusion that under these conditions the vaccine is safe. I shall report later my own experience with regard to the harmlessness of the vaccine.

Opinions differ also concerning the efficacy of the vaccine. This is chiefly due to the difficulty of procuring control material for comparison. On this account the vaccination experiments carried out in France on such a gigantic scale have not been considered conclusive. That the vaccine does produce a certain amount of immunity in animals has, on the other hand, been definitely proved. When the vaccine is injected in suitable doses into certain animals, they become sensitized to tuberculin after the lapse of a certain time and are less susceptible to mild virulent reinfections than untreated control animals.

That even human beings acquire a certain increased resistance by means of a BCG vaccination resulting in tuberculin sensitization has been proved by Heimbeck's experiments on tuberculin negative probationary nurses at Oslo. Out of 136 nurses vaccinated, only three became ill after having attended tuberculous patients in the course of their duty, while of the thirty-four unvaccinated probationers, unaffected when they began their duty, not less than fourteen fell ill with tuberculous disease. This is the only experiment in vaccination performed on human beings so far in which an adequate control material has permitted a comparison between vaccinated and unvaccinated subjects. This experiment furnishes definite evidence that a BCG vaccination is capable of producing a certain degree of immunity even in human beings. The report given before this section last year by Park, Kereszturi and Mishulow² of the vaccination experiments carried out in New York also lends support to this view.

A virulent primary infection does not produce more than a very relative immunization, and since the avirulent BCG infection is surely less intensely immunizing than a virulent infection it cannot of course be expected that a vaccination will afford absolute protection. That would be placing too great a demand on the vaccine. It should also be clearly understood that a BCG vaccination cannot protect the individual from secondary or tertiary tuberculous diseases any more than a natural tuberculous infection can do so. At best it can only prevent the severest forms of primary tuberculosis.

In my vaccination experiments I have followed these two principles: First, only healthy children in danger of being infected have been vaccinated; second, the vaccinated children have been protected from virulent infection until they have become sensitized to tuberculin by the inoculation.

From what has just been said it is evident that as yet there is very little information and experience relating to the usefulness of an antituberculous vaccination in children. The extent to which it protects the child against the dangers of a virulent infection is not known, nor is there any knowledge of the duration of such a protection. Under these circumstances the wisest plan seems to be to confine vaccination to those children who may be suspected of being exposed to the risk of infection in the near future. This is the case with all children of tuberculous parents.

In order to obtain any benefit from being vaccinated, the child must be free from tuberculosis. An infected child has already by means of the natural infection acquired that immunity which a vaccination is intended to produce. Hence, vaccinating an already infected child is absolutely superfluous. But it is not only

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.
1. Wallgren, Arvid: Intradermal Vaccinations with BCG Virus, *J. A. M. A.* 91: 1876 (Dec. 15) 1928.

2. Park, W. H.; Kereszturi, Camille, and Mishulow, Lucy: Effect of Vaccination with BCG on Children from Tuberculous Families, *J. A. M. A.* 101: 1619 (Nov. 18) 1933.

superfluous; it should also be avoided. In order to estimate the value of the vaccination it is imperative that accurate information be acquired with regard to the child's state of health, especially if it is infected before being vaccinated.

New-born infants can as a matter of fact always be regarded as free from tuberculosis. On the other hand, if the child has lived for some time in a tuberculous

TABLE 1.—*Relation Between Dosage of Vaccine and Duration of Preallergic Period*

Quantity of BCG Injected, Mg.	Duration of the Preallergic Period, Weeks																
	2	3	4	5	6	7	8	9	10	11	12	13	17				
1		2		1									..				
0.5.	1	1															
0.25.			2														
0.1.		1		6	10	4	2		1				1				
0.05.			4	10	9	3	2	..	1	1	2						

surrounding the case is quite different. In such cases tuberculin tests will show whether or not the child has escaped infection. This can be determined only when the child has been separated from the source of infection for six or seven weeks. A negative tuberculin test after this period of quarantine will show that the child has not been infected. New-born infants and nonexposed children may therefore be vaccinated at once, but children who have been exposed to possible infection should be vaccinated provided they have shown themselves to be tuberculin negative after a lapse of from six to seven weeks from the date of their last exposure.

Calmette and his coworkers were of the opinion that vaccination with BCG produced a relative immunity without causing any tuberculin sensitivity. Now it is known that tuberculin sensitivity occurs just as well after a successful BCG vaccination as after a virulent infection. The only difference is that it is ever so much weaker and is possible of demonstration only by means of large doses of tuberculin. It is generally assumed that if immunity is acquired at all by vaccination it is present in those children who have become sensitized to tuberculin. Whether the immunity is already present before the tuberculin test has become positive is as yet unknown. When it comes to the question of deciding when a vaccinated child may be permitted to return to its tuberculous home it would

TABLE 2.—*Total Number of Children Vaccinated*

	Exposed	Not Exposed	Inoculated But Not Yet Tuberculin		Total Number
			Positive	Unknown	
Living	226	120	0	0	346
Dead..	2	3	2	0	7
Total number...	230	123	2	0	355

be safest at all events to assume that the child has acquired this immunity only when it has become tuberculin positive. It is on this principle that we have acted in the experiments made at Gothenburg.

Under such circumstances it is a matter of great practical importance to determine when the sensitivity to tuberculin sets in after vaccination. Calmette was of the opinion that immunity does not occur until after a month's time and therefore recommended that the vaccinated child be isolated for this period. From data to be submitted later it will be seen that it is absolutely

impossible in each separate case to determine in advance an exact period of one month's isolation. This is especially the case when employing the peroral vaccination recommended by Calmette. In this method the sensitivity to tuberculin occurs very late, usually not before the lapse of some months, sometimes not before six months or later, sometimes not at all. Sensitization is therefore a very irregular phenomenon, a fact which does not occasion surprise when one takes into consideration that the peroral method of vaccination implies such enormous variations in the size of the actually resorbed dose of vaccine.

For this reason it has been considered more appropriate to employ a technic of vaccination in which the effective dose can be determined in advance. This can be done by injecting the vaccine. In subcutaneous inoculations there frequently arise rather large and disagreeable abscesses. Of the various parenteral methods of vaccination my associates and I have therefore chosen the intracutaneous, thus ensuring that any eventual liquefaction of the focus of inoculation will be as small and superficial as possible. When an appropriate dose of vaccine is administered there never arise any unpleasant local reactions in intradermal vaccination. The focus of inoculation, which is hardly ever larger than a pea, undergoes only a slight liquefaction and heals entirely in the course of a few weeks.

The interval between the vaccination and the onset of the tuberculin sensitivity varies also in cases in which the vaccine is administered intradermally, but by

TABLE 3.—*Age of Exposed Children When Vaccinated*

Age of Vaccinated Children										
Months					Years					
0-1	1-3	4-6	7-9	10-12	1-2	2-3	3-4	4-5	5-6	Above 6
90	22	24	16	19	15	10	7	4	16	6

no means so widely as in peroral vaccination. The sensitivity to tuberculin occurs, too, in a more reliable and fairly constant manner. The larger the dose of vaccine the quicker does allergy occur as a rule. With a vaccine dose of from 0.5 to 1 mg., tuberculin sensitivity is obtained after from one to three weeks (table 1), with a dose of 0.25 mg. after four weeks, with 0.1 mg. after six weeks and with the dose of 0.05 mg., which is used at present, after about seven weeks. On reference to the table it will be seen that even with exactly the same dose of vaccine there are very great variations, ranging from four to thirteen weeks with a dose of 0.05 mg. of BCG. These variations are due to individual constitutional factors, for the variations are equally great even if precisely the same preparation of vaccine is used, the same dose, the same method of application and in children of the same age.

From what has been said it is therefore evident that there is no possibility of determining beforehand when a child will be immune after being vaccinated. Judging from the conditions of tuberculin sensitivity, the acquisition of a state of immunity takes an unequal length of time in different cases. As a rule it occurs in about seven weeks, but occasionally it takes a considerably longer time. Indeed, in some cases the child is so insensitive to the vaccine that it does not react, either locally or by means of tuberculin allergy, even after a period of many months. In such cases the injections have been repeated, sometimes with increasing doses, until the child has finally reacted.

As already pointed out, we have not considered the child vaccinated until it has reacted to tuberculin. Until that occurs the child is not permitted to be exposed to any risk of infection. To ensure this the children during the period of vaccination have been isolated in an institution or in a private home. All children have been subjected to such a tuberculin control after vaccination.

In Gothenburg, a seaport town with a population of 250,000, since 1928, every child considered by the municipal dispensary to be in danger of infection has been vaccinated. This dispensary is thoroughly informed of practically every family any member of which has an open pulmonary tuberculosis. With only a few solitary exceptions it has always been possible to induce the parents to consent to the vaccination of the uninfected children at home. When the parents have been informed of the danger threatening the child at home and that for the sake of diminishing this danger they must either separate the child from the tuberculous member of the family or have the child vaccinated, they have of course chosen the latter alternative. In my opinion, the work of tuberculous vaccination in a community should be managed in this

Thus, altogether, only seven of the 355 inoculated children have died (table 2). Although this small number of deaths is in itself sufficient proof that the vaccination does not constitute any serious danger to the children, the following particulars are still more instructive: Out of 117 children who were vaccinated

TABLE 5—Duration of Exposure

Exposure of Vaccinated Children	Children Exposed During 1st Year	Children Exposed After 1st Year	Sporadic Exposure
2-3 months	5	5	0
4-6 months	12	7	2
7-8 months	3	2	0
10-12 months	17	10	4
13-18 months	20	21	1
19-24 months	16	18	
25-36 months	19	8	1
37-48 months	19	7	0
49-60 months	14	7	0
61-72 months	8	1	0
Totals	133	86	11
	230		

TABLE 4.—Age of Exposed Children at Date of First Exposure

Age of Vaccinated Children	Children Vaccinated 1st Year	Children Vaccinated After 1st Year
1½ months	6	
2 months	23	
3 months	16	
4-6 months	34	
7-9 months	35	
10-12 months	24	
1½ years	20	12
1½-2 years	2	12
2-3 years	3	10
3-4 years	0	7
4-5 years	1	5
5-6 years	0	15
Above 6 years	0	5
Totals	164	66
	230	

way by the tuberculosis dispensary and should preferably be entrusted to a single person so that he will be in a position to supervise the whole work and to control the effect of the inoculations of the vaccine and the health of the vaccinated infants

Up to the end of December 1933 the number of children vaccinated amounted to 355. For various reasons, among others the death of the source of infection, 123 of these children had not yet been exposed to tuberculous infection after vaccination. Three of these 123 children have died and all three of them have been examined post mortem. The cause of death was congenital malformation of the heart with bronchopneumonia in one case, pertussis-pneumonia in the second case and influenzal pneumonia in the third case. In none of these cases was death due to the vaccination. Two other children died before the vaccination had conferred tuberculin sensitivity and therefore at the time of their death were not completely vaccinated. One of these children died from a hemorrhagic diathesis, probably sepsis, the other from bronchopneumonia. The children just mentioned are the only ones of those inoculated up to the present who have died and who had not yet been exposed to tuberculous infection. Of the children who had been exposed, only two died; I shall refer to these deaths later.

at birth and who at the last after-examination were at least 1 year of age, only four had died in their first year of life. This corresponds to a mortality rate among infants of only about 3 per cent. The method in which we have organized the work of antituberculous vaccination, by caring for the children in an institution or private home during their early life until the vaccination has taken has accordingly not involved any increased risk for the child. That the infants' state of health has been so good is no doubt due to the fact that they were nursed at an institution in which they could be fed on breast milk.

In regard to the living children, numbering 120, who have not yet been exposed, it should be mentioned that at the periodic reexaminations they were all in good health. They were still living in their homes, so far free from tuberculosis, or were accommodated in the homes of healthy families or were admitted to an institution

The children who are of most interest are, of course, those who have been exposed to tuberculous infection after being vaccinated. In the following remarks I shall confine myself entirely to these 230 children. The ages of these exposed children at the time of vaccination will be seen in table 3.

TABLE 6—Result of Last After-Examination (December 1933)

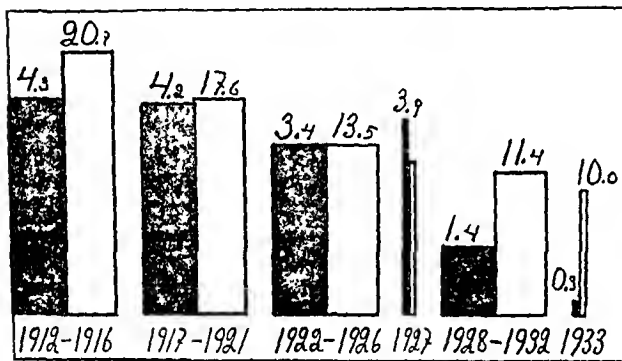
Results of Roentgen Examination of Children Alive at After-Examination					Postmortem Examination of Dead Children		Total
Very Large Hilus Shadow	Moderately Enlarged Hilus Shadow	Slightly Enlarged Hilus Shadow	Suspected Enlarged Hilus Shadow	Normal Roentgenogram	Died From Tuberculosis	Died From Other Diseases	
0	1	4	7	216	0	2	230

Fully one third of all the children were vaccinated shortly after birth, while but a small number were vaccinated during school age. Thus, vaccination has been performed chiefly on infants and preschool children. In order to form an estimate of the degree of protection that a vaccination may be expected to afford, it is important to know the age at which the exposure to infection began. The earlier a child contracts a virulent infection the more serious does the tuberculous disease in general tend to be. Since, under the most favorable conditions, sensitivity to tuberculin is delayed

for about one and one-half months after vaccination has been performed, it is obvious that no child has been exposed until the expiration of this time. This feature is in itself a very great gain in a prophylactic respect. For various reasons quite a number of the vaccinated children were kept away from their tuberculous homes for a still longer period. I should like to point out that we have not, of course, urged that a child be returned to its home immediately after the vaccination has taken. On the contrary, we have tried to induce the parents to wait as long as possible before taking the child home. The time at which the children were first exposed to infection appears in table 4.

It will be seen from this table that only six children were exposed to the risk of infection at the age of 6 weeks, forty-five were exposed under the age of 3 months and seventy-nine under the age of 6 months; that is, nearly half of the children were vaccinated before 1 year of age. On the other hand, the exposure of some of these children was delayed until they were more than 2 years of age.

Another thing that is important for the effect of a tuberculous infection is the duration of the exposure. Here, too, the prognosis differs in the case of a child who has been exposed to infection ever since infancy



Death rate from tuberculosis among infants per thousand (black columns) and from pulmonary tuberculosis among adults per 10,000 (white columns) in Gothenburg during the years 1912-1933, arranged in five year periods.

from that in a child who is exposed at a later age. The duration of the exposure is seen in table 5.

The shortest period of exposure was fixed at two months. This was done in view of the fact that any eventual tuberculous changes produced by a virulent tuberculous infection cannot be demonstrated until the end of the tuberculous incubation period, about six to seven weeks. Hence children who have been exposed for less than two months after being vaccinated have been regarded as nonexposed. Nearly three fourths of all children exposed during the first year of their lives have been exposed for a period of more than twelve months and some of them up to from six to seven years. Owing to the fact that many of the sources of infection died one after the other, the number of children exposed for very long periods consequently become fewer and fewer in proportion. The children which have only been exposed sporadically have been recorded separately. Usually the risk of a sporadic exposure is not so great as that of a daily one. Several of the children recorded as being continuously exposed have, in addition to the period of exposure shown in table 5, been exposed sporadically at certain times.

All vaccinated children are examined at least once a year and are besides kept under the regular supervision

of the dispensary. As soon as a child exhibits any symptoms of disease it is at once sent for a control examination in addition to the annual reexamination.

In judging the health of a child vaccinated with BCG regard must be paid chiefly to tuberculous disease. In the case of an unvaccinated child a positive tuberculin reaction constitutes an important support for the diagnosis of tuberculosis. In the case of a vaccinated child, on the other hand, no diagnostic significance is to be attached to a positive tuberculin reaction; all children successfully vaccinated with BCG are sensitive to tuberculin.

If the virulent infection, which sooner or later takes place by way of the respiratory passages in a vaccinated child exposed to tuberculous infection at home, should lead to so violent a reaction that anatomic changes arise, these lesions will be found, with but few exceptions, to be intrathoracic. These foci do not usually present any physical symptoms but may be demonstrable by roentgen examination. The only possibility of forming an objective conception of a vaccinated child's state of health as far as tuberculosis is concerned is therefore by means of a roentgen control. An after-examination that is not based on such a control is unreliable and is of no real value from the point of view of morbidity.

All children vaccinated with BCG at Gothenburg who have been exposed after the vaccination to the risk of infection have been examined roentgenologically at least once a year. The results of these after-examinations are seen in table 6. Only one of the 230 exposed children exhibited roentgenologically an infiltration of the hilus of a decided tuberculous character.

This patient was a boy, whose father and a grown-up brother had open pulmonary tuberculosis. The child had been vaccinated shortly after birth and was returned home after the completion of the vaccination. He was then 6 months old. After an exposure of six months he became ill with fever and displayed symptoms of a catarrhal condition of the upper respiratory passages. The roentgen examination showed a density of the hilus and the lower part of the right lung. Virulent tubercle bacilli were discovered in the fluid obtained by gastric lavage, and the diagnosis was clear. The densification was the manifestation of a tuberculous process produced by a virulent infection which the child had contracted at home.

The tuberculous process presented by the boy was remarkably benign. He became afebrile after a week and his general condition was never affected. Although he passed through a whooping cough during his stay at the hospital, he was discharged after five months. Subsequently roentgen examinations have disclosed a rapid disappearance of the densification of the hilus, so that a year after its manifestation the roentgenogram showed an almost normal condition. I may add that this boy's sister, aged 6 years, who had not been vaccinated, was also infected at about the same time after a short visit at home. There resulted an extensive infiltration of the right hilus, for which she had to be nursed at the hospital an entire year.

In four cases the hilus pictures were slightly larger than normal but in three of them the patient had had pertussis or pneumonia before the examination, and not one of these four children had exhibited any symptoms suggestive of a manifest primary tuberculosis. In seven of the cases it was not possible to decide from the roentgenogram whether the hilus shadow was normal or not. In the remaining 216 children alive at

the time of the last reexamination the roentgenograms showed absolutely normal conditions.

Only two out of the 230 children exposed have died, neither of them from tuberculosis. One of the two died from an epidemic meningitis after an exposure of one and three-fourths years. No signs of tuberculosis were found at autopsy. The other child succumbed to an acute pneumonia and diaphragmatic hernia after an exposure of six months. At autopsy no tuberculous disease was discovered.

As to the value of the statistics of the after-examinations, not a single one of the vaccinated children missed the examination. Every one has been controlled and therefore there is no child in my material whose fate is not known.

There is no possibility of determining the manner in which the immunity acquired by means of the vaccination has influenced the results. We have no control material of unvaccinated children who have lived under the same conditions as the vaccinated ones. Even other factors besides a specific resistance may have been active. Attention has already been called to one such important factor: the children were not exposed during their earliest age, and in many cases the exposure was delayed until after 1 year of age and even later. Another favorable factor is the increased interest in the prophylactic measures against tuberculosis shown by the parents of the vaccinated child, thanks to the educational work of the dispensary nurses while the children are being vaccinated. Under the influence of this instruction the parents do everything in their power to prevent severe infections of the children and avail themselves of the prophylactic means at their disposal.

The effect of all these favorable factors contained in the method of vaccination employed can be seen by comparing conditions prevailing when this system was not in use. As already stated the vaccinations have been made at the request of the dispensary. It was also pointed out that this dispensary supervises nearly all tuberculous families in the town and is informed of all children exposed to infection in such families. Attention was finally called to the fact that practically all infants exposed to the risk of infection, but so far uninfected, have been vaccinated. Since deaths from tuberculosis among infants as a rule occur among those in infectious surroundings, this attempt at the reduction of tuberculosis, aimed at by these vaccinations, must have an effect on the total death rate from tuberculosis in infancy in Gothenburg. This is really the case. A prophylactic measure, such as the one described here, cannot of course prevent every death from tuberculosis occurring among infants. Those children who have been infected before the discovery of the source of infection cannot be protected and some of them die from tuberculous disease.

The result of the prophylactic vaccination introduced in 1927 can be seen from the chart, in which, arranged in five year periods, the absolute number of deaths per thousand from tuberculosis among infants in Gothenburg is shown. In the three five year periods immediately preceding 1927 the death rate was 4.3, 4.2 and 3.4 per thousand, respectively. In 1927, which was a year of transition with but a relatively small number of vaccinated children, the mortality amounted to 3.9 per thousand. After 1928 it can be considered that the principles advanced here have been strictly applied. The rate of mortality during this five year period was only 1.4 per thousand; that is, about 60 per cent less than during the preceding period. In 1933, the first

year in the next five year period, the death rate was only 0.3 per thousand. It should be noted that the general tuberculosis death rate, especially from pulmonary tuberculosis, has not shown the same downward tendency. This signifies that the number of the sources of infection has not, broadly speaking, decreased in proportion to the decrease in the number of deaths from tuberculosis in infants.

The course of this mortality curve furnishes conclusive proof that the principles on which we have been working have been efficacious in a purely practical application of BCG vaccine as a prophylactic measure against tuberculosis in the infants of a community. What has been possible for us to achieve should also be attainable elsewhere. The main condition of success is that the work of the dispensary of the community should be based on sound principles and that it has full information about the tuberculous homes. Further, it is essential that vaccination with BCG be performed in such a manner that an immunizing effect can be obtained before the children are exposed.

Gothenburg Children's Hospital.

THE TREATMENT OF EXTENSIVE MALIGNANT LESIONS OF THE STOMACH

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It is difficult to define "extensive" carcinoma of the stomach, for a very small, apparently localized, carcinoma no larger than 1.5 cm. in diameter may be of very high degree of malignancy, and it may cause involvement of the lymph nodes along the greater and lesser curvatures of the stomach that necessitates removal of an extensive portion of the stomach and its attached omentums containing the involved lymph nodes. Were it not for the varying degrees of malignancy, extensive malignant tumors of the stomach might be defined as those which, because of their size, necessitate removing an unusually large part of the stomach and, in some cases, even the entire stomach; or those which because of frequent attachment of the carcinoma to adjacent structures, such as the capsule of the liver or pancreas, or because of involvement of the transverse mesocolon, require that portions of these structures also be removed.

Not uncommonly, in this group of cases, preoperative clinical and roentgenologic examination of the stomach may give the impression that the lesion is inoperable but, at exploration, removal may be found to be not only possible but also justifiable. Last year, at the clinic, 126 patients were operated on for carcinoma of the stomach. In 62.6 per cent of cases the lesion was removed by partial or by total gastrectomy. In thirty-seven of these cases the carcinoma was very extensive, and fluoroscopic and roentgenographic examination seemed to indicate that the lesion was of doubtful operability or was wholly inoperable; yet, in nineteen of the thirty-seven cases, the lesion was removed successfully. The corollary of this should be, I think, that every patient who has a malignant lesion of the stomach and whose condition warrants an abdominal exploration should be given the opportunity

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

unless definite evidence of incurability or of remote metastasis is present. I would estimate that, in at least 10 to 15 per cent of cases in which the lesion on roentgenologic examination would appear to be inoperable because of its extent, surgical removal of the lesion can be accomplished. Large malignant lesions of the stomach often will be found to be of a low degree of malignancy, to be sharply demarcated, and to present no glandular involvement; removal of such lesions by partial gastrectomy gives a high incidence of permanent cure, and this particularly is true in cases in which patients are elderly.

Progress that has been made in the treatment and curability of carcinoma of the stomach can be attributed, among other things, to (1) greater recognition of the fact that early symptoms may be insignificant, (2) increasing efficiency with which the competent roentgenologist can identify even the smallest gastric lesions, thus permitting earlier and complete removal, (3) a working hypothesis that every gastric lesion may be malignant unless proved otherwise, and (4) extension of the field of operability to include extensive carcinomas that heretofore might have been regarded as being on the borderline of operability.

VALUE OF THE ROENTGENOGRAPHIC EXAMINATION

The value of the roentgenographic examination in cases of small carcinomas of the stomach is strikingly illustrated in two cases. In the first case, that of a man aged 32, the presence of a small ulcerating lesion, measuring 1.9 by 1.7 cm., was detected by the roentgenologist and diagnosed as an ulcerating carcinoma because of the meniscus sign of Carman. At operation, with the lesion between my exploring fingers, I could not distinguish it from a benign lesion. Microscopic examination following gastric resection revealed it to be a carcinoma of grade 3. Some time ago I operated on a patient who had a small ulcer of the lesser curvature of the stomach; this ulcer had recurred two years after reported local excision of a gastric ulcer elsewhere, and symptoms had recurred. The roentgenologist reported a gastric ulcer with a small crater. At operation, the lesion appeared grossly to be a benign gastric ulcer, with a round, smooth crater approximately 1 cm. in diameter. Gastric resection was performed, the Billroth I-Haberer anastomosis being used to restore continuity between the stomach and the second portion of the duodenum. Although on gross examination the lesion appeared to be benign, a few minutes later a report of microscopic examination indicated that it was a carcinoma.

In the first of these cases the roentgenologist was correct in his declaration that the lesion was malignant but, in the second case, it was not known that the lesion was malignant until it had been so reported on microscopic examination. Of a group of eighty-two cases taken at random, in which patients were operated on at the clinic in 1933 and in which a preoperative clinical and roentgenologic diagnosis of gastric ulcer was made, in seventeen cases, or 20 per cent, the lesion was found to be carcinomatous, and in eleven of these seventeen cases the lesion was inoperable owing to its extensiveness or to metastasis. Carcinoma of the stomach can be detected by a competent roentgenologist in 95 per cent of cases, and roentgenographic examination of the stomach of patients 40 years of age or more who have indeterminate dyspepsia is the most important procedure in the examination, and it never should be omitted in

any suspicious cases. In the absence of the meniscus sign, the roentgenologist cannot determine whether the ulcer is benign or a small ulcerating carcinoma. For this reason, every gastric lesion should be regarded as being malignant or potentially so until proved otherwise.

There is no denying the fact that many small benign gastric ulcers, particularly those of short duration, may heal completely under a properly conducted medical regimen. However, such a method of treatment should not be instituted unless the patient can be kept under constant observation for several months to eliminate, subsequently, the possibility of malignancy. McVicar, several years ago, called attention to the fact that an ulcerating lesion of the stomach that disappears following a course of medical treatment cannot always be assumed to be benign, and he drew attention to the fact that many patients with ulcerating lesions of the stomach responded temporarily to medical treatment even when the process was malignant. The decision to treat a patient with an ulcerating gastric lesion by medical measures carries a great responsibility, for, if the lesion is malignant, by the time it is found to respond unsatisfactorily to medical treatment sufficient time may have elapsed for it to have become completely unremovable. The large gastric ulcer, even though benign, usually is of the callous or penetrating type, extending through the gastric wall either into the pancreas or into the gastrophatic omentum. The possibility of curing such a lesion by medical measures is small; indeed, the possibility that the lesion is malignant is much greater.

I have mentioned this problem of the small gastric ulcer because it seems to me that the recognition of the fact that it frequently is malignant, as likewise may be other small lesions of the stomach such as polypi, will frequently enable an earlier attack to be made on such lesions while they are in stages most favorable for cure. If further progress is to be made, therefore, in securing a larger proportion of three and five year cures in cases of carcinoma of the stomach, every effort must be made to recognize the presence of malignant gastric lesions in their earliest stages before extension of the lesion has occurred.

Just as roentgenologic examination is of great value in the localization of small gastric lesions, so also is it equally valuable in cases of more extensive lesions. In the interpretation of roentgenograms in such cases it must be remembered that the roentgenographic film may present a shadow which would indicate deformity but that this deformity may be the result of other intrinsic, benign gastric lesions, such as foreign bodies, leiomyomas, polypi and large, penetrating, benign gastric ulcers, and that most of these lesions are benign and removable. Certain extrinsic lesions, such as are associated with empyema of the gallbladder or cyst of the pancreas, often produce deformity of the stomach suggestive of a gastric lesion. In either of these groups, if a large portion of the stomach appears involved on roentgen examination, the lesion might be regarded as inoperable and malignant unless exploration is done.

EXTENSION OF THE FIELD OF OPERABILITY OF MALIGNANT GASTRIC LESIONS

In general, I believe that an increasing number of extensive malignant lesions of the stomach are being removed. This has partially been due to the fact, as I mentioned previously, that every patient who has a lesion of the stomach, no matter how extensive that

lesion appears to be, is never denied the possible benefits of an abdominal exploration, provided his general condition permits it and provided remote metastasis is not demonstrable. The finding of an extensive carcinoma localized in the stomach, or even of one with associated glandular involvement, is viewed from the standpoint that unless the lesion is removed the patient is doomed to an early death. On the other hand, Balfour has shown that, when the disease is still confined to the stomach, 50 per cent of patients who have a carcinoma of the stomach which potentially is removable have lived for three years or longer following partial gastrectomy, and that, even when extragastric glandular involvement has taken place, 19 per cent of patients have lived three years following resection.

In several cases total gastrectomy has been performed successfully at the clinic, and patients have lived and been comfortable two and three years subsequently. That such an operative procedure can be carried out in suitable cases with great benefit to the patient has led to the impression that all gastric lesions should be removed unless they have invaded adjacent structures to the extent that the carcinomatous process cannot be removed in its entirety. At operation, in many instances in which the lesion at first would appear to be insusceptible of removal because of its extent and attachment to the mesocolon and to the capsule of the pancreas or liver, it is found that, after freeing of adhesions and separating the lesion from these structures, the growth is readily removable. In other cases, particularly if the tumor is large, the uninvolved portion of the stomach may be thickened to give the appearance of involvement, yet the thickening may be only the result of gastritis adjacent to the lesion. It is not an uncommon experience to find that a growth which is examined while the patient is straining under light anesthesia appears to be unremovable but under deep anesthesia may be seen to be readily removable. In several cases involvement of the transverse mesocolon has given, at first, the appearance of inoperability, yet it usually is the avascular portion of the mesocolon that is involved, and this portion can be removed with the carcinoma without interfering with the blood supply of the colon.

THE INFLUENCE OF AGE ON OPERATIVE RISK

I believe it is worth while emphasizing to patients in the sixth, seventh or even eighth decade of life that they frequently stand operative procedures of great magnitude as well as younger individuals. One of the two successful total gastrectomies I have performed for carcinoma was in the case of a man 68 years of age, and he was living and well two years later. Two years ago I performed subtotal gastrectomy in a case in which the patient was 80 years of age, and he has been free of recurrence since that time. I recall many cases in which patients in the sixth and seventh decades of life were operated on successfully and in which extensive gastric resections were carried out successfully with a risk no greater than that attending resections of average extent among much younger patients. A corollary of this is that it is not the age of the patient but his general condition that is a factor in the surgical mortality.

TECHNICAL PROCEDURES ASSISTING IN THE REMOVAL

I have found it of value to approach all extensive lesions of the stomach through a left rectus incision.

Such an approach enables one to attack the upper part of the stomach with much greater ease than through an incision in the median line. Resection is begun by dividing the duodenum just below the pyloric sphincter and by reflecting the stomach upward, removing all of the gastrohepatic omentum and as much of the gastrosplenic omentum as may be indicated to a point well above the lesion. If it is desired to perform a Polya type of anastomosis, the jejunum is sutured to the posterior wall of the stomach at this high level before the growth is removed, which enables one to remove a large part of the stomach or even the entire stomach when necessary, with greater ease and safety than by removing the lesion first, using a crushing clamp to close temporarily the proximal end of the stomach. Among fleshy individuals particularly, removal of all the gastrosplenic omentum to the site of resection assists materially in the ease with which reconstruction anastomosis can be carried out and, at the same time, more completely removes any involved glands along the greater curvature.

In general, a posterior Polya, or an anterior Polya-Balfour, type of anastomosis is the most satisfactory type of reconstruction following extensive gastric resection for malignant disease. However, in certain instances I have found that the original method of Billroth, in which the stomach is anastomosed to the duodenum, has worked out to advantage, although the greatest field of its applicability is with benign, gastric ulcers, bleeding duodenal ulcers, and with recurring ulcers. This particularly is true of small lesions localized high on the lesser curvature of the stomach, the removal of which can quite readily be effected by removal of a larger portion of the lesser curvature and its omentum. By preserving a larger amount of the greater curvature of the stomach, anastomosis to the duodenum directly requires less time than the Polya anastomosis, and there is one less area for suturing. When extensive gastric resections have been performed on elderly patients, particularly in the case of subtotal or total gastrectomy, jejunostomy as a means of providing a temporary method of feeding has a decided advantage, as nourishment can be administered directly into the jejunum through a tube for as long a time as necessary; during this time oral administration of fluids is restricted to assist in healing the anastomosis. This is of particular value for patients who have lost a considerable amount of weight and who have been debilitated as a result of carcinomatous obstruction.

SUMMARY

Because of the varying degrees of malignancy of carcinomatous lesions of the stomach, probably all malignant gastric lesions should be regarded as extensive, for the very small lesion may be highly malignant and produce glandular involvement and a larger lesion may be of a low degree of malignancy and produce no glandular involvement. Since very large malignant lesions of the stomach are usually localized in the stomach and frequently are of a low degree of malignancy, it is quite necessary that every attempt be made to remove them. Frequently such lesions, in the preoperative clinical examination, particularly in the roentgenologic examination, may appear to be, because of their size and extent, inoperable; yet on abdominal exploration these lesions frequently can be removed successfully. In addition, the fact that certain other intrinsic gastric lesions, such as polypi, large gastric ulcers or foreign bodies, as well as some few extrinsic

lesions, may deform the stomach to the extent that the lesion appears malignant and inoperable, even though it is benign and removable, emphasizes further the value of abdominal exploration. The finding of an extensive carcinoma localized in the stomach, even when there is associated glandular involvement, is viewed from the standpoint that unless the lesion can be removed the patient is doomed to an early death. It is felt that such a patient should not be denied the benefit of surgery if it is possible to remove the growth. Balfour's report of 50 per cent three year cures in cases of removable gastric lesions without glandular involvement and of 19 per cent three year cures in cases of very malignant lesions with glandular involvement emphasizes the great value of surgical removal of all gastric carcinomas.

Technical procedures assisting in removal of extensive gastric lesions are to approach the stomach through a left rectus incision, to begin resection by dividing the duodenum below the pylorus, and to complete the posterior portion of the gastrojejunal anastomosis to the posterior wall of the stomach high above the lesion before the latter is removed. This enables a larger segment of the stomach to be removed. A temporary jejunal stoma for feeding has permitted administration of nourishment into the intestinal canal during the post-operative period in which healing of the anastomosis is taking place. If further progress is to be made in securing a larger proportion of cures in cases of carcinoma of the stomach, every effort must be made to recognize the presence of malignant gastric lesions in their earlier stages, and in this roentgenologic examination of the stomach is of the greatest assistance. Competent roentgenologists have been able to identify accurately and to localize a polypoid or an ulcerating gastric lesion as small as 1 cm. in diameter.

ABSTRACT OF DISCUSSION

DR. FRANK H. LAHEY, Boston: In discussing carcinoma of the stomach, one must always assume the position that the diagnosis of this condition is too frequently late, owing to the fact that the symptoms are of such a silent character. Progress in this condition will not be made until symptoms can be investigated by bismuth subnitrate roentgenograms oftener and earlier. One thing that always comes up is the question of malignant degeneration of ulcer. There are certain points about these cases that are now quite settled. One is that 100 per cent of the lesions on the greater curvature are malignant. I do not hesitate to submit lesions in this location to immediate surgery. The next location in which malignancy is common is the prepyloric region. The closer to the pylorus on the gastric side the lesion is, the greater is its tendency to be malignant. Lesions in this region, however, are easily misinterpreted because prepyloric spasm is very common and I have twice found no lesion on exploration. Prepyloric spasm closely simulates a malignant condition. Another point of value to discuss is the type of malignancy that involves the whole stomach and appears inoperable. One sees two types of cancer of the stomach: one, the lesion that involves the serosa, particularly on the lesser curvature, and this very quickly metastasizes into immediate and distant lymph nodes; the other type, the so-called leather bottle stomach, the linitis plastica type. Microscopic examination reveals two different types of cancer distribution. In the linitis plastica type the cancer cells tend to stream down between the muscle bundles and in this way they are disseminated through the entire gastric wall. They tend to expend their energy in this type of carcinoma not in distant metastases. In the other type of carcinoma, the localized type, the carcinoma cells are localized to the lesion but extend out in the lymphatics and do tend to metastasize early. Not infrequently, therefore, one sees almost complete

involvement of the stomach by the linitis plastica type of carcinoma without metastasis in the liver and without metastatic lymph nodes. I think these are the cases particularly in which total gastrectomy is best indicated. My associates and I have had three successful total gastrectomies. Dr. Clute had one and I had two. As one becomes adjusted to some of the technical difficulties of this operation and if the cases are well selected, it is distinctly a reasonable and possible procedure but will frequently, of course, as Dr. Walters has already stated, be disappointing in the long run because of recurrences due to the extensiveness of the lesion. Nevertheless, when I recall that Dr. Clute's successful case had been repeatedly rejected elsewhere as inoperable but, following a total gastrectomy, the patient worked every day and lived in comfort for three and a half years, this operation becomes, in my mind, definitely justifiable.

DR. GATEWOOD, Chicago: Until some new light is shed on the treatment of carcinoma, extensive gastric resection will continue to be a necessary procedure. Neglect will always play a part, but in spite of all that lay cancer education and periodic health examination can do, gastric cancer frequently sneaks up on its unsuspecting victim so silently that it is extensive before he has any warning. Theoretically, more than three fifths of gastric cancers should be amenable to eradication by surgery. Practically, less than one fourth can be removed. How are results to be improved? First, by more careful heeding of any vague gastric symptoms in the patient past 40 (thereby making earlier diagnoses) and, secondly, by improving therapy. Reviewing the last twenty-five consecutive hospital deaths following gastric resection done for carcinoma, I find the following causes: I. Peritonitis, eight cases. A. General. B. Local, as subphrenic abscess. II. Pneumonia, eight. III. Cardiac failure, two. IV. Shock, three. V. Hemorrhage, one. VI. Pneumothorax, one. (This patient died rather suddenly several hours after total gastric resection. Autopsy showed that, by retching, a small opening had been blown in the suture line. As the diaphragm had been used to reinforce the suture line, the swallowed air was forced into the thoracic cavity). VII. Inanition, one. VIII. Pulmonary metabolism, one. It was found that the absence of free acid definitely increases the operative risk, owing to the great increase in bacterial flora. While I have not been able by my own microscopic studies to confirm Bloomfield's statement that absence of hydrochloric acid is due to gastritis, tissues are definitely more friable and the mortality greater in the achlorhydria case. To reduce hospital mortality, careful preoperative preparation is most essential. A week can often be well spent in bringing up the patient's fluid balance, in repeated blood transfusions and in feeding the patient small amounts of highly nourishing foods at frequent intervals. Drachm (4 cc.) doses of dilute hydrochloric acid given from three to five times a day are, I believe, of definite value in reducing the bacterial content of the stomach. Gentle lavage by the Levine tube except in cases of active bleeding aids in preparation as well as accustoming the patient to a procedure that may be of life-saving value later. In selected cases I have inserted the tube under the fluoroscope postoperatively, obviating the necessity for jejunostomy. Earlier diagnosis and more technical skill are of great importance, but physicians should not forget to direct attention toward more careful preoperative and postoperative care.

DR. J. TATE MASON, Seattle: I have had occasion within the last two years to do two total gastrectomies, which have called attention to several outstanding technical advantages in certain operative procedures. First, if the surgeon is able to do a total gastrectomy at all it is a relatively easy surgical procedure in that individual. The patient with a large frame, who has lost considerable weight, is of course much easier to operate on than the short, thick, heavy-set person, in whom exposure is always difficult. The operation is greatly simplified by following Dr. Walters' method of using the stomach, after it has been thoroughly detached, as a lever to pull down on while making the posterior anastomosis between the esophagus and the jejunum. I have in the past classified certain patients with cancer of the stomach as inoperable, because of their clinical and roentgenologic appearance, who should have been given the chance that exploratory operation affords. Both my

patients made uneventful recoveries. One lived very comfortably for twelve months and then began to have symptoms of recurrence and died in fourteen months. The other patient was operated on too recently for a report. I know of no operation in the abdominal cavity in which one needs more exposure than in a total gastrectomy. Particularly is this true in certain individuals. I have for years used a zigzag incision, which gives the greatest amount of exposure that I have ever seen through any abdominal incision, in which no nerves or muscle fibers are severed, and which, when closed with a little care, gives as few postoperative hernias as any incision I have seen. The incision begins high up on the left rectus and passes down in this muscle to just above the umbilicus and then is carried across to the opposite side and down on the right rectus a short distance, depending on the amount of exposure one wishes to obtain. The anterior sheath of the left rectus is then opened on its inner third, the muscle fibers containing the blood supply and nerve supply rolled to the other side. Just above the umbilicus the fascia is cut straight across, and the same procedure is followed on the right rectus below the level of the umbilicus, the muscle being rolled to the other side. In closing this incision, one closes the transverse part first, which is usually imbricated, making the fascia even more secure and tight than before operation.

DR. J. SHELTON HORSLEY, Richmond, Va.: The only cure for gastric cancer is excision, so the problem of treatment is simple. There are a few cases of small, round-cell cancer of the stomach and cases of lymphosarcoma which respond to irradiation, but they are rare. As a practical therapeutic measure, excision of a gastric cancer is the accepted treatment. It is obvious that the diagnosis and resection should be done early, but the majority of cancers of the stomach are seen only in the advanced stages and they demand earnest consideration. The statement by Dr. Walters that almost all gastric cancers should be explored is important. Naturally, when there is ascites, or Virchow's glands, at the root of the neck, or when masses in the culdesac can be felt by rectal examination, exploration is contraindicated. But without these signs of hopelessness, even though an experienced roentgenologist says that he thinks the lesion is inoperable, exploration is often justified. I have had several cases in which the roentgenologist pronounced the lesion inoperable and in which I was able to make a resection. A few of these patients have at least had their lives prolonged, all otherwise being doomed. The administration of large quantities of dilute hydrochloric acid, a physiologic antiseptic, is valuable. This, with intravenous dextrose in Ringer's solution, will frequently convert into a potentially safe recovery a case that otherwise seems desperate. A resection may often be done in the presence of adhesions or invasion of the adjacent viscera, or even in the presence of small metastases in the liver. It not only removes the cause of obstruction, frequently a necrotic cancerous mass, but likewise gives a free exit to the stomach contents. I doubt whether gastro-enterostomy really has any place in the treatment of cancer of the stomach, because if this is the only operation that can be done because of the extent of the lesion, a gastro-enterostomy will afford no real relief. Pathologists have shown that about 23 per cent of all deaths from gastric cancer show the lesion still limited to the stomach. The small amount of resectability that is reported from the hospitals suggests that chances should be taken in many cases that seem inoperable. If 23 per cent of gastric cancers at necropsy are confined to the stomach, there certainly should be a still larger percentage limited to the stomach when the patient comes for diagnosis.

DR. J. W. THOMPSON, St. Louis: I wish to stress a point that has not been emphasized and that is the frequency of the extension of these carcinomas onto the transverse colon. The decision as to the operability of the lesion on abdominal exploration is frequently based on the extension of these peritoneal implants from the original growth. About three years ago I had occasion to perform an extensive subtotal resection on such a patient and at the same time I made a primary end-to-end anastomosis after resecting 6 inches of the transverse colon. This man has lived three years in comfort. The colon can be resected successfully at the same time that the stomach is resected.

THEORY AND PRACTICE OF PARENTERAL FLUID ADMINISTRATION

ALEXIS F. HARTMANN, M.D.

ST. LOUIS

In the early stages of undue loss of water from the body, regardless of the cause of such loss, the composition of the blood in respect to its water content and electrolyte pattern tends to remain unaltered because of the stabilizing or buffering effect of the intercellular fluid of the body. This portion of the body may be looked on as a reservoir which may shrink appreciably in order that changes in the blood and perhaps also in the fixed tissue cells may be kept at a minimum. When, however, the intercellular fluid becomes exhausted, changes do appear in the blood indicative of this exhaustion, and probably also in the fixed tissues themselves. The nature of the changes is largely dependent on the manner in which fluid is lost; sometimes acidosis may accompany dehydration, at other times alkalosis, while occasionally a tendency toward one such change may be almost exactly balanced by a tendency in the opposite direction (chart 1). Also, during a period of excessive fluid loss leading to dehydration, the groundwork for subsequent edema may be laid.

By chemical examination of the blood one can usually obtain undeniable proof of loss of water, chloride, bicarbonate and total fixed base. Loss of other substances, however, such as potassium and calcium, are not usually so indicated, as their concentrations in the blood plasma tend to remain quite fixed, the tissue cells and the bones acting as reserve depots. These facts should be borne in mind when efforts are to be made to replace lost intercellular water, so that restitution may be chemically adequate. Thus, it is frequently necessary to replace lost electrolytes along with water, if the effects of dehydration are to be overcome completely. It may also be necessary to restore plasma protein, or at least to make more normal the colloidal osmotic pressure of the blood in order to reestablish a normal circulation of the blood and a normal interchange of substances between the blood and the intercellular fluid.

In order to accomplish such a purpose without too much reliance on the aid which renal activity may afford or on the aid with which absorption of food from the intestinal tract may provide, it may be necessary to give parenterally fluids that are quite similar to normal intercellular fluid, or at least to provide the most essential mineral constituents of body fluids. Sodium chloride is the most important salt as far as amount is concerned. It is to be expected, therefore, that administration of isotonic sodium chloride solution should go far toward relief of the phenomena of dehydration. Sodium chloride alone, however, frequently is insufficient to provide complete relief of symptoms.¹ The addition of potassium and calcium is at least theoretically indicated, and when such an addition is made in the same proportion in which these elements exist in blood plasma or intercellular fluid, Ringer's solution

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Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.
1. Hartmann, A. F.: Chemical Changes Occurring in the Body as the Result of Certain Diseases: I. The Effects of Diarrhea, Vomiting, Dehydration and Oliguria on the Acid-Base Balance of the Plasma of Infants with Mastoiditis. *Am. J. Dis. Child.* 35: 557 (April) 1928; Acidosis, Alkalosis and Ketosis, in Brennenmann's Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., volume 1, section 2, chapter 1.

without causing reactions. It has been my policy, however, to make fresh solutions every week. Commercial products in ampule form may also be used if dilutions are made with freshly distilled sterile water before injection. My experience has been entirely satisfactory with such preparations.

For intraperitoneal injection, however, special precautions must be taken. Perhaps the best method is that described by Schwentker,⁵ in which chemically pure dextrose is sealed in glass ampules and sterilized by boiling in a water bath for thirty minutes on each of three consecutive days. Just before using, the dry dextrose is dissolved in freshly distilled water to make an isotonic 6 per cent solution. In my own experience, however, distention has so frequently followed the intraperitoneal administration of dextrose that it is no longer given by this route. The explanation for such an undesirable reaction is suggested by the recent work of Darrow and Yannet,⁶ who found that, when dextrose is injected intraperitoneally, electrolytes and water are first withdrawn from the blood until the fluid within the peritoneal cavity resembles the blood and intercellular fluid in its electrolyte composition.

Sodium Bicarbonate Solution.—This should be made up freshly before using. For intravenous injection, it is satisfactory to transfer chemically pure anhydrous sodium bicarbonate onto a clean filter paper taken from the middle of a pack with a flamed spatula. In this way the proper amount of sodium bicarbonate may be weighed to make a 5 per cent solution, the weighed material being added to cool, freshly distilled sterile water. While not absolutely sterile, this material is suitable for intravenous administration and has been used quite extensively without indications of infection. For subcutaneous injection, a 1.5 per cent solution is made, and a small amount of phenol red indicator is added. The solution is then filtered through a Berkefeld candle and, just before using, carbon dioxide is filtered through water and bubbled through the solution until the red color changes to orange. Such a solution is isotonic, sterile and of a p_H that is not irritating. Theoretically, such a solution should also be satisfactory for intraperitoneal injection, but I have never used it in this way and therefore cannot recommend its use. Another method of preparing sodium bicarbonate is that suggested by Cunningham and Darrow.⁷ By this method previously sterilized sodium carbonate is partially neutralized by hydrochloric acid with the formation of sodium bicarbonate and sodium chloride.

Artificial "Spinal Fluid."—This solution was developed particularly to meet the needs of Dr. Ernest Sachs in replacement of lost ventricular fluid during certain intracranial operations, particularly choroidpexctomy for the relief of hydrocephalus. At the time of injection into the ventricles, this solution closely resembles normal cerebrospinal fluid as far as content of sodium,

potassium, calcium, magnesium, chloride, bicarbonate and p_H is concerned. Because of its bicarbonate content, the solution has to be prepared in two parts, which, after sterilization by autoclaving and proper dilution, are mixed in equal amounts just before using.

Solution 1 (concentrated): Preparation is as follows: sodium chloride, 300 Gm.; potassium chloride, 19 Gm.; calcium chloride, 10 Gm., and magnesium chloride, 20 Gm. are added to 1 liter (1,000 cc.) of freshly distilled water. Filter (preferably through a glass disk filter to exclude filter paper fibers). Autoclave at 15 pounds for thirty minutes. This is the concentrated solution 1 which should keep in pyrex glass indefinitely.

To prepare for mixing with solution 2, measure accurately 10 cc. (with a sterile pipet, so as not to contaminate the stock solution) and make to 250 cc. with freshly distilled water. It is convenient to do this in a 250 cc. volumetric flask. Make up to the mark, and then withdraw 10 cc. with the same pipet, leaving 240 cc. Place this amount in a pyrex glass flask or bottle of 500 cc.

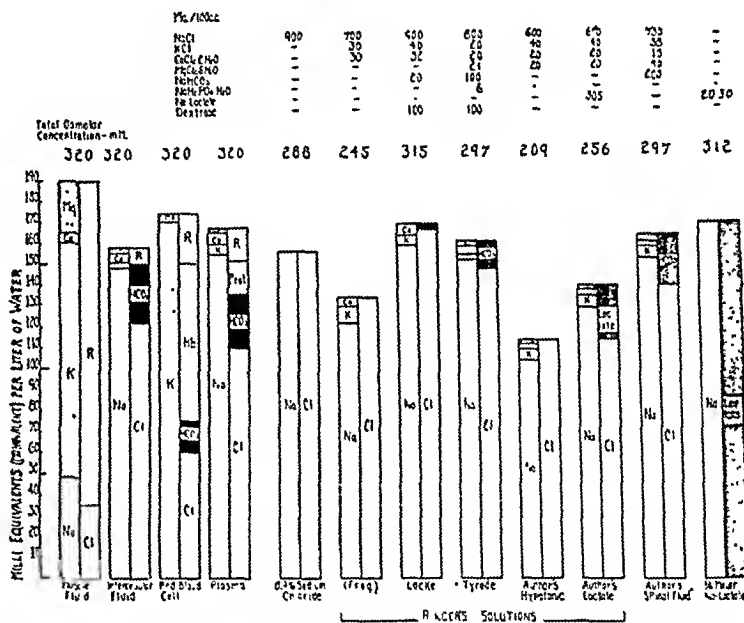


Chart 2.—The chemical composition of normal body fluids and the more common therapeutic solutions for parenteral injection.

capacity, mix, and resterilize by autoclaving at 15 pounds for thirty minutes. Stopper with sterile (autoclaved) cork or rubber stopper. It is usually convenient to prepare about six such bottles of 240 cc. each of solution. This solution may be resterilized at any time, if thought advisable.

Solution 2: Weigh out 5 Gm. of anhydrous sodium bicarbonate. Add a few milligrams of dry phenol red (phenolsulphonphthalein) and make to 1 liter (1,000 cc.) with freshly distilled water. Filter free of any suspended particles. Measure 240 cc. of this solution into a pyrex glass flask or bottle of 500 cc. capacity and sterilize by autoclaving at 15 pounds for thirty minutes. Stopper with a sterilized (autoclaved) cork. In this condition the solution may be resterilized at any time, if thought advisable.

Just before using, add exactly 1 cc. (measured with an accurate sterile pipet) of concentrated hydrochloric acid (36 per cent) to 240 cc. of solution 2, and mix by rotating the flask or bottle. The sodium carbonate should now be converted into sodium bicarbonate plus sodium chloride, and the color should change from red

5. Schwentker, F. F.: The Preparation of Dextrose for Parenteral Injection, *Am. J. Dis. Child.* 40: 533 (Sept.) 1930.

6. Darrow, D. C., and Yannet, Herman: Effect of Changes in Extracellular Electrolyte on Cellular Electrolyte and Water, read before the American Pediatric Society at Asheville, N. C., in May 1934.

7. Cunningham, R. D. M., and Darrow, D. C.: Preparation of a Solution of Sodium Bicarbonate and Sodium Chloride for Hypodermoclysis, *Am. J. Dis. Child.* 41: 1347 (June) 1931.

to an orange shade. If such a change does not occur, a drop more of the acid should be added. At this stage the solution can no longer be reesterilized. Pour equal parts of solution 2 (after the addition of the hydrochloric acid) into solution 1 and mix by rotating the flask. This final mixture has now the composition of normal spinal fluid and is now ready for injection into the ventricles.

Acacia Solution.—While it is possible to prepare acacia solution satisfactorily for intravenous injection, it has proved much more convenient to use products already prepared, such as the product marketed by Eli Lilly & Co. This product is marketed in 30 per cent concentration and contains 4.5 per cent sodium chloride. Its most frequent use is its intravenous injection in cases of shock. For this purpose the original material is diluted five times with sterile distilled water or 20 per cent dextrose solution, so that the final concentration of acacia is 6 per cent and sodium chloride 0.9 per cent. When it is used for the relief of nephrotic edema, such

Sodium Lactate Solution.—This solution is indicated in specific amounts in all types of severe acidosis other than that associated with congenital heart disease with persistent cyanosis. It is of value also for rapid alkalization of the urine in the treatment of acute infections of the urinary tract. Sodium lactate may be administered by any of the parenteral routes. It is important that an isotonic solution be used for subcutaneous or intraperitoneal administration. One-sixth molar sodium lactate is isotonic and is made by adding one part of the molar sodium lactate solution to five parts of sterile distilled water. Somewhat more concentrated solutions may be given intravenously, but, especially during the presence of dehydration, it is unwise to use a solution more concentrated than the isotonic solution. If the carbon dioxide content of the blood is known, the amount of sodium lactate that will be required to raise the carbon dioxide content to the normal value of 60 volumes per cent may be calculated.² Since, however, the chief indication for the use of sodium lactate is the presence of a carbon dioxide content under 25 volumes per cent, a routine dose of 10 cc. of the molar solution per kilogram of body weight, diluted with five volumes of distilled water, will be generally satisfactory; i. e., this amount will tend to increase the carbon dioxide content by 25 to 35 volumes per cent. When merely alkalization of the urine is desired, smaller amounts, i. e., 5 cc. molar solution per kilogram of body weight, are effective.

Lactate-Ringer's Solution.—Since its effect in the body is to relieve either acidosis or alkalosis of the metabolic types, lactate-Ringer's solution is indicated in all types of dehydration, especially when a chemical study of the blood has not been made. When severe alkalosis of the metabolic type is known to exist, the addition of lactate to the Ringer's solution is without benefit, aside from its antiketogenic and glycogenic effects. The addition of lactate to Ringer's solution, however, need not be feared, even if very severe alkalosis is present. The results obtained in

such cases by (1) Ringer's solution, and (2) lactate-Ringer's solution are illustrated in chart 3. When very severe acidosis is known to be present, the amount of lactate indicated is of such an amount that it is much better to give the lactate independently of the Ringer's solution (i. e., as sixth molar sodium lactate), and later, if further fluid administration is necessary, it may be combined with Ringer's solution to prevent recurrence of acidosis.

Lactate-Ringer's solution may be given by any of the parenteral routes. It has almost entirely replaced the use of physiologic solution of sodium chloride or Ringer's solutions in the St. Louis Children's Hospital for the routine treatment of dehydration with or without the knowledge of coexisting chemical changes. When administered by the subcutaneous or intraperitoneal routes or as a single intravenous injection, therapeutic doses should average from 80 to 100 cc. per kilogram of body weight. Mixed with 10 per cent dextrose solution, it has been the fluid of choice for the continuous intravenous drip method of providing fluid.

Sodium Bicarbonate Solution.—The indications for the use of sodium bicarbonate solution are the same as

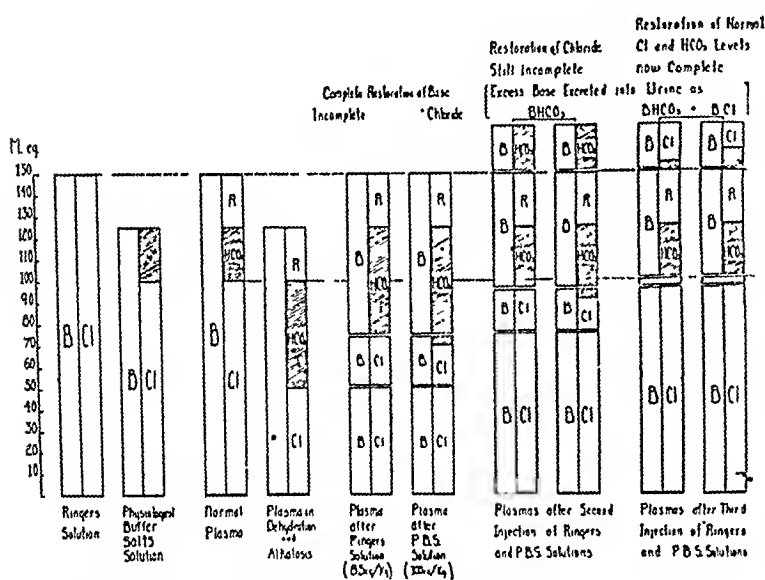


Chart 3—Schematic recovery from severe alkalosis in response to Ringer's solution and to lactate-Ringer's solution.

dilution is unnecessary and the material may be used as marketed or diluted just sufficiently to enable it to flow readily by gravity.⁸

SPECIFIC INDICATIONS

Ringer's Solution.—This solution is indicated whenever chlorides and the fixed bases sodium, potassium, calcium and magnesium have been lost. Therefore it is indicated in all forms of dehydration, but particularly in cases in which large amounts of gastro-intestinal secretions have been lost by vomiting, diarrhea or fistula, as occurs in such conditions as pyloric and intestinal obstruction, diarrhea, diabetic acidosis, glomerular nephritis (terminal stage) and many severe infections. Beneficial effects in acidosis or alkalosis result indirectly from improvement of the circulation and stimulation of renal activity. While Ringer's solution may be administered by any of the parenteral routes, it finds its chief use when administered subcutaneously or intraperitoneally. Ordinarily therapeutic doses, adequate for restitution of lost water and minerals, average from 80 to 100 cc. per kilogram of body weight.

8. Hartmann, A. F.; Senn, M. J. E.; Nelson, M. V., and Perley, A. M. The Use of Acacia in the Treatment of Edema, J. A. M. A. 100: 251 (Jan. 28) 1933

for sodium lactate solution. It is superior to the latter only in those conditions in which lactate metabolism may be seriously impaired (congenital heart disease with anoxemia being the only one that has been encountered so far in my experience), but it has many disadvantages.² A somewhat hypertonic solution may be given intravenously in a case of severe acidosis in a dosage of 0.5 Gm. of sodium bicarbonate per kilogram of body weight. A sterilized isotonic solution containing carbon dioxide in the proper amount may be given subcutaneously in corresponding amounts.

Dextrose Solutions.—Dextrose solutions are indicated when the carbohydrate metabolism is low, when ketosis exists, when hypoglycemia is present, and when there is depletion of liver or muscle glycogen: i. e., in such conditions as starvation, acute severe infections, intoxications, particularly in cases in which the liver and heart muscle are affected, and in hyperinsulinism. It is also of value in promoting diuresis and for this purpose may be used in acute nephritis with acute cerebral edema. Isotonic dextrose solution may be given subcutaneously or intravenously or, as previously mentioned, it may be mixed with equal parts of lactate-Ringer's solution to be given by either of those two routes. More concentrated solutions, even up to 50 per cent, may be given intravenously, when in particular edema is to be treated and when diuresis is particularly to be established. There is some danger of venous thrombosis when 50 per cent dextrose is used, particularly if the circulation is sluggish. Since dextrose solutions are given both for their dextrose and for their water content and for the relief of edema, no exact dosage can be given. In general, when given for purposes of administering fluid, from 80 to 100 cc. per kilogram may be given subcutaneously, and, roughly, from one-fourth to one-half that amount may be given as a single intravenous injection. When given in conjunction with lactate-Ringer's solution by the continuous drip method, the rate of flow should be from 3 to 6 cc. per kilogram hourly after dehydration has been relieved.

Artificial "Spinal Fluid."—The use of this solution has been as yet confined to cases in which operation is performed for hydrocephalus in which it is desirable to refill collapsed ventricles. Theoretically, at least, this solution should be much superior to physiologic solution of sodium chloride whenever replacement of, or admixture with, cerebrospinal fluid is to be considered, in such instances as "through and through" drainage for meningitis, spinal anesthesia and nerve block.

Acacia Solution.—Acacia is especially indicated when the blood volume has been reduced as the result of hemorrhage or shock. In such conditions the injection of electrolytes or nonelectrolyte crystalloids, such as dextrose, does not have much of an effect in increasing the blood volume, since they are free to pass through the capillary walls and actually diffuse quite rapidly into the tissue fluids. The plasma proteins and acacia, however, are normally impermeable, remain in the circulation and through their effect in raising the colloidal osmotic or oncotic pressure tend to maintain blood volume. In nephrotic edema the oncotic pressure of the plasma is reduced because of loss of protein from the blood, chiefly as the result of albuminuria. The glomerular membrane in such conditions is less permeable to acacia than to the plasma proteins, and through its use in such conditions the oncotic pressure of the plasma usually can be restored to a level sufficiently high to

lead to loss of edema fluid. Acacia should be administered only intravenously, the concentration varying from 6 to 30 per cent. The solution injected should have roughly a sodium chloride concentration of from 0.6 to 0.9 per cent. Since the effect on edema of injected acacia depends largely on the concentration of acacia which is maintained in the blood plasma, which in turn is dependent on the amount given in relation to the original blood volume, the rate of excretion into the urine and the rate at which it is taken up by other tissues, the dose of acacia cannot be fixed.⁸ In general, however, from 1 to 2 Gm. of acacia per kilogram of ideal body weight is given intravenously over a period of forty-five to sixty minutes and may be repeated daily until as much as 10 Gm. per kilogram has been given.

Blood.—Specific indications for the administration of whole blood are: (1) reduction in blood volume, resulting from hemorrhage or prolonged malnutrition; (2) severe anemia, particularly if the erythrocyte count is low; (3) blood dyscrasias associated with a bleeding tendency, such as hemorrhagic disease of the new-born and hemophilia; (4) edema which is due chiefly to diminished plasma protein ("nutritional" edema, nephrosis and chronic active glomerular nephritis), and (5) possibly icterus gravis of the new-born and other types of hemolytic anemias. In such instances there is either a qualitative or a quantitative deficiency of whole blood or some of its components, such as erythrocytes, platelets or plasma. As a rule, sufficient whole blood may be given to correct such a deficiency. The most important exception is the edema of nephrosis, in which the protein loss through the kidney may equal or excel the rate at which protein can be injected as whole blood. In such instances, larger amounts of protein may be administered as plasma transfusions or, as is not infrequent, a substitute for protein in the form of acacia must be relied on. In a number of instances of rheumatic heart disease with failure, severe anemia was relieved by transfusing cells suspended in citrated saline solution without running the risk of increasing the cardiac embarrassment by increasing the blood volume or viscosity by adding more plasma protein.

Blood transfusions have also been extensively used in both acute and chronic infections, with the hope of administering antibodies. Probably because of the frequent lack of such antibodies in high concentration, results in such cases have often been disappointing.

In general the intravenous route is the one of choice, particularly if the function of the erythrocytes is to be preserved. The usual amount of blood given in this way is about 20 cc. per kilogram of body weight. More may be given safely in cases of hemorrhage, while in the presence of cardiac or pulmonary lesions it is often desirable to repeat much smaller transfusions (5 cc. per kilogram). In states of severe nephrotic edema, very much larger amounts of plasma may be given, because of the rapid loss of plasma protein by way of the urine. When given subcutaneously or intramuscularly, the erythrocytes are destroyed but the plasma elements rapidly make their way into the blood stream. Under favorable conditions apparently most of the blood given intraperitoneally finds its way rapidly into the circulation. My experience with very sick infants, however, has been discouraging, in that abdominal distention tends to result, and in several instances, most, if not all, of the blood injected was found unabsorbed after death several days later.

Combinations of Various Solutions.—Injection of sodium lactate and Ringer's solution has already been considered. In a similar fashion, dextrose may be combined with Ringer's or lactate-Ringer's solution. As a rule, it is best to mix isotonic solutions in equal volumes, so as to preserve isotonicity. Equal parts of 10 per cent dextrose solution, however, may be added to Ringer's or lactate-Ringer's solution and given intravenously without any deleterious effect. Dextrose and sodium bicarbonate may be mixed, if the resultant mixture is given immediately. On standing, however, dextrose decomposes much more rapidly in the presence of alkali. Sodium bicarbonate cannot be mixed with Ringer's solution without precipitation of calcium bicarbonate. Since acacia solution contains considerable amounts of calcium, bicarbonate solution and acacia are also incompatible for this reason. Acacia cannot be mixed with citrated whole blood either, since the calcium content of the acacia will neutralize the effect of the citrate and permit clotting to occur.

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ABSTRACT OF DISCUSSION

DR. ARTHUR G. HELMICK, Columbus, Ohio: Sometime ago I had the opportunity of viewing the immediate effects of fluid introduced into the abdominal cavity. It was entirely new to me and I thought it of sufficient interest to bear repetition. It came about by accident in connection with an operation for pyloric stenosis. In these cases, it is my custom to give 5 per cent dextrose in physiologic solution of sodium chloride subcutaneously. In this particular instance there was a new house officer on duty. The method of administering the fluid not being specified, he gave it intraperitoneally. The next morning some fifteen hours afterward, when the surgeon opened the abdominal cavity, quite a little of the solution was still present as well as a brownish gelatinous substance, which covered the abdominal parietes as well as the intestine. This material did not seem to be a mass but it was evenly distributed over the surface as if it might have been painted on. It was of such a character that it made any type of manipulation almost impossible, and it was only with great difficulty that the operation was completed. The youngster made an uninterrupted recovery from the immediate effects, but a short while afterward there was a recurrence of the original symptoms and an exploration was decided on. This was done. About the seat of the original operation was a dense mass of adhesions. These were broken up, there was great shock, and the child died some hours later. I think two distinct facts can be drawn from this instance: First, one dare not be too dogmatic concerning the rapidity and thoroughness with which the abdomen absorbs fluid, and, second, it is evident that abdominal operations will have to be added to the contraindications already known, to the administration of certain, if not all, fluids intraperitoneally.

DR. JOSEPH C. RAY, Louisville, Ky.: My work in venoclysis has followed closely that of Dr. George A. Hendon of Louisville in adults. We have applied it also to very young persons. Venoclysis is administered by attaching a cannula into the vein for the continuous administration of fluid. The fluid which we have found most successful in administering to children has been a 5 per cent solution of dextrose given at the rate of about 2 cc. an hour for each kilogram of body weight, though it may be given at a much more rapid rate. The calcium is given with the dextrose, about 15 grains (1 Gm.) per thousand cubic centimeters of dextrose. Venoclysis is not administered in cases of marked edema or marked kidney destruction but is given in almost all cases of dehydration from any toxic condition, vomiting, or the like. It supplies fluid and nourishment when the intestinal tract fails to absorb. The stomach content at different times has been analyzed during this administration. It may be acid or it may be alkaline, but neither of these conditions has played a great part in the treatment.

DR. ALEXIS F. HARTMANN, St. Louis: I don't believe Dr. Helmick really wanted to give the impression that one should never give fluids intraperitoneally but rather that one should be careful about the time and the type of fluids to be given. His experience with peritoneal irritation and slow absorption has been the experience of others, particularly when dextrose solution has been used. Such a reaction has been so general that a number of workers have attempted to improve the dextrose solution to avoid this effect. Grulee and Schwentker have recommended the administration of dry sterilized dextrose but, as Darrow has shown, the effect of pure dextrose administration intraperitoneally is to take out salts and water from circulating blood and to make a solution within the peritoneal cavity that is chemically similar to the blood. I have had that impression for some time and therefore have attempted to make the injected fluid essentially similar to normal body fluids and blood plasma. I am also very careful about not injecting intraperitoneally fluid within twelve hours of a contemplated operation or when there seems a possibility of some abdominal complication. I also have found the continuous intravenous method of extreme value. I think better than just the 5 per cent dextrose solution, which, after all, affords only water and some food, which is also glycogenic in its action, is the mixture of equal parts of 10 per cent dextrose solution and lactate Ringer's solution, which also supplies the chemicals that may be necessary to help restore chemical changes.

SOME PHYSIOLOGIC CHANGES DURING HYPERPYREXIA INDUCED BY PHYSICAL MEANS

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AND

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NEW YORK

Forty-six years ago Dr. William H. Welch wrote: "Enlightened physicians have held the opinion that fever is a process which aids in the elimination or destruction of injurious substances which gain access to the body. The doctrine of evolution indicates that a process which characterizes the reaction of all warm blooded animals against the invasion of harmful substances has not been developed to so wide an extent and is not retained with such pertinacity without subserving some useful purpose."¹ Recent advances in the application of fever as a therapeutic agent have tended to substantiate the correctness of these ideas.

The treatment of a large series of cases by substantial elevation of body temperature within a short period of time offered us a unique opportunity for the study of the physiologic changes in the body induced in response to high temperatures. These observations are of practical value, as they permit us to rationalize this therapy on the basis of the physiologic changes which it produces and also because they may throw some light on the purposefulness of fever when it occurs in response to some insult to the body. Our observations were made on individuals suffering from a great variety of diseases. They were exposed to short-wave radiation of about 30 meters wavelength. This caused their systemic temperatures to become elevated to about 104 to 107 F. within a period varying from one to one and a half hours. This temperature elevation was then maintained for periods varying from three to six hours by trans-

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Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Welch, W. H.: The Cartwright Lectures on the General Pathology of Fever, *M. News* 52: 365, 393, 539, 565, 1888.

ferring the patient to a bed covered with a hood containing carbon filament lamps.

In this presentation it is not our purpose to discuss in detail the changes occurring during hyperpyrexia but rather to make note of some of the summarized facts that we have observed. A more critical analysis of these changes is available in the papers that have been and are soon to be published by other workers and by ourselves.

When heat producing physical energy is applied to the body in a quantity sufficient to overcome its thermoregulatory mechanism as evidenced by a rise in the temperature of the rectum, the body makes an added effort to increase its dissipation of heat. Sweating occurs. The skin surface temperature rises promptly. The skin surface temperature gradient that ordinarily exists (the temperature of the skin covering the fingers, the lower extremities and particularly that of the toes being several degrees lower than that of the torso) is eliminated, so that the various portions of the skin surface of the body reach a more or less common temperature level. This level is lower than the temperature occurring in the interior of the body even when the temperature of the surrounding air is much higher. In the fever produced endogenously, as in response to the injection of typhoid vaccine intravenously, the temperature of the skin surface of the extremities does not rise until after the systemic temperature has become markedly elevated. Subsequently the skin surface temperature rises and its gradient disappears. Bazett noted that "while on exposure to heat there is therefore evidence of diminished peripheral resistance in the skin area, in fever, particularly during the stage when the temperature is rising, the skin appears pale, the veins are constricted and vasoconstriction in this area is indicated by a temporary failure to increase heat loss in spite of the rise in body temperature."²

Because we seriously interfered with the thermoregulation of the body and produced temperatures that with further slight additions might prove dangerous, we realized the necessity for making constant observations of the systemic temperature. We found that a knowledge of the rectal temperature as indicated by an automatic registering thermometer was a sufficiently accurate guide for this purpose. When, however, we employed a technic for the differentially increased heating of the pelvic tissues (as in the treatment of gonorrhea)³ we could no longer rely on the rectal temperature as an index of body temperature. We then followed the temperature in the mouth even though we frequently noted that the temperature of this area did not bear an exact relationship to that in the rectum. As a rule it averaged about 0.7 degree F. lower than the rectal temperature. Occasionally it was higher, or the same, or more than 2 degrees F. lower.

The velocity of the blood flow becomes markedly accelerated. On one occasion we have observed an increase of more than 400 per cent.⁴ This acceleration may be accounted for by the changes in the pulse rate, in the blood pressure, and in the volume and viscosity of the blood.

The pulse rate increases. In 500 observations we found that the rate of increase averaged 8.5 beats per minute for each degree Fahrenheit of temperature elevation. Bazett noted that the pulse rate varies in experimental pyrexia according to the body temperature in a manner similar to that of fever, with an increase of from eight to ten beats a minute for each degree above 98.6 F.²

Employing the common auscultatory technic, we noted that the systolic blood pressure usually shows a slight elevation followed by a gradual fall to a point below the original level. The sound associated with the diastolic pressure becomes audible at increasingly lower levels until it is heard (though frequently changed in character) when the mercury in the manometer reaches the zero level. After a period of an hour or two the diastolic sound becomes heard at higher levels, until it reaches a point slightly above the original one.

Although these patients lose large quantities of fluid through the sweat (as much as 3 or 4 liters) their weight at the end of the treatment is about the same as that at the beginning, if they are permitted to drink as much fluid as they desire. The blood volume commonly remains about the same and so does the blood viscosity.

The respiratory rate increases. Shortly there appear apneic periods, which gradually increase in their frequency and in their time duration so that occasionally no respiratory effort is visible during a period as long as one minute. Between these apneic periods there are intervals of increased rate and depth of respiration. With a reduction of systemic temperature the apneic periods become less frequent and shorter, and gradually the original type of respiratory excursions become reestablished. These changes in the character of the respiratory movements are reflected in the altered status of the oxygen and carbon dioxide content of the blood and in its increased p_{H_2} .

The number of the white blood cells in the blood changes. The leukocytes show an initial reduction in number of about 25 to 30 per cent occurring during the first and second hour following the inauguration of hyperpyrexia. This is constantly followed by a leukocytosis the maximum of which, amounting to about 80 per cent above the initial figure, occurs from about the sixth to the ninth hour. These variations are due mainly to changes in the total number of the neutrophils, of which the staff neutrophils show the greatest increase. These changes together with the appearance of immature forms (myelocytes, metamyelocytes, premyelocytes and myeloblasts) indicate a stimulation of the bone marrow. At a later stage the monocytes increase in number and also the lymphocytes. Repeated stimulation by heat is followed by a reduction in the leukocyte response.⁵

Observations of the rate of sedimentation of the erythrocytes when this is high show a fall in the rate as a result of temperature elevation.

The reaction, the osmotic pressure and the volume relationships of the body fluid are closely dependent on properly regulated acid-base equilibrium. Hence the study of the regulatory mechanisms for the preservation of acid-base equilibrium during heavy sweating furnishes insight into the underlying mechanisms that regulate many normal physiologic processes. The

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3. Bierman, William, and Schwartzchild, Myron: *General Hyperthermia with Heat Localization by Radiotherapy*, Proc. Soc. Exper. Biol. & Med. **29**:439 (Jan.) 1932.

4. Kissin, Milton, and Bierman, William: *Influence of Hyperpyrexia on Velocity of Blood Flow*, Proc. Soc. Exper. Biol. & Med. **30**:527 (Jan.) 1933.

5. Bierman, William: *Effect of Hyperpyrexia Induced by Radiation upon the Leukocyte Count*, Am. J. M. Sc. **187**:545 (April) 1934.

changes to be recorded take place within a comparatively short time, so that one can study the factors regulating the acid-base balance without the interfering effects of the intake of food and the loss of catabolites in the feces. More important, one is enabled to watch the compensatory mechanisms whereby the loss of fixed base is reduced to a minimum at a time when the body fluids are undergoing marked changes. Since the patients treated in this investigation suffered from such varied pathologic conditions as dementia paralytica, tabes, acute gonorrhea, arthritis, scleroderma and psoriasis, we feel justified in interpreting the results that remain consistent throughout the investigation as fairly independent of the specific pathologic condition of the patient.

The regulating factor in the mechanism of adjustment to high temperature is naturally the very heavy excretion of sweat, the excretion of urine being below normal during this period. There is an enormous loss of body fluid through sweat, which in fact almost equals the entire blood volume. It is known that miners during work can lose as much as 3,000 cc. of body fluid an hour, and Dr. Dill informs us that during his investigations in the desert of Arizona his subjects lost as much as 5 liters an hour.⁶ During exertion and at high temperatures the lack of balance between the fixed base and the acid catabolites is augmented, and some regulatory mechanism is essential if the fixed base depots of the body are not to be drained. The base economy factor of the skin will depend on its ability to produce a fluid of lower p_H than the plasma, which acts as the carrier of catabolic products. There has been a long controversy as to the reaction of the sweat, which has only lately been settled by the introduction of the electrometric method of p_H determination. As early as 1833 Thénard reported that the sweat is definitely acid.⁷ It is known that athletes complain of stinging sweat. Marchionini⁸ showed that the divergence of the results obtained previously was due principally to the admixture of apocrine sweat, which is distinctly alkaline. This apocrine sweat is secreted by special glands in the axilla and the genitoperineal region and is very rich in odoriferous substances and cell content. During heavy sweating the proportion of this type of sweat becomes very small and results are obtained which more accurately measure the true p_H of the exocrine sweat secreted all over the body as a result of exertion and high temperature. In our cases the p_H of the sweat was determined by the hydrogen electrode method and varied between 4 and 5.

At a range of p_H as low as this, several important changes come into play. The acid substances are carried for excretion bound in the plasma and consist of carbonates, phosphates, sulphates, chlorides, the salts of organic acids and proteinates. All of these appear in the sweat except the carbonates and proteinates. The skin is impermeable to proteinates, while at a low p_H carbonates as such are practically nonexistent. Thus a wasteful expenditure of base for a catabolite that can be excreted practically base free through the lungs is avoided. This is analogous to the mechanism operating in acid urines. Thus the carbonates and proteins do not enter the sweat but remain in the plasma and exert their function in stabilizing the reaction of the blood.

The presence in the sweat of an acid that would be ionized to only a relatively low degree would allow of the excretion of a large amount of acid catabolite without undue strain on the fixed base of the body. Such an acid we found in lactic acid, which at the p_H of sweat is about 50 per cent ionized. It is peculiar that the presence of lactic acid in the sweat is scarcely mentioned in the literature. Liebermann in 1880 stated that, in patients suffering from puerperal fever, lactic acid is found in the sweat.⁹ Snapper found quantities of lactic acid of over 1 Gm. in the shirts of football players after the Olympic games.¹⁰ When it is considered that the shirts covered only a portion of the body it can be seen that the actual quantity of lactic acid must have been much higher.

In addition to its base-saving properties, lactic acid can act as a powerful buffer. It is present in the sweat in a concentration of from 250 to 350 mg. per hundred cubic centimeters. Since the chloride ion content of the plasma is about 0.35 per cent and the lactic acid 0.01 per cent it is evident that the chloride content of the plasma is about equal to that of the sweat, while the lactic acid is twenty times higher in the sweat than in the plasma. Hence the skin functions simply as an ultrafilter with regard to the chloride, while it can concentrate the lactic acid to higher amounts. It is significant that just those constituents which are excreted by the kidney at practically the same concentration as in the plasma are also excreted in the same ratio in the sweat; namely, chloride, sodium and calcium.

If a solution of weak lactic acid is titrated with its equivalent of sodium hydroxide at 37.5 C., it is found¹¹ that the p_H at the half titration point of the solution is 3.94 and the dissociation constant is 1.23×10^{-4} . Hence at the p_H of sweat, lactic acid is half dissociated. It can be excreted in an un-ionized form resulting in the sparing of 15 units of tenth normal base per hundred cubic centimeters. The absolute sparing of base is large, in view of the fact that when one is dealing with approximately 3,000 cc. of fluid, the proportion of equal parts of lactic acid and its alkali salt is the condition at which the buffer mechanism is at a maximum. This lactic acid buffer system in the sweat is analogous to the protein buffer system in the blood and the phosphate buffer system in the urine. The buffer value of the sweat is approximately that of a two hundredth-normal solution of a buffer acid whose dissociation constant equals 10^{-4} . The actual stimulus to the secretion of sweat is in dispute. It seems possible that the lactic acid formed at high temperatures and during exertion may be the actual substance initiating the process and that the lowered p_H is necessary for the proper functioning of the gland. Some mention should be made at this point of the phylogenetic homology between the mammary glands and the sweat glands.

The formation of lactic acid in the blood results in a lowering of the carbon dioxide content to levels of 30 or 25 volumes per cent, in contrast to the normal 50 or 60 volumes per cent. The stimulatory effect of the free carbon dioxide on the respiratory center soon results in a blowing off of more carbon dioxide and the patients are found to manifest extreme alkalosis,

9. Liebermann, Leo: *Chemie des Menschen*, Stuttgart, F. Enke, 1880.

10. Snapper, I. and Grünbaum, A.: Ueber die Milchsäure Ausscheidung im Harn und Schweiß während Fussballwettkämpfe, *Biochem. Ztschr.* 206: 319 (March 9) 1929.

11. Fishberg, E. H., and Bierman, William: Acid-Base Balance in Sweat, *J. Biol. Chem.* 97: 433 (Aug.) 1932.

6. Dill, D. B.: Personal communication to the authors.
7. Thénard, Louis-Jacques: *Traité de chimie élémentaire*, Paris, Crochard, 1833.
8. Marchionini, Alfred: Die Wasserstoffionenkonzentration des Schweiß, *Klin. Wchnschr.* 8: 924 (May 14) 1929.

the p_H of the blood reaching levels as high as or higher than any we have seen in a general hospital service. They approach 7.6, which is the highest value actually recorded in the literature. The low carbon dioxide tension results in a compensatory migration of the chloride from the cells into the serum in order to restore the normal values of the electrolyte distribution in accord with the Donnan equilibrium with consequent maintenance of normal osmolar relationships. The extreme loss of chloride resulting from heavy sweating naturally diminishes the chloride in whole blood, but the migration of the chloride from cells to serum results in changed distribution ratio.

The heavy sweating, by removing the chloride, results in a urine that is extremely poor in chlorides, the concentration in the urine not exceeding for the twelve hours after treatment one fourth of the content of the corresponding twelve hours before treatment.

The gastric juice shows a similar loss of chloride with a practically total cessation of secretion of free hydrochloric acid. The values of the p_H after a test meal scarcely deviates at the height of digestion from the values recorded before the meal. Certain English physiologists have shown that gastric acidity is proportional to the amount of free carbonic acid actually circulating in the blood.¹² Our results are in accord with these observations, since the increased breathing drives off carbon dioxide and the higher temperature greatly lessens its solubility, so that the lowered carbon dioxide results in a great lessening of the secretion of acid in the stomach.

The patient at a higher temperature shows a great increase in hemoglobin in response to the heightened oxygen demand. Our patients showed an increase in oxygen combining capacity from a normal of approximately 19 volumes per cent to 23 volumes per cent, which was in accord with the increased hemoglobin. In spite of this increase in the actual oxygen carrying factor of the blood, the percentage of saturation was actually lower. The difference in oxygen saturation between the venous and arterial blood was extremely small.

Because of its therapeutic significance, the effect of temperature elevation on the bacterial invaders of the human organism becomes of interest. It appears possible to exert a direct thermostatic effect on the bacteria like the gonococcus within the human body. We have on several occasions achieved a complete eradication of this organism within the female pelvis by creating a systemic hyperpyrexia plus higher local pelvic heating, to temperatures of about 110 F. which were maintained from three to four hours.¹³

Rabbits that have been immunized against staphylococci, streptococci and *Micrococcus catarrhalis* and diphtheroid bacilli showed a temporary diminution of the complement fixing antibody titer of their blood as a result of hyperpyrexia produced by physical means.¹⁴ We have also observed a reduction in the complement fixing titer in the serum of individuals suffering from gonorrhea (with positive complement fixation in the blood serum) as a result of the administration of hyperpyrexia.

SUMMARY

Observations have been made of some changes occurring in the body as a result of the elevation of its temperature by physical means. These observations included changes in the skin surface temperature, relationship between the mouth and rectal temperatures, velocity of blood flow, pulse rate, blood pressure, blood volume, blood viscosity, respiratory excursions, number of white blood cells, erythrocytic sedimentation rate, chemistry of the sweat, blood, urine, gastric contents, and the serologic reactions of the blood.

471 Park Avenue.

THE TREATMENT OF CHRONIC RHEUMATOID ARTHRITIS WITH STREPTOCOCCUS VACCINE

ON THE BASIS OF SKIN SENSITIVITY

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The relation of streptococci and streptococcal infection to chronic rheumatoid arthritis remains in an uncertain and far from established position in spite of the many diligent investigations pursued during the past decade. Not only do students of the disease differ regarding the interpretation of experimental results but the results themselves lack uniformity. If a relationship exists, it might do so in one of three ways: 1. The joint lesions may be the result of the localization of streptococci circulating in the blood stream. 2. The joint lesions may be due to toxins liberated from some focus of streptococcal infection elsewhere in the body. 3. The joint reactions may be allergic in nature and represent hypersensitivity of the joint tissues to streptococci, resulting from low grade infections or from the persistence of foci of infection in the body.

If the first relation obtains, then the nature of the joint change and the method of its production are easily understood, for the condition is a metastatic infection. If the second, then a high degree of specificity is implied. If the third, then an equally high degree of specificity exists, or else one must assume with Clawson and Wetherby¹ that there is specificity for a species rather than for a strain. If the joint changes are regarded as allergic it is at times difficult to explain just how the contact of antigen with antibody comes about in the allergic joint.

The announcement by Cecil, Nicholls and Stainsby² in 1929 that they had isolated an atypical hemolytic streptococcus from the blood stream and joints of over two thirds of their patients with chronic rheumatoid arthritis immediately aroused great interest. Not only was the percentage of their positive cultures far larger than that obtained by previous investigators, but the report was particularly noteworthy since the organism isolated was hemolytic. The ability of their "typical strain" to hemolyze blood was at variance with the cultural characteristics of the organisms previously

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13. Bierman, William, and Horowitz, E. A.: General Hyperthermia with Heat Localization by Radiotherapy in the Treatment of Pelvic Inflammatory Disease, *New York State J. Med.*, Feb. 15, 1933.

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From the Biological Division of the Department of Medicine of the Johns Hopkins Medical School and Hospital.

Read before the American Association for the Study and Control of Rheumatic Diseases, Cleveland, June 11, 1934.

1. Wetherby, Macnider, and Clawson, B. J.: Chronic Arthritis with Special Reference to Intravenous Therapy, *Arch. Int. Med.* 49: 303 (Feb.) 1932.

2. Cecil, R. L.; Nicholls, E. E., and Stainsby, W. J.: Bacteriology of Blood and Joints in Chronic Infectious Arthritis, *Arch. Int. Med.* 43: 371 (May) 1929.

isolated by Moon and Edwards,³ Richards,⁴ Hadjopoulos and Burbank⁵ and others. These investigators had reported finding *Streptococcus viridans* in blood cultures, although in only a small number of cases. Cecil, Nicholls and Stainsby were able, by the intravenous injection into rabbits of their "typical" hemolytic streptococcus, to produce an arthritis analogous to rheumatoid arthritis in human beings, without associated visceral lesions, and to recover the organism from the blood stream and joints of their inoculated animals.

The results of Cecil and his co-workers have been confirmed by some investigators and denied by others.

TABLE 1.—Results of Agglutination Tests with Strains of Hemolytic Streptococci

	Total Number of Cases	Total Positive Agglutinations	AB ₁₂		NY ₆	
			Living Antigens	Heat Killed	Living Antigens	Heat Killed
Chronic rheumatoid arthritis.....	51	46	41	39	42	39

For instance, Klugh⁶ was able to isolate a streptococcus in an even larger proportion of cases, namely 72 per cent, Gray and Gowen⁷ in 58 per cent, and Wetherby and Clawson¹ in 50 per cent. In these reports the organism is classified as a *Streptococcus viridans*. On the other hand, Dawson, Olmstead and Boots⁸ were able to recover a streptococcus from only 2.5 per cent of their cases, and Nye and Waxelbaum⁹ obtained no streptococci in any of their cases of either acute or chronic infectious arthritis. Lichtman and Gross¹⁰ grew streptococci from only 9 per cent of their series and considered this percentage no greater than that of the "transient streptococcemias found in the routine blood culture work of a general hospital."

Although the lack of uniformity in the results obtained from blood cultures is striking, the presence of serum agglutinins for hemolytic streptococci in a very large percentage of cases of rheumatoid arthritis has been reported by numerous observers. Dawson, Olmstead and Boots¹¹ found that 67 per cent of 157 cases possessed this property in their serums to a dilution varying from 1:20 to 1:2,560 or higher. Nicholls and Stainsby¹² found streptococcus agglutinins for their "typical strains" present in the serum of practically all patients with chronic infectious arthritis. Keefer, Myers and Oppel¹³ found that 54.5 per cent

of their patients with rheumatoid arthritis showed blood serum agglutinins for the four strains of hemolytic streptococci used.

In approaching the subject from another angle, it has been reported that patients suffering from rheumatoid arthritis show positive skin reactions to killed streptococci and their fractions in a larger percentage than do healthy persons or those suffering from some other disease. Birkhaug¹⁴ found that 47 per cent of sixty-nine cases of chronic arthritis showed marked skin reactions to both nonhemolytic and hemolytic streptococci. Myers, Keefer and Oppel¹⁵ obtained positive reactions to the nucleoprotein of a strain of *Streptococcus scarlatinae* in 70 per cent of their cases of rheumatoid arthritis, whereas 44 per cent of their control series gave positive reactions. In 32 per cent of the cases of rheumatoid arthritis the reaction was marked, whereas it was marked in but 12 per cent of the controls. Wetherby and Clawson¹ found that 91.8 per cent of their cases of chronic arthritis gave positive reactions when tested intradermally with *Streptococcus viridans* obtained from the blood of a patient with acute rheumatic fever. A positive reaction was obtained in only 49.6 per cent of their controls. They felt that the positive skin test probably indicated hypersensitiveness to the strain of streptococcus used and that the percentage of positive reactions was significantly higher in chronic arthritic patients than in a series of controls.

BLOOD CULTURES

The recovery of streptococci from the blood stream and joints of such a large percentage of cases of rheumatoid arthritis is a matter of great importance. If the observations are confirmed, the arthritis must be regarded as probably metastatic. At the Johns Hopkins Hospital I have been unable to duplicate the results of Cecil, Nicholls and Stainsby. Using essentially their technic ninety-four blood cultures in ninety-one cases

TABLE 2.—Highest Dilution of Serums in Which Agglutination Occurred*

	Dilutions					
	1:20	1:40	1:80	1:160	1:320	1:640 1:1,280
AB ₁₂ A.....	1	2	10	11	8	5 4
AB ₁₂ HK.....	1	2	16	8	7	3 2
NY ₆ A.....	1	2	11	10	8	7 3
NY ₆ HK.....	2	7	10	6	5	7 2

* A denotes living antigens; HK, heat killed antigens.

of chronic rheumatoid arthritis of the following varieties were made: seventy cultures in sixty-seven cases of rheumatoid arthritis; eight cultures in eight cases of combined arthritis; fifteen cultures in fifteen cases of atypical rheumatoid arthritis, and one culture in one case of Still's disease.

Two departures, however, were made from the technic of Cecil, Nicholls and Stainsby: 1. The blood was collected and allowed to clot in the 500 cc. Erlenmeyer flask in which the culture was to be made. Coagulation was allowed to take place with the flask in a tilted position so that the clot became adherent to the side of the flask and later could easily be broken up. After standing over night the expressed serum was

3. Moon, V. C., and Edwards, S. R.: Blood Cultures in Rheumatoid Arthritis, *J. Infect. Dis.* **21**:154, 1927.

4. Richards, J. H.: Bacteriologic Studies in Chronic Arthritis and Chorea, *J. Bacteriol.* **5**:511 (Sept.) 1920.

5. Hadjopoulos, L. G., and Burbank, R. F.: Preliminary Study Bearing on Specific Causative Factors of Multiple Infective Arthritis, *J. Bone & Joint Surg.* **9**:278 (April) 1927.

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7. Gray, J. W., and Gowen, C. H.: Role of Streptococcus in Arthritis Deformans, *Am. J. M. Sc.* **152**:682 (Nov.) 1931.

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9. Nye, R. N., and Waxelbaum, E. A.: Streptococci in Infectious (Atrophic) Arthritis and Rheumatic Fever, *J. Exper. Med.* **52**:885 (Dec.) 1930.

10. Lichtman, S. S., and Gross, Louis: Streptococci in Blood in Rheumatic Fever, Rheumatoid Arthritis, and Other Diseases, Based on a Study of 5,233 Consecutive Blood Cultures, *Arch. Int. Med.* **49**:1078 (June) 1932.

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12. Nicholls, Edith E., and Stainsby, W. J.: Streptococcal Agglutinins in Chronic Infectious Arthritis, *J. Clin. Investigation* **10**:323 (June) 1931.

13. Keefer, C. S.; Myers, W. K., and Oppel, T. W.: Streptococcal Agglutinins in Patients with Rheumatoid (Atrophic) Arthritis and Acute Rheumatic Fever, *J. Clin. Investigation* **12**:267 (March) 1933.

14. Birkhaug, K. E.: Skin Hypersensitiveness of Patients with Rheumatic Fever and Chronic Arthritides to Filtrates, Autolysates and Bacterial Suspensions of Streptococci, *J. Infect. Dis.* **44**:363 (May) 1929.

15. Myers, W. K.; Keefer, C. S., and Oppel, T. W.: Skin Reactions to Nucleoprotein of Streptococcus Scarlatinae in Patients with Rheumatoid Arthritis and Rheumatic Fever, *J. Clin. Investigation* **12**:279 (March) 1933.

drawn off with a pipet in one manipulation. The beef heart infusion broth used as the culture medium was then transferred to the flask in which the blood had been collected and had clotted. After the addition of the broth the clot was broken up into a number of pieces by strokes of a sterile pipet. 2. Subcultures were made at ten day intervals instead of five and during the month's incubation the flask was opened only three times. The same medium was used in making the joint cultures and they were subcultured also at ten day intervals. The results of our cultures were as follows: *Streptococcus viridans* was obtained from one case of rheumatoid arthritis; diphtheroids from three cases of rheumatoid arthritis and from one case of atypical rheumatoid arthritis; staphylococci were obtained from four cases and gram-positive bacilli were obtained from three cases.

In only one instance was a streptococcus obtained, and this proved to be *Streptococcus viridans*. However, we were unable to obtain this, or any other organism when the culture was repeated. The diphtheroids occupy the usual uncertain position with regard to their significance. The staphylococci and gram-positive bacilli were considered contaminations.

Fourteen joint cultures were made in fourteen cases of rheumatoid arthritis. Twelve of these were negative, and two were contaminated with mold.

AGGLUTININ REACTIONS

We then tested the serums of fifty-one patients with rheumatoid arthritis for the presence of agglutinins for hemolytic streptococci. These tests were made with both living and heat killed antigens. The tubes were placed in the water bath at 56 C. for two hours and then transferred to the icebox, where they remained during the night and were read the following morning. The serums were tested as a routine for the presence of agglutinins for AB₁₃, a "typical" strain obtained from Cecil, Nicholls and Stainsby and for the scarlet strain NY₅. The results are shown in the accompanying tables.

In our series, forty-six patients, or 90 per cent, were found to possess agglutinins in their serum in the dilution indicated in table 2. However, the extent of the dilution in which agglutination was obtained was somewhat lower than that reported by other observers. Six per cent did not show any reaction.

SKIN REACTIONS

In order to determine the strain of streptococcus to which our cases of rheumatoid arthritis showed the maximal skin reaction, we made intradermal tests in fifty-five cases. The tests were not done for the purpose of comparing either the frequency or the intensity of skin reactions in arthritic patients with those in non-arthritic patients; therefore we have no series of controls. Our object was to determine the strain and the type of streptococcus to which the patients of our series showed the maximal skin reaction, and to use this information as a guide to vaccine treatment. We confined the tests to streptococci, not because these organisms have been so frequently recovered from the blood and joints by others, although completely missed by us, but because of the serum agglutinins for hemolytic streptococci which have been found with such constancy in these patients by all observers.

The antigens used in the tests were prepared from strains of streptococci, both hemolytic and green, obtained from foci of infection in arthritic patients; a

green strain isolated from a knee joint, later referred to as "Tschetter"; AB₁₃, the so-called typical strain obtained from Cecil, Nicholls and Stainsby, and stock laboratory strains. No tests were made with autogenous strains.

The organisms were grown in meat infusion broth for twenty-four hours. A portion of the culture was then centrifugated and the precipitated organisms were suspended in salt solution. The whole organism was used in preparing the suspension and appropriate dilutions were made, so that 0.1 cc. of the salt solution suspension contained approximately one million organisms. The suspensions were placed in the water bath at 56 C. for one hour, at the end of which time cultures were made and allowed to incubate for forty-eight hours. If the cultures remained sterile the suspensions were then ready for use. No preservative was added.

TABLE 3—Skin Reactions to Intradermal Injections of *Streptococci* in Fifty-Five Cases

Number reacting to hemolytic streptococci alone	24
AB ₁₃ , Cecil strain gave maximal reaction in	6
NY ₅ , scarlet strain gave maximal reaction in	7
Maith, septicemia gave maximal reaction in	5
Lee, septicemia with arthritis gave maximal reactions in	6
	24
Number reacting to viridans streptococci alone	3
Lindsay gave maximal reaction in	2
Waller gave maximal reaction in	1
	3
Number giving maximal reaction to hemolytic streptococci, but reacting to both types	25
AB ₁₃ gave maximal reaction in	2
NY ₅ gave maximal reaction in	7
Maith gave maximal reaction in	10
Lee gave maximal reaction in	6
	25
Number giving maximal reaction to viridans streptococci, but reacting to both types	3
Giordani gave maximal reaction in	1
Tschetter, joint, gave maximal reaction in	2
	3
Total number with maximal reaction to hemolytic streptococci	49, 90%
AB ₁₃ gave maximal reaction in	8
NY ₅ gave maximal reaction in	14
Maith gave maximal reaction in	15
Lee gave maximal reaction in	12
	49
Total number with maximal reaction to viridans streptococci	6, 10%
Tschetter gave maximal reaction in	2
Giordani gave maximal reaction in	1
Lindsay gave maximal reaction in	2
Waller gave maximal reactions in	1
	6
	55

The patients were tested with from fifteen to twenty suspensions prepared in this way. One-tenth cc. of the suspension was injected intradermally on the volar surface of the forearm and the results were read from eighteen to twenty-four hours later. An area of erythema 1 cm. in diameter or larger was considered a positive reaction. In most instances the reaction was larger, varying from 1 to 5 cm. in diameter, in the center of which was an area of induration varying from 0.5 to 2 cm. in diameter in direct proportion to the size of the area of erythema. In all instances the reaction was tuberculin-like in appearance and in one instance was sufficiently violent to progress to the stage of necrosis in the central portion. In all, fifty-five cases of chronic rheumatoid arthritis were tested. The results of the tests are shown in table 3.

It will be seen that in this series all the patients gave a positive skin reaction to at least one strain of streptococcus. The number of strains to which each subject reacted varied; in but three instances did a reaction occur to only a single strain; the average number of

positive reactions was to four strains and the maximum number to twelve strains. In twenty-four instances, or 43 per cent, there was a positive reaction to one or more hemolytic strains only. No single strain predominated in causing the maximal reaction, these marked reactions being divided equally among four of the strains. In only three instances did a positive reaction occur to a viridans strain alone, and in two of these only single positive reactions were obtained. In twenty-eight cases, positive reactions were obtained with antigens of both hemolytic and green strains. In this group twenty-five showed the maximal reaction to a hemolytic strain, whereas in only three was the greatest reaction obtained with a green strain. The distribution among the hemolytic strains was not uniform, ten of the twenty-five showed the maximal reaction to Maith strain, obtained from a case of streptococcal septicaemia; NY₆, a scarlet strain and Lee, a strain obtained from a case of streptococcal septicaemia with arthritis, showed the maximal reaction in about an equal number, seven with the former and six with the latter; AB₁₃ showed the maximal reaction in two instances. Therefore, in a series of fifty-five cases, all reacting intradermally to one or more strains of the streptococci with which they were tested, forty-nine, or 90 per cent, showed the maximal reaction to a hemolytic strain, whereas only six, or 10 per cent, showed the greatest reaction to a green strain.

I shall make no attempt to interpret these results in terms of causation but wish merely to record the results. These results were useful for our purpose, since they indicated clearly to which particular strain of streptococcus, among the many used, each patient was especially sensitive.

VACCINE TREATMENT

The problem we had set ourselves was to determine the changes that would occur in the diseased joints concomitantly with a gradual reduction of skin sensitivity following the repeated injection of the antigen to which the patient was especially sensitive. An analogous situation exists in certain instances of choroiditis. This lesion is essentially inflammatory but nonspecific. It is generally thought that these choroidal lesions are in some way related to tuberculous infection, but speaking strictly one cannot say that they are tuberculous, since they possess none of the characteristic histologic features of tuberculous disease of the choroid. The assumption that they are related to tuberculosis rests chiefly on the fact that these inflammatory reactions in the choroid occur nearly always in the presence of marked tuberculin hypersensitivity as demonstrated by the intradermal test, although in most instances there is no demonstrable tuberculous disease elsewhere in the body. All that one can say definitely is that a choroiditis exists in the presence of a high grade of tuberculin hypersensitivity, and that the lesions almost always do well when the patients are desensitized to tuberculin.

Swift¹⁶ and his co-workers have shown that subcutaneous injections of killed nonhemolytic streptococci tend to sensitize rabbits, whereas similar injections given intravenously tend to make them immune. This observation decided us to use the intravenous route in giving the treatments. We were solicitous in our efforts to avoid general reactions and at the same time to minimize the possibility of the effects of foreign

protein shock reactions such as follow, for instance, the intravenous injection of typhoid vaccine.

The vaccine was prepared for each case from the strain to which the maximal skin reaction was obtained. It was a heat killed salt solution suspension of organisms, previously grown in beef infusion broth for twenty-four hours, so diluted for the initial dose that 0.5 cc. contained approximately five million heat killed organisms. No preservative was added.

An intravenous injection of 0.5 cc. was given as the initial dose and in most instances little or no constitutional reaction followed the injection. No set rule was followed in administering subsequent doses of the vaccine. The increase in dosage was gaged entirely by the patient's response. When any constitutional reaction occurred, manifested by fever, the dose was very slowly increased, keeping below the amount sufficient to produce fever. Otherwise the injections were made at four day intervals and each dose increased by 0.5 cc. If on account of a severe skin reaction it was feared that a constitutional reaction might occur, the strength of the initial dose of vaccine was decreased and the increase in dosage carefully gaged by the patient's response. In this way constitutional reactions were kept at a minimum, indeed almost entirely eliminated.

During the first period of treatment the patients were kept in the hospital, in most instances in bed, a necessary precaution in many cases on account of the severe involvement of the knee joints. No other treatment was employed except the use of salicylates and sedatives as was necessary for the alleviation of pain. The injection of vaccine was continued at four day intervals during the stay in the hospital, which was from four to eight weeks' duration. Following discharge the interval was lengthened to seven days and the patients returned to the outpatient department for treatment, except in those instances in which the involvement of the joints of the lower extremities made this impossible.

Twenty-eight cases have so far been treated for periods ranging from two months to over one year. Of this number twenty-five patients had definite chronic rheumatoid arthritis, three suffered from combined arthritis in which the rheumatoid features predominated. In all cases symptoms and signs of the disease had been present for at least six months, the average duration being approximately two years. All foci of infection had been removed and sufficient time allowed to elapse to convince us that no benefit or further benefit would follow. Under treatment, twenty-one cases, or 75 per cent, have shown evidence of definite improvement.

The improvement manifested itself by reduction of pain, reduction of soft tissue swelling and increased mobility of the joint. In joints in which bone destruction and true ankylosis had occurred, the mobility could not be increased but pain and soft tissue swelling were reduced. It has not been unusual to see fusiform swelling of the fingers decrease in size and in some instances disappear altogether. Eight patients were bedridden when treatment was begun; five of these are now out of bed and able to move about; two of the remaining three have been under treatment barely two months; the third has been treated for five months. The two under treatment only two months have shown definite improvement, whereas the one treated for five months has not been appreciably benefited. In all three cases there was extensive involvement of the knees.

¹⁶ Swift, H. F.: Pathogenesis of Rheumatic Fever, *J. Exper. Med.* 39: 497 (April) 1924.

Although constitutional reactions have been absent or minimal, the patients have rather uniformly complained of focal reactions, indicated by increased pain in the involved joints for twenty-four hours after the injections. Following this reaction the joints have been less painful. Amelioration of symptoms has appeared gradually, becoming definite usually after from three to five weeks, and from then on progressing slowly. The course of improvement has not been uniform in all cases; at times joints flare up during treatment but subside in a shorter time than is usual in the spontaneous remissions of chronic arthritis. Although improvement has not been obtained in all cases, in no instance has there been any untoward effect; nor has an aggravation of the condition resulted from the treatment.

Seven cases have failed to show any definitely favorable response. In three of these we were disappointed because in the light of the response made by other patients it seemed reasonable to anticipate improvement. Two of these, however, have been under treatment only a short time. Two of the remaining five cases gave a history of long standing joint involvement with pain as the chief symptom, whereas the inflammatory process was relatively inactive. In the remaining two cases a combined arthritis was present.

Twenty-six of the cases showing the maximal skin reaction to a hemolytic strain have been treated with hemolytic streptococcus vaccine. In nine instances the Maith strain, obtained from a case of hemolytic streptococcus septicemia, was used. In nine cases NY₆, a scarlet strain, was used; in four, AB₁₃, a "typical" strain furnished us by Cecil, Nicholls and Stainsby; in four, the Lee strain, obtained from a case of hemolytic streptococcus septicemia with acute infectious arthritis. The viridans strains used were Tschetter, isolated from a knee joint, and Waller, a stock laboratory strain from an unknown source.

During the course of treatment the skin reaction to the strain employed has uniformly diminished in intensity and frequently disappeared entirely. The agglutinating power of the patient's serum has materially increased, and those patients whose serum failed to agglutinate the organism before treatment was begun gradually developed agglutinins for the organism used in treatment. The increase in titer varied from 1:1,280 to 1:10,240 and was occasionally as high as 1:20,480. In one of the cases in which a green strain was used, agglutination was absent before treatment was given but appeared shortly after and rose gradually until it was present in a dilution of 1:10,240. In the second case no agglutination of the organism used in treatment has ever developed.

We determined the sedimentation rate of the erythrocytes in only a small number of our cases. In these few the rate decreased as improvement took place but in none did it reach normal.

COMMENT

Our efforts to recover streptococci from the blood and joints of cases of chronic rheumatoid arthritis have completely failed. In one instance a *Streptococcus viridans* was obtained but it was present for only a short time, and I feel that this must be regarded as a transient bacteremia. In reporting these results I realize that the limited number of cases does not warrant any sweeping conclusions but wish merely to record our failure to corroborate the work of those investigators who find streptococci in the blood and

joints in a large proportion of cases of rheumatoid arthritis.

On the other hand the presence of agglutinins for hemolytic streptococci in the serums of patients suffering from chronic rheumatoid arthritis seems well established. A positive reaction does not indicate of necessity a causal relationship between hemolytic streptococci and rheumatoid arthritis but it does suggest that streptococci play a rôle in the disease. Agglutination may be due to the presence of natural rather than acquired or specific agglutinins, as Dawson, Olmstead and Boots¹¹ suggest, but the frequency with which it occurs in rheumatoid arthritis is the most incriminating evidence thus far produced against the streptococcus in this disease and merits some consideration.

The presence of skin sensitivity to streptococci does not necessarily indicate that there is also joint sensitivity or general sensitivity. The objections raised by Short, Dienes and Bauer¹⁷ to the interpretation of skin reactions to autogenous vaccines, namely, that they may indicate varying irritability of the patients' skins, natural toxicity of the bacterial species or perhaps sensitization to certain bacterial groups, must be considered. However, the effect on the reactions of subsequent treatment with vaccines indicates that they do represent a specific skin sensitivity to the strain used.

I am not prepared to offer an interpretation of the changes occurring after intravenous injection of vaccine. I do not know that the diminution and disappearance of the skin reaction is a measure of desensitization or that the increase in the agglutinating power of the patient's serum is a measure of immunity. However, I do feel that the skin reaction is the most definite evidence of hypersensitiveness we could obtain and wish to cite the observations we have made and record the improvement which has taken place in the patients we have treated. I realize that any claim to specificity could be justifiably disputed and that it is not beyond the realm of possibility that the improvement brought about is the result of treatment which is nonspecific in character. We have succeeded in eliminating or at least minimizing the feature of non-specific therapy to which is commonly attributed the benefit derived from vaccine treatment. The evidence of improvement has appeared fairly early, but the long continued use of vaccine may be of further value.

SUMMARY

1. Ninety-four blood cultures in ninety-one cases of rheumatoid arthritis yielded *Streptococcus viridans* in one case, diphtheroids in four cases, staphylococci in four cases and gram-positive bacilli in three cases.
2. Fourteen joint cultures in fourteen cases of rheumatoid arthritis were negative.
3. The serums of forty-six, or 90 per cent, of fifty-one cases of rheumatoid arthritis were found to possess agglutinins for hemolytic streptococci.
4. All of fifty-five cases of rheumatoid arthritis gave positive skin reactions to one or more strains of streptococci.
5. Twenty-one of twenty-eight cases of rheumatoid arthritis have shown improvement following intravenous injections of streptococcus vaccine prepared from the strain to which the skin was most sensitive.

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IS THERE A SCARLET FEVER
TOXOID?

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In early studies of diphtheria toxin, it was observed that on standing the toxin undergoes spontaneous change resulting in loss of toxicity. But this loss of toxicity is not accompanied by corresponding loss in ability to neutralize diphtheria antitoxin. In elaborating his theory of immunity, Ehrlich employed the term "toxoid" to designate this nontoxic substance which is still able to bind antitoxin. The French prefer the term "anatoxin" for this substance. The change from toxin to toxoid, which takes place spontaneously in solutions of diphtheria toxin, may be hastened by addition of certain chemicals. Ramon used formaldehyde to accelerate and complete the change from diphtheria toxin to toxoid and utilized the formalized product for active immunization. He found the same method useful in obtaining toxoid from tetanus toxin. Toxoids that have lost their toxicity but retain the ability to neutralize and stimulate the production of antitoxin are satisfactory agents for active immunization against some diseases in which soluble toxins are concerned.

Scarlet fever toxin kept at icebox temperature in insoluble glass containers does not undergo spontaneous loss of toxicity comparable to the change noted in diphtheria toxin. However, attempts have been made to obtain a scarlet fever toxoid through treatment of the toxin with formaldehyde.

In this article the expression "solution of formaldehyde" is used in the sense of the U. S. Pharmacopeia to designate a solution containing not less than 37 per cent of formaldehyde gas.

Zoeller¹ studied the effect of formaldehyde on scarlet fever toxin in solutions to which he added from 0.25 to 1 per cent of a 40 per cent solution of formaldehyde before storing at 38 to 39 C. for a period of thirty days. From standardization by means of skin tests before and after treatment with formaldehyde, Zoeller determined that addition of 0.25 to 0.5 per cent solution of formaldehyde did not produce appreciable attenuation of the toxin. One per cent solution of formaldehyde caused considerable attenuation, but detoxification was not complete even when 2 per cent solution of formaldehyde was used. Sparrow and Celarek² added 0.5 per cent solution of formaldehyde and stored the preparation six weeks at 38 C. They then used this material in immunization experiments and reported 88 per cent of 143 susceptible children immunized by 3 cc. of the formalized toxin. Smith³ titrated his toxin before and after treatment with formaldehyde. Like Zoeller, Smith found marked loss of toxicity following addition of 2 per cent solution of formaldehyde and but slight detoxification in mixtures containing from 0.5 to 1.0 per cent. None of Smith's preparations were completely detoxified. Injecting 3 cc. of formalized toxin, he obtained immunity in from 52 to 56 per cent. Debré and Ramon⁴ used

0.5 per cent of a 40 per cent solution of formaldehyde and stored the preparation at from 38 to 40 C. for from one month to six weeks. In subsequent immunization experiments they found that the less toxic preparations that caused fewer reactions produced less immunization than the more toxic samples. Mureddin⁵ used a formalized mixture of scarlet fever and diphtheria toxin to which 0.4 per cent solution of formaldehyde was added before incubation at from 38 to 39 C. for only four to five days. He injected graduated doses of this mixture, totaling 3 cc. in children susceptible to both scarlet fever and diphtheria, and reported that 81 per cent developed negative skin tests, indicating immunity to both diseases. Mureddin standardized the diphtheria but not the scarlet fever toxin before and after treatment with formaldehyde. Futagi⁶ employed scarlet fever toxin to which 0.4 per cent of a 30 per cent solution of formaldehyde was added before storage at temperatures ranging from 40 to 48 C. for periods varying from seven to sixty days. With these different preparations of formalized toxin injected in four doses totaling 3.8 cc., the immunity obtained varied from 25 to 84.5 per cent, compared with 99.3 per cent following administration of 26,000 skin test doses of unmodified toxin. This author did not state the titer of the toxin after treatment with formaldehyde. Veldee⁷ of the United States Public Health Service recommends use of the acetone insoluble portion of the toxin containing broth filtrate redissolved in broth, treated with 0.4 per cent solution of formaldehyde and stored at 37 C. for about sixty days. Veldee attempts to determine the amount of residual toxin by means of skin tests on rabbits and advises the further addition of 0.05 per cent solution of formaldehyde if tests on rabbits indicate insufficient detoxification. He reported 87.3 per cent susceptibles immune on retest after three doses consisting of 0.1, 0.5 and 1 cc. of his formalized preparation.

In considering results of previously published work, it is noted that none of the authors were able completely to detoxify scarlet fever toxin, though some used as high as 2 per cent of a 40 per cent solution of formaldehyde. Zoeller and Smith determined the degree of detoxification with different amounts of formaldehyde and agree that there is comparatively little loss of toxicity following the addition of the smaller amounts of solution of formaldehyde up to 0.5 per cent. In this connection it is significant that preparations of scarlet fever toxin containing the largest amounts of formaldehyde gave the lowest percentage of immunity following injection of the formalized toxin, while the best results have been reported by authors who used less than 0.5 per cent solution of formaldehyde. This suggests that reduction in toxicity on addition of formaldehyde to scarlet fever toxin may not be due to conversion of the toxin into a true toxoid. The better results obtained with toxin treated with smaller amounts of formaldehyde might be due to the presence of larger amounts of unaltered toxin remaining in such solutions.

Apparently most investigators have been so influenced by analogy between the soluble toxins of the diphtheria bacillus and the scarlet fever hemolytic streptococcus that they have assumed the partial loss of toxicity on treatment of scarlet fever toxin with

1. Zoeller: *Compt. rend. Soc. de biol.* **92**: 244-245 (Feb.) 1925.2. Sparrow, H., and Celarek, J.: *Compt. rend. Soc. de biol.* **97**: 957-959 (Oct. 13) 1927.3. Smith, J.: *Brit. J. Exper. Path.* **9**: 49-54 (April) 1928.4. Debré, R.; Ramon, G., and Petot, C.: *Rev. d'hyg.* **52**: 881-898 (Dec.) 1931.5. Mureddin: *Compt. rend. Soc. de biol.* **103**: 1200-1202 (May 1) 1930.6. Futagi, Y.: *J. Immunol.* **19**: 451-456 (Nov.) 1930.7. Veldee, M. V.: *Pub. Health Rep.* **48**: 549-565 (May) 1933.

formaldehyde was necessarily due to conversion of the toxin into toxoid. Without other basis, some have described the formalized toxin as "scarlet fever toxoid" and, in interpreting the results of immunization experiments, have ignored the possible effect of the unaltered toxin remaining in the formalized preparations. Veldee carried the analogy further in advising the addition of alum to precipitate the scarlet fever toxoid before injection.

The following experiments, begun in 1927, were undertaken to learn whether the addition of formaldehyde to scarlet fever toxin results in the formation of a scarlet fever toxoid, nontoxic but capable of binding scarlet fever antitoxin, and capable of stimulating the production of antitoxin when injected into susceptible individuals.

IMMUNIZATION EXPERIMENTS WITH FORMOLIZED TOXIN

1. One liter amounts of a broth culture filtrate containing toxin specific to scarlet fever were placed in glass stoppered Pyrex flasks. A neutral 37 per cent solution of Merck's reagent formaldehyde was added in 1, 2, 3, 4, 5, 6, 8 and 10 cc. amounts to different flasks, and to one flask no solution of formaldehyde was added. All flasks were sealed and kept in an incubator at 38 C. for a period of six weeks. At the end of this time the toxin remaining unchanged in each flask was titrated by means of skin tests on susceptible human beings compared with the results of skin tests made simultaneously on the same individuals with one standard skin test dose of scarlet fever toxin. Toxin in the flask to which no formaldehyde had been added contained 37,500 skin test doses per cubic centimeter. There was some loss of toxicity in all flasks containing formaldehyde, but detoxification was not complete in any flask. Loss of toxicity was in proportion to the amount of formaldehyde. Samples from flasks to which less than 0.5 per cent solution of formaldehyde had been added still contained more than half of the original amount of toxin. The greatest loss of toxicity occurred in the flask to which 1 per cent solution of formaldehyde had been added. Accurate standardization showed that in this flask the original toxicity of 37,500 skin test doses per cubic centimeter had been reduced to 4,000 skin test doses per cubic centimeter. This material was used in subsequent immunization experiments in a total dosage ranging from 2.675 to 13.675 cc. In control experiments 3.2 cc. of toxin from the flask containing no formaldehyde were injected in five graduated doses. Of sixty-seven susceptible young adults between the ages of 18 and 30 years in this control series, 91 per cent were immune to one skin test dose on retest two weeks after the last injection. At first the formalized toxin was injected undiluted in doses of 0.125, 0.5 and 2 cc., but when it was found that this dosage did not confer immunity in most cases the amount injected was gradually increased up to 13.675 cc. given in the following doses of undiluted material: first dose, 0.125 cc.; second dose, 0.5 cc.; third dose, 2 cc.; fourth dose, 3 cc.; fifth dose, 4 cc.; sixth dose, 4 cc.

Fifteen, or 75 per cent, of twenty persons who received the larger dosage of formalized toxin developed immunity to one skin test dose of toxin.

Before the addition of formaldehyde, the 13.675 cc. had contained 512,812.5 skin test doses of toxin; yet injection of this amount of formalized toxin conferred less immunity than injection of 119,875 skin test doses of unmodified toxin; moreover, the 13.675 cc. of formalized toxin still contained 54,700 skin test doses of unaltered toxin which might account for all of the immunity obtained.

2. In the next experiment another lot of formalized toxin was used. This toxin originally contained 40,000 skin test doses per cubic centimeter and after incubation for two months with 0.8 per cent solution of formaldehyde the toxicity was reduced to 2,000 skin test doses per cubic centimeter. Injected in five doses of 0.25, 1, 3, 3 and 3 cc., this preparation conferred immunity in 52 per cent of 75 susceptible young adults.

The total volume of 10.25 cc. had contained 410,000 skin test doses of toxin before treatment with formaldehyde and after treatment it still contained 20,500 skin test doses of unaltered toxin. In a control series of seventy-nine young adults, the untreated toxin given in five doses, totaling 2.9 cc. and containing 115,500 skin test doses, immunized 91 per cent.

This same formalized preparation was then employed in two schools, where nose and throat cultures were made on blood agar plates and all children showing hemolytic streptococci in nose or throat culture were excluded from school until immunization of the noninfected susceptibles had been completed. The 207 susceptible children between the ages of 5 and 19 years were divided into two groups. One group received the formalized toxin in the first three immunizing doses and untreated toxin in the last two doses as follows:

First dose of formalized toxin.....	0.25 cc.
Second dose of formalized toxin.....	1 cc.
Third dose of formalized toxin.....	4 cc.
Fourth dose of untreated toxin.....	0.625 cc.
Fifth dose of untreated toxin.....	2 cc.
Total	7.875 cc.

The other group received unmodified toxin of the same lot used in producing the formalized toxin in the following dosage:

First dose of untreated toxin.....	0.0125 cc.
Second dose of untreated toxin.....	0.05 cc.
Third dose of untreated toxin.....	0.2 cc.
Fourth dose of untreated toxin	0.625 cc.
Fifth dose of untreated toxin.....	2 cc.
Total	2.8875 cc.

Since this formalized toxin contained 2,000 skin test doses of unaltered toxin per cubic centimeter, the amount of unmodified toxin injected in each series was the same: 115,500 skin test doses. But in addition to the unmodified toxin injected in both groups, the first group received 199,500 skin test doses of detoxified toxin. If the detoxified portion of the formalized toxin contained toxoid capable of stimulating the production of antitoxin, the group that received 5.25 cc. of the formalized toxin in addition to the unmodified toxin might be expected to show more immunity than the second group, which received only the unmodified toxin. This was not the case. The development of immunity in the two groups was practically the same, being 95.3 per cent in the 103 children who received only the untreated toxin and 94.2 per cent in the 104 children who received the formalized toxin in addition to the unmodified toxin.

3. In the next experiment a third preparation was employed. This toxin also originally contained 40,000 skin test doses per cubic centimeter and its toxicity was reduced to 4,000 skin test doses per cubic centimeter after treatment with formaldehyde. It was used in two orphanages after nose and throat cultures as well as skin tests had been made on every one and all those infected with hemolytic streptococci had been quarantined from noninfected susceptibles. In these institutions there were 118 noninfected susceptibles. To half of these in each institution the formalized toxin was given in the doses shown in table 1. In the other half, untreated toxin of the same lot used to produce the formalized toxin was given in the doses shown in table 2.

If the 94,500 skin test doses of toxin that had been detoxified in the 2.625 cc. of the formalized toxin had been converted into toxoid, the group that received the formalized toxin should have shown considerably more immunity on retest than those who received only 0.2625 cc. of the untreated toxin. Two weeks after the third dose was given, retests were made. These showed practically the same degree of immunity in the two groups. Of the fifty-nine children who received the formalized preparation, twenty-five, or 42 per cent, were immune to one skin test dose of toxin, and twenty-four, or 40.6 per cent, were immune in the other group.

Immunization in both groups was continued by injection of 25,000 and 100,000 skin test doses of the untreated toxin. Following this, skin tests showed 97 per cent immune.

Results of these experiments indicate that, although incubation with 0.8 to 1 per cent of a 37 per cent solution of formaldehyde may cause detoxification of as much as 95 per cent of the toxin in a solution of scarlet fever toxin, no evidence is found that the detoxified portion possesses antigenic properties. Such immunity as resulted from injection of the formalized

TABLE 1.—*Dosage of Formalized Toxin*

Dose	Volume	Amount of Unmodified Toxin	Amount of Detoxified Toxin
1st..	0.125 cc.	500 skin test doses	4,500 skin test doses
2d..	0.500 cc.	2,000 skin test doses	18,000 skin test doses
3d..	2.000 cc.	8,000 skin test doses	72,000 skin test doses
Total.	2.625 cc.	10,500 skin test doses	94,500 skin test doses

TABLE 2.—*Dosage of Untreated Toxin*

Dose	Volume	Amount of Unmodified Toxin	Amount of Detoxified Toxin
1st..	0.0125 cc.	500 skin test doses	0
2d..	0.0500 cc.	2,000 skin test doses	0
3d....	0.2000 cc.	8,000 skin test doses	0
Total..	0.2625 cc.	10,500 skin test doses	0

toxin could be explained by the considerable amounts of unaltered toxin remaining in the solution.

On publication of Veldee's work from the United States Public Health Service, arrangements were made to use formalized scarlet fever toxin prepared by Veldee in the National Institute of Health. Veldee started with a stronger toxin than we had used and it was thought the better results which he reported might be due to the fact that he had used a stronger toxin for treatment with formaldehyde.

When received, the material was labeled "Scarlet Fever Toxoid." The label stated that its original toxicity had been 150,000 skin test doses per cubic centimeter and that after the addition of 0.35 per cent solution of formaldehyde and storage at 37 C. for eighty-eight days the toxicity had been reduced to 500

that scarlet fever toxin is precipitated by alum. To determine whether it would be advisable to add alum, the following experiment was made.

EXPERIMENTS TO LEARN THE EFFECT OF ALUM ON SCARLET FEVER TOXIN

Following the method described by Leonard and Holm⁸ for diphtheria toxin and toxoid, 5 cc. of a 10 per cent solution of sodium alum was added to 50 cc. of an undiluted scarlet fever skin test toxin containing 15,000 skin test doses per cubic centimeter. The mixture was placed in the icebox for three hours, centrifugated and the supernatant fluid discarded. The precipitate was washed twice in 25 cc. distilled water, and treated with 2.4 per cent disodium acid phosphate. After centrifugation the remaining precipitate was dissolved in 5 cc. of 5 per cent sodium citrate solution and diluted to 50 cc. with 0.3 per cent sodium chloride containing 0.4 per cent phenol. This solution was sterilized by passage through a Berkefeld W porcelain filter.

The amount of toxin in the solution of the alum precipitate was determined by means of skin tests on susceptible human beings compared with the results of tests made on the same individuals with one standard skin test dose of toxin, with the results shown in table 3.

TABLE 4.—*Standardization of Unaltered Toxin in Veldee's "Toxoid"*

Reaction Produced by 0.1 Cc. of Veldee's "Scarlet Fever Toxoid" 1:800	Reaction Produced by One Standard Skin Test Dose of Scarlet Fever Toxin in 0.1 Cc.
21 × 13 mm. moderate red	25 × 15 mm. moderate red
23 × 20 mm. moderate red	25 × 20 mm. moderate red
25 × 17 mm. moderate red	25 × 15 mm. moderate red
23 × 17 mm. moderate red	27 × 10 mm. moderate red
21 × 18 mm. faint red	20 × 26 mm. faint red
26 × 18 mm. bright red	20 × 15 mm. bright red
Negative	12 × 10 mm. moderate red
13 × 12 mm. moderate red	15 × 10 mm. moderate red
10 × 17 mm. moderate red	14 × 15 mm. moderate red
21 × 18 mm. bright red	20 × 15 mm. faint red
22 × 16 mm. bright red	22 × 15 mm. bright red
23 × 17 mm. moderate red	23 × 18 mm. moderate red
40 × 24 mm. bright swollen	35 × 21 mm. bright swollen
34 × 20 mm. bright red	22 × 10 mm. bright red
10 × 12 mm. moderate red	17 × 10 mm. bright red
10 × 8 mm. moderate red	0 × 0 mm. moderate red
21 × 15 mm. faint red	20 × 14 mm. faint red
22 × 17 mm. moderate red	21 × 12 mm. moderate red
20 × 20 mm. moderate red	27 × 15 mm. moderate red
18 × 11 mm. moderate red	10 × 19 mm. moderate red

Diphtheria toxin was treated in the same way. Tests for the presence of diphtheria toxin in the redissolved precipitate were made by injection subcutaneously in 250 Gm. guinea-pigs.

One cubic centimeter of a 1:100 dilution of the original toxin caused a local reaction but did not kill the pig. One cubic centimeter of a 1:10 dilution killed a pig on the second day.

One cubic centimeter of a 1:50 dilution of the redissolved alum precipitate caused a local reaction. One and eight-tenths cubic centimeter of a 1:5 dilution killed a pig on the second day.

In this experiment no evidence of toxin was found in the alum precipitate from scarlet fever toxin, but toxin was demonstrated in the alum precipitate from diphtheria toxin. In view of these results it was decided to use the "scarlet fever toxoid" without the addition of alum.

IMMUNIZATION EXPERIMENTS WITH VELDEE'S "SCARLET FEVER TOXOID"

In a control group of seventy-eight persons susceptible to scarlet fever as shown by positive skin reactions to one skin test dose of scarlet fever toxin, five graduated doses of an unmodified scarlet fever toxin containing 45,000 skin test doses per cubic centimeter were injected at weekly intervals. The toxin in the smaller doses was diluted with physiologic solution of sodium chloride to facilitate accurate dosage. Retests made

8. Leonard, G. F., and Holm, A. J.: J. Infect. Dis. 53: 376-385 (Dec.) 1933.

TABLE 3.—*Results of Skin Tests with Alum Precipitate of Scarlet Fever Toxin*

0.1 Cc. Solution of Alum Precipitate Diluted 1:500	0.1 Cc. Diluted Standard Toxin Containing 1 Skin Test Dose
Negative	30 × 30 mm. moderate red
Negative	21 × 16 mm. moderate red
Negative	16 × 15 mm. moderate red
Negative	26 × 14 mm. moderate red
Negative	18 × 15 mm. faint red
Negative	11 × 15 mm. moderate red
Negative	25 × 18 mm. moderate red
Negative	20 × 18 mm. moderate red
Diluted 1:200	
Negative	29 × 10 mm. moderate red
Negative	29 × 24 mm. faint red
Negative	24 × 18 mm. moderate red
Negative	21 × 14 mm. faint red
Negative	26 × 20 mm. moderate red

skin test doses per cubic centimeter. Two methods of immunization were recommended on the label, the first consisting of injection of 0.1, 0.5 and 1 cc. at intervals of three weeks and the second consisting of the addition of sufficient potassium alum to make the final solution contain 0.5 per cent alum and administration of two doses of 0.25 and 0.5 cc. measured before addition of the alum.

It is known that alum precipitates diphtheria toxin, but there was no evidence in the literature to indicate

two weeks after injection of the fifth dose showed seventy-seven persons, or 98.6 per cent, immune to one skin test dose of toxin.

At the same time in the same institution the "scarlet fever toxoid" was injected in a group of forty-one susceptible persons in three doses of 0.1, 0.5 and 1 cc. at intervals of three weeks, as Veldee suggests. Retests were made in this group one month after the last dose was injected. Thirty-five were retested, the others having left the institution or died in the interval of two and a half months. Of the thirty-five retested, fourteen, or 40 per cent, were immune to one skin test dose of toxin. In most of the others the skin reaction was modified though still positive.

In administering the "toxoid" no reactions were expected, because the label stated that it contained only 500 skin test doses of residual toxin per cubic centimeter. However, the reactions observed following the first dose of 0.1 cc. were such as to suggest that the patients had received considerably more than the fifty skin test doses of unchanged toxin indicated by the label.

Veldee used rabbits to determine how much unaltered toxin remained in solution following treatment with formaldehyde. Compared with human beings the rabbit is insusceptible to scarlet fever, as shown by the fact that the majority of rabbits show negative skin reactions to the standard skin test dose of toxin, which

TABLE 5.—Comparative Results with Untreated Toxin and with "Scarlet Fever Toxoid" Prepared by Veldee

	Untreated Toxin 5 Dose Series	Untreated Toxin 3 Dose Series	Veldee's "Toxoid" 3 Dose Series
Total volume injected.....	2.863 cc.	0.257 cc.	1.6 cc.
Total number of skin test doses of unmodified toxin injected.....	129,050	11,550	12,800
Total number of skin test doses of detoxified toxin injected.....	0	0	237,200
Per cent immunized.....	98.6%	36.7%	40%

gives positive reactions in susceptible human beings; by the fact that the scarlet fever rash is not produced in rabbits by intravenous injection of large amounts of toxin or by inoculation with living cultures of the scarlet fever streptococcus; also by the fact that scarlet fever toxin is inhibited by normal rabbit serum mixed with it in vitro before it is injected intradermally in susceptible human beings. This comparative insusceptibility makes the rabbit an unsuitable subject for accurate standardization of either scarlet fever toxin or scarlet fever antitoxin, since the latter is merely titration of free toxin left in the toxin-antitoxin mixture.

STANDARDIZATION OF UNMODIFIED TOXIN REMAINING IN VELDEE'S "TOXOID"

The amount of unchanged toxin remaining in the Veldee preparation was therefore standardized by means of skin tests on one arm of susceptible human beings compared with the reactions produced by injection of one standard skin test dose of toxin on the other arm. Results of tests made with 0.1 cc. of a 1:800 dilution of the "toxoid" are shown in table 4.

By this means it was learned that the preparation which as the result of tests on rabbits was labeled as containing 500 skin test doses of toxin actually contained 8,000 skin test doses of unchanged toxin per cubic centimeter.

Thus it was apparent that in giving the doses of 0.1, 0.5 and 1 cc. there had been injected along with the

detoxified toxin 800, 4,000 and 8,000 skin test doses of unaltered toxin. To learn how much of the immunity obtained was attributable to the unmodified toxin present in the "toxoid," a group of forty-two young adults who had received the first three doses of untreated toxin usually given in routine immunization were retested before the fourth and fifth doses were

TABLE 6.—Binding of Scarlet Fever Antitoxin by Untreated Toxin

Case	0.1 Cc. Toxin- Control Containing 2 Skin Test Doses of Toxin	0.1 Cc. Toxin- Antitoxin Mixture Containing 2 Skin Test Doses of Toxin and 5 Neutralizing Units of Antitoxin	0.1 Cc. Toxin- Antitoxin Mixture Containing 6 Skin Test Doses of Toxin and 5 Units of Antitoxin	Anti- toxin Control
1	22 x 19 mm. moderate red	Negative	9 x 11 mm. moderate red	Negative
2	34 x 25 mm. moderate red	Negative	11 x 11 mm. moderate red	Negative
3	21 x 20 mm. moderate red	Negative	16 x 11 mm. faint red	Negative

given. It was found that sixteen, or 36.7 per cent, were immune to one skin test dose of toxin. The total amount of toxin given in this group was somewhat less than the total amount of unmodified toxin injected in the three doses of the formalized preparation. If the detoxified portion of the formalized preparation had possessed antigenic properties, the group receiving the formalized toxin should have shown as much immunity as those who received five doses of untreated toxin, instead of less than half that immunity. Also the group that received the formalized toxin should have shown considerably more immunity than those who received only three doses of untreated toxin; yet the immunity in the two groups was practically the same, indicating that the detoxified portion of the formalized preparation had little if any antigenic action.

That failure to develop more immunity in the "toxoid" group was not due to any peculiarity of the individuals composing the group was learned by injecting the fourth and fifth doses of untreated toxin, after which retests showed all but one, or 97.1 per cent, com-

TABLE 7.—Failure of Detoxified Toxin to Bind Scarlet Fever Antitoxin

Case	Veldee's "Toxoid" 0.1 Cc. Containing 2 Skin Test Doses of Unaltered Toxin and 37.5 Skin Test Doses of Detoxi- fied Toxin	0.1 Cc. "Toxoid". Antitoxin Mixture Containing 2 Skin Test Doses of Unaltered Toxin, 37.5 Skin Test Doses of Detoxified Toxin and 5 Units of Antitoxin	0.1 Cc. "Toxoid". Antitoxin- Toxin Mixture Containing 3 Skin Test Doses of Unaltered Toxin, 37.5 Skin Test Doses of Detoxified Toxin and 5 Units of Antitoxin	Anti- toxin Control
4	27 x 20 mm. moderate red	Negative	Negative	Negative
5	11 x 10 mm. moderate red	Negative	Negative	Negative
6	22 x 15 mm. faint red	Negative	Negative	Negative

pletely immunized. Thus the children in the "toxoid" group had received the full amount of unmodified toxin given in the control group before their immunity was comparable to that in the control group.

Having failed to demonstrate the existence of a "toxoid" in the formalized scarlet fever toxin by means of immunization experiments in susceptible human beings, we attempted to demonstrate a nontoxic substance capable of binding scarlet fever antitoxin in Veldee's formalized scarlet fever toxin.

EXPERIMENTS TO DETERMINE WHETHER THE DETOXIFIED PORTION OF FORMOLIZED TOXIN IS ABLE TO BIND SCARLET FEVER ANTITOXIN

Some of Veldee's formolized toxin used in the preceding experiment was diluted 1:200 so that each 0.1 cc. contained four skin test doses of unchanged toxin and seventy-one skin test doses of detoxified toxin. This was mixed with an equal volume of scarlet fever antitoxin diluted so that each 0.1 cc. contained sufficient antitoxin to neutralize ten skin test doses of toxin. The "toxoid"-antitoxin mixture contained in each 0.1 cc. two skin test doses of unmodified toxin, 35.5 skin test doses of detoxified toxin, and enough antitoxin to neutralize five skin test doses of toxin. This mixture was allowed to stand in the incubator two hours, and to half of it sufficient untreated toxin was added to make the toxin content in each 0.1 cc. five skin test doses, or the full amount necessary to bind the antitoxin. As a control the same untreated toxin used in the mixtures described, containing 20,000 skin test doses per cubic centimeter, was diluted 1:500 so that it contained four skin test doses in each 0.1 cc. and combined with antitoxin and additional toxin in the same proportions used in the "toxoid" experiment except that, instead of three additional skin test doses of toxin in each 0.1 cc., four additional skin test doses were added, or one more skin test dose of toxin than the amount of antitoxin used should be able to neutralize.

"Toxoid," toxin and antitoxin control mixtures were also prepared, physiologic solution of sodium chloride being substituted for the "toxoid," toxin or antitoxin in the mixtures. After it had stood in the icebox overnight, 0.1 cc. of each solution was injected intradermally in persons susceptible to scarlet fever.

From the results in table 6 it is apparent that, if one more skin test dose of toxin is added to the toxin-antitoxin mixture than the antitoxin present can hold in combination, the excess toxin is manifested in a positive skin reaction.

If the 37.5 skin test doses of detoxified toxin in 0.1 cc. of the "toxoid"-antitoxin mixture had had combining power equivalent to one skin test dose of unaltered toxin, the skin reactions would have been positive with the "toxoid"-antitoxin mixture to which toxin was added after incubation as they were in the corresponding mixture in which untreated toxin was used instead of "toxoid." This was not the case.

RABBIT IMMUNIZATION EXPERIMENTS

Experiments were made in immunization of rabbits by injecting intravenously in three rabbits the formolized toxin prepared by Veldee. Untreated scarlet fever toxin was injected in a second group of three rabbits, and sterile, uninoculated broth in three rabbits. A dilution was made of the untreated toxin, which contained in each cubic centimeter an amount of toxin exactly equal to the unaltered toxin remaining in each cubic centimeter of the undiluted formolized preparation. Before injection, all rabbits showed positive reactions to fifty skin test doses of toxin injected intradermally on the ear. The intravenous injections were made at intervals of two weeks, beginning with 1 cc. and increasing to 20 cc. Before each dose the skin test was repeated. The rabbits in the control group injected with broth continued to show positive reactions. The rabbits injected with the diluted, untreated toxin developed negative skin reactions as early as those which received the undiluted formolized toxin.

Thus these experiments failed to demonstrate any antigenic substance in the formolized toxin other than the unaltered toxin remaining in it.

CONCLUSIONS

1. Scarlet fever toxin is partially but not completely detoxified by treatment with solution of formaldehyde up to 1 per cent. The presence of unaltered toxin in the formolized preparation is sufficient to account for the immunity obtained.

2. No evidence now available justifies the assumption that there is a scarlet fever toxoid analogous to diphtheria toxoid.

3. Alum precipitates diphtheria toxin and the toxin may be demonstrated in the precipitate; but the redissolved alum precipitate from scarlet fever toxin showed no evidence of the presence of toxin.

4. The rabbit is not a suitable subject for standardization of scarlet fever toxin.

5. Since the detoxified portion of formolized scarlet fever toxin is not antigenic, it is inferior to unmodified toxin as an immunizing agent because of the unnecessary amount of useless foreign protein which it contains.

THE SYNDROME OF HYPERTONIC AND ATONIC COLOPATHY

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Colitis is a much used and abused term, and most certainly the medical profession should limit its application to include only inflammatory states of the large bowel. These inflammations, from simple catarrhal to chronic ulcerative colitis, as well as related conditions producing definite pathologic lesions, have been well demonstrated, and their causative agents have been determined, ranging from chemical poisons, certain deficiency states, as noted in pellagra and sprue, protozoan infestations and, above all, bacterial infections.

A diagnosis establishing a case of acute or chronic bowel disorder, in the foregoing category, as an actual colitis affords some satisfaction in classifying the disorder and some comfort in the knowledge that one may proceed with therapy more or less promising and universally recognized. There still remain chronic constipation and intermittent diarrhea to plague, confound and divide the profession. These complaints represent by far the greater proportion of chronic bowel disorders that occur without any evidence of definite pathologic lesions of the mucous membrane.

ETIOLOGY

As in migraine, so in the more chronic colopathies characterized by constipation and intermittent diarrhetic episodes, the cause of the condition has been assigned, on the one hand, to constitutional and functional factors and, on the other, to local irritative lesions or more general metabolic disorders. The latter conception would seek out and eliminate all neighborhood irritative factors that may arise intermittently, such as local disease in the rectum, pelvis or abdomen. It would correct also those presenting a general constitutional effect, such as certain food intolerances due to intestinal allergy or to an unfavorable intestinal flora-producing fermentation and congestion.

It must be admitted that adjacent inflammatory or irritative foci, namely, chronic appendicitis, disease of the gallbladder and pelvic disorders, and local rectal lesions (rectal ulcers, retention crypts, fistulas and hemorrhoids), as well as those other disturbances already noted, may produce secondary bowel disorders. Still the clinician, as a rule, is disappointed in the results

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Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

obtained by treatment of these conditions alone, and by necessity of failure to gain much or even any improvement in his patient's symptoms has come to realize that the fundamental problem has not been solved. Therefore more attention has been paid to the functional elements, which has led to a study and analysis of the form of the colon, as exemplified by variations in length, loops, tone and position, and to the motor activity and function of the disturbed bowel, in order to understand the factors that affect and control it.

As in migraine, students of the more chronic colopathies, described later in more detail, recognize a probable congenitofunctional origin, since the causes of chief influence are partly congenital but inherently functional, and are manifested by certain psychic and autonomic disturbances of the nervous system.

COLON FORM AND FUNCTION

This critical study of the large bowel has led to knowledge of a usual or normal colon form; to redundancies or increased lengths with various loopings in different portions; to hypertrophy of sections of the bowel wall with dilatation, as in megacolon, and to what Larimore¹ calls "hyperrotation" of the cecum, or low descent. Any or all of these, with the possible exception of megacolon (which is typically atonic), may give rise to either diarrhea or constipation at various periods.

Further investigation of motor function has demonstrated phases of hypotonicity and hypertonicity in the colon leading to the classification, on the one hand, of atonic constipation and, on the other hand, of spastic constipation and mucous colitis. While apparently opposite conditions, they are undoubtedly fundamentally related; in all there is evidence of a constitutional and functional disturbance or imbalance of the autonomic nervous system, even though there is congenital variation in the form of the colon.

With a history of constipation and roentgen evidence of a relaxed or apparently dilated colon, usually a diagnosis of atonic constipation is made, and the physician has been content to treat the condition as such, in the accepted manner, with a bulky diet containing roughage, with various laxatives or other form of bowel stimulation and, much too frequently, with prolonged rectal and high colonic irrigations. In a surprisingly large proportion of such cases, mucous outpouring and diarrhea ensue, so that from an atonic regulatory regimen one must reverse to that of hypertonicity and irritability, because of evidence of most of the characteristics of irritable colon and mucous colitis.

Atonic as well as hypertonic states exist and can be demonstrated roentgenologically. Either may produce obstinate constipation, but it has been my observation that the two are more likely to occur at different times in the same individual than to characterize uniformly the bowel habitus of one person as against that of another. Any of the bowel-form types noted may show irritability, which is characteristic of hypertonia, or may be apparently atonic.

ATONIA

However, there is a uniform tendency for hypertonicity to be more apparent in shorter and more normal forms, whereas atonic loops and states appear more frequently as the bowel becomes more redundant. Finally, the only consistently atonic cases are found in

the more serious redundancies, which may lead to volvulus, and in megacolon, where there is a local organic thickening or hypertrophy of the bowel wall in the part affected, as well as a congenital overaction of the sympathetic nervous system leading to dilatation. After many such cases have been observed, evidence accumulates that long before bowel "paralysis" or atonia becomes persistent, increasing degrees of decompensation or stretching appear, as the result of gradual development of autonomic nerve imbalance.

I myself have felt for a long time that the designation "atonic form" of constipation is misleading. By following the barium meal down the bowel with the fluoroscope and later supplementing these observations with the barium enema, I have learned that constipation due to uniform relaxation of the colon tube is rarely seen and possibly never exists throughout the whole length of the bowel at one time. It is conceded that there are regions of relaxation as there are of spasticity at times, and these vary. But it is the incoordination of muscular motor function rather than its paralysis or absence that is at the base of all constipation, except in the definitely mechanical obstructive types. One often sees relaxed, distended loops of bowel in redundant colons and very frequently dilated boggy cecums hanging low in the pelvis; but the spasticity and overirritability of other parts of the tract have seemed responsible for the loss of tone and of the decompensation apparent in these saccular loops and pouches. Atonia is relatively infrequent in the shorter bowel forms. It becomes apparent in the decompensated bowel segments of marked redundancies and in megacolon, and in these less evidence of hyperirritability appears, less of the functional make up of the hypervagotonic. In addition, there is an overacting sympathetic system which tends to continue the "status quo" in apparently dilated and decompensated large loops of bowel. The problem in these relatively few cases is to relieve the bowel stretching and decompensation and by various means block out the influence of the sympathetic system.

AUTONOMIC CONTROL

The main factors involved are the relative activity at various periods of the parasympathetic and sympathetic divisions of the autonomic nervous system. The parasympathetic (craniosacral), notably the vagus, is the activator, carrying fibers that increase secretion, produce spasticity and motor activity, and, if overstimulated, cause the excessive formation of mucus and lead to colic and hyperirritability. The sympathetic system (with its paravertebral ganglions) is the inhibitor or depressor, the direct antagonist of the parasympathetic. Stimulation or activity of this system leads to relaxation and loss of tone and to checking of secretion. Royle denies that relaxation is an essential factor of its activity but believes that excessive action of the sympathetic nervous system fixes any posture that is imposed, producing a fixation of plastic tone. He proved this idea by the operations of lumbar sympathetic ganglionectomy and ramisectomy in megacolon and decompensated redundant colons to relieve constipation when the bowel loops were fixed in form. Practically, pure cases of overactivity are never found of one system. The work of Bockus and his associates² shows that a general imbalance exists in the autonomic nervous system with varying degrees of overactivity.

1. Larimore, J. W.: The Human Large Intestine in the New-Born and in the Adult. *Ann. Clin. Med.* 5:439 (Nov.) 1926

2. Bockus, H. L.; Bank, J., and Wilkinson, S. A.: Neurogenic Mucous Colitis. *Am. J. M. Sc.* 176:813 (Dec.) 1928

of both systems, with that of the parasympathetic (vagus) more pronounced.

THE SPASTIC, IRRITABLE COLON AND MUCOUS COLITIS

As somewhat of a contrast, the hypertonic colopathies, which include the spastic colon, the irritable colon and mucous colitis as different phases of the same functional disorder, present not only the local bowel derangement but clearly a more apparent nervous and psychic disturbance. A preponderance of evidence indicates that the syndrome of the spastic, irritable colon is a visceral neurosis (in some respects akin to asthma) and exists only in persons with unstable or poorly coordinated nervous systems.

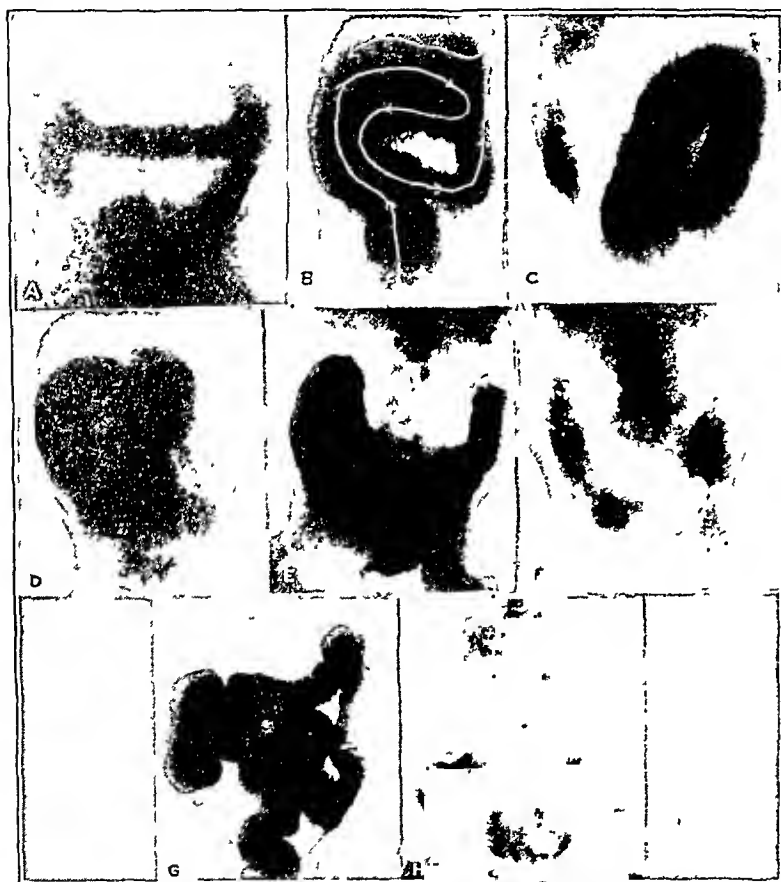


Fig. 1.—Variations in form of colon; essential tendency to redundancy and atonia. A, normal colon; B, redundant colon; C, atonic loop, redundant colon; D, megacolon; E, low descent of cecum; F, low descent of cecum after evacuation; G, irritable colon relaxed by enema; H, after evacuation.

As a group, intelligent and analytical, and excessively hypersensitive, they seem to have adopted a phobia of some disease (generally cancer) and an obsession, constipation.

It matters not that at the time advice is sought there may be many liquid and mucous stools a day, with great pain; this is usually considered but an episode. The thing that matters is the constipation that always comes, and the patient's fear of its results. As Dr. Lewellys F. Barker³ has so aptly summarized it, that "form of habitual constipation in which there is persistent spasm of the colon (hyperkinetic-dyskinetic constipation), often associated with paroxysms in which larger or

smaller quantities of mucus are passed from the bowel . . . is most obstinate and more and more difficult satisfactorily to treat, especially when it occurs in patients of outspoken hypervagotonic constitution."

Normal colon function includes fluid and salt absorption, a favorable bacterial digestive activity, and certain regulatory motor phenomena. These consist of the pendulum movements that mix its contents, peristaltic waves that send these onward to the distal bowel, and important antiperistaltic contractions that result in the retention of the contents in the cecum and ascending colon. Nature thus provides for a retention or favorable stagnation in the cecum, which makes possible bacterial digestion, absorption of fluids and soluble products, and the proper concentration of the excreta, insuring a formed paste in the distal bowel.

When the fluid contents of the cecum are projected rapidly to the distal colon, all the ills of intestinal indigestion result: irritation, fermentation, impaired absorption of intestinal gases, colonic spasm and pain, and systemic toxic effects. On the other hand, when the contents of the proximal colon are too long held up by dysfunction of the peristaltic and other motor activities, the dry inspissated residue produces a similar result, though with different characteristics. In either of these states a heightened irritability of the neural and muscular mechanisms of the colon exists, leading to spasms, an incoordination of the colonic contractions and often to hyperactivity and perverted secretion of mucous glands.

In functional colon disturbance are found (a) spasm most pronounced in the descending and sigmoid colon, (b) peristalsis and antiperistalsis greatly increased in the cecum and adjacent bowel with prolonged stasis and (c) excessive mucous secretion. An underlying neurosis is the essential factor that produces this type of habitual constipation and irritable colon. However, not all neurotic persons have irritable colons, and it would be a grave error to consider the neuroasthenia as the only provocative incentive of the disturbance. Of immediate importance may be states of debilitation and exhaustion from many causes, such as various infections, a thyrotoxic episode, inroads of child bearing, abuse of the intestinal tract with laxatives and enemas, and certain intoxicants, such as poisoning from lead and from tobacco. Undoubtedly, all these con-

ditions, plus emotional crises and the wear and tear of life, may bring in extraneous influences enough to set off functional disturbances that are held in abeyance. Intestinal neuroses diminish as one descends the social scale.

As a class, individuals with functional colon disorders are more or less unstable with an apparent imbalance of autonomic control of many involuntary functions, being easily excited, worrying, anxious, below par physically and frequently hyperanalytic and introspective. The intestinal complaint may be but a local manifestation of a general spasmophilic tendency. Outspoken vagotonia is frequently apparent. Migraine is common and asthma in the family history is not infrequent, as also are other allergic reactions. Sparseness, undernutrition, visceroptosis, active mentality, and

3. Barker, L. F. On the Management of the Spastic Colon and Mucous Colopathy, Especially in Hypervagotonic Persons, *Am. J. M. Sc.* 178: 606 (Nov.) 1929.

a too frequent impulse to "go on their nerve" are outstanding characteristics.

Wide pupils, erythemas, sweatings, irritable heart, variable blood pressure, fatigability and affective states abound. In many patients the evident and distinctive features of nervous instability and hypertonia are not casually apparent. Just as in migraine, the individual may seem most phlegmatic, reasonable and composed, and it is only when under strain, physically or mentally, or both, that the nervous instability can be recognized.

About 75 per cent of these disorders occur in women. While the age average is about 35 to 40 years, the condition may occur in the second to the fifth decade. Constipation and abdominal discomfort, often amounting to the severest pain, simulating disease in other neighborhood organs, are the leading complaints.

An abdominal unrest is evident, with sensations of rumbling, gurgling and bowel tremor, terrifying to the patient and greatly accentuated when, in the more irritable types, quantities of mucus are passed. The discomfort may be described as a tight feeling, or pressure sense, like a ball or lump or stoppage. This feeling may be diffuse but is more generally located in the lower part of the abdomen, especially on the left, with tenderness and soreness about the cecum.

While a gnawing sensation is frequent, the pain is usually a dull continuous ache, which may be general or localized. At intervals it may be spasmodic, but it is not rhythmic and not of the relentless immobilizing character of an acute inflammatory condition. To some it is agonizingly severe, localized accurately over the particular part of the colon in spasm, and even requiring relief by opiates. Ryle⁴ speaks of it as suggestive of major colic, localized or diffuse, lasting from hours to days, of variable frequency and occurring generally two or three hours after food has been taken. During the day it seems to incapacitate and depress the victim out of all proportion to the actual physical manifestations, but rarely disturbs sleep. Heat and rest give relief, as also will a bowel movement, generally.

The constipation may be mild but usually is obstinate and at periods may be excessive. With an increase of nervous irritability, periods of diarrhea ensue, and it is not unusual to have a regular interchange of small, dry, constipated stools for several days, followed by a shorter period of violent diarrhea with watery stools and mucus in great sheets and strings. The steady dull pain appears in the period of constipation, with severe paroxysms in the diarrheic, especially in conjunction with excessive quantities of mucus. The stools are difficult to pass and are always unsatisfactory to the patient, but they are negative for pus and parasites and usually for blood.

There is an almost invariable use of cathartics and enemas, partly because of a great fear that an organic obstruction or block exists somewhere in the intestinal tract, or of an unreasonable anxiety in reference to the constipation and systemic poisoning. There are chronic fatigue, chronic indigestion and a coated tongue.

Subjective flatulence and gas, with nervous eructations, may be present but does not cause objective

distention, except in the less frequent cases with fermentative intestinal floras.

On examining the abdomen, the keen observer will detect the excessive degree of complaint and the hysteria-like attitude as being unwarranted in comparison with the objective manifestations and realize that he is dealing with a barometric belly. Such an abdomen is markedly hypersensitive and flinches almost as it is touched; the lightest pressure on the skin is almost as distressing as deeper palpation. The ropy or cordlike sigmoid may or may not be felt. More characteristic, but present in only a moderate percentage of cases, is the abnormal cecum, either firm, prominent and resistant or lax, boggy and baglike, distended with material, gas and fluid, sensitive and tender, lying low in the inguinal region.

Elmer Eggleston⁵ estimates that from 20 to 25 per cent of these patients have had their appendixes removed (so-called chronic appendix) and in 5 per cent the gallbladders have been taken out without any improvement. The wise surgeon now knows that it is best to stay out of the "functional abdomen."

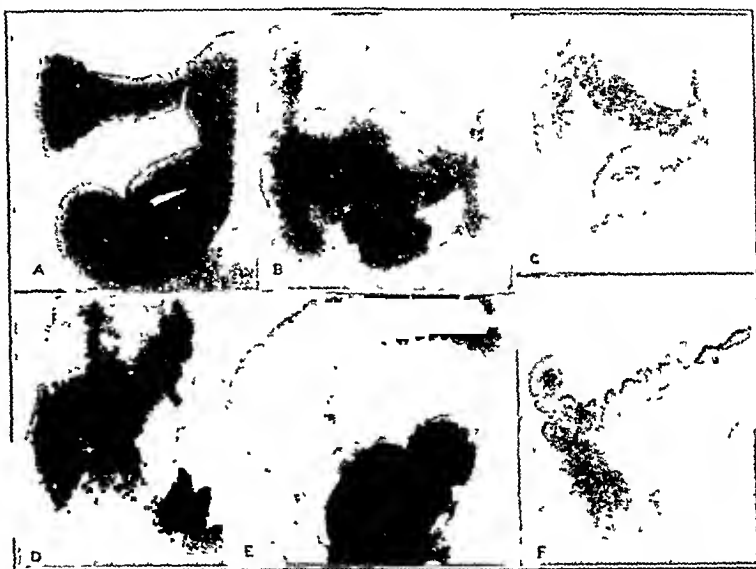


Fig. 2.—Differences in contractility of colon; essential tendency to short or normal lengths and hypertonia. A, redundant colon dilated and relaxed by enema; B, general spasticity; C, irritation type of segmentation, segmental spasm; D, irritable colon, feather sign; E, spastic sigmoid, dilated cecum; F, spastic colon, string sign.

DIAGNOSIS

The diagnosis is made primarily when a history and physical examination with the essential characteristics are secured. It is further sustained by a study of the stools, rectal and sigmoidoscopic examination and roentgen visualization of the gastro-intestinal tract.

The stools show great variation in form and shape, ranging from normally formed to mushy or watery, or with alternating periods of small, dry, marble-like masses, followed by diarrheic looseness and great quantities of mucus. They are essentially negative on microscopic examination, although occasionally a few blood cells can be noted.

The sigmoidoscopic examination is primarily important in ruling out early ulcerative colitis, amebic dysentery, rectal ulcer and neoplasm of the rectum and lower sigmoid. This examination should always be made.

4. Ryle, J. A.: The Study of Symptoms, *Lancet* 1:737 (April) 1931; Chronic Spasmodic Affections of the Colon and the Diseases Which They Simulate, *ibid.* 2:1115 (Dec. 1) 1928.

5. Eggleston, E. L.: Colitis—The Spastic Type, *J. A. M. A.* 91:2049 (Dec. 29) 1928; Common Disorders of the Colon Observed in the Treatment of the Chronic Invalid, *New Orleans M. & S. J.* 81:686 (April) 1929.

Spasm, irritability, moist normal looking mucous membranes, with perhaps a little injection and a rectum usually empty but containing mucus in varying amounts and appearance, are characteristic. The membrane everywhere is intact and normal appearing to the eye.

Visualization by the roentgen ray of different portions of the gastro-intestinal tract in functional disturbances of the colon, like the sigmoidoscopic examinations, is chiefly of value in demonstrating or ruling out pathologic conditions not related to form or function.

If none such is found, then the bowel form—namely, the length of the colon and degree of redundancy, amount of decompensation, and loss of tone in loops, presence of diverticula and position of the flexures—is next in importance. Finally, the degree of irritability present at that time may be demonstrated. This may vary at different periods from the normal form and tone previously shown to varying degrees of general spasticity, segmental irritation phenomena, hurried or delayed emptying, a spastic sigmoid with a large dilated cecum, a feathery descending colon simulating the appearance of the small bowel, and occasionally (10 per cent) the string sign.

The most important procedure is to follow the barium meal down through the tract to judge approximately the disturbance of motility and the degree of irritability, stasis and fermentative processes. The normal bowel is usually only partially empty, while in the irritable bowel only a trace of barium is left in the colon. The barium enema is important, but since it relaxes spasm it may mislead the observer entirely as to the motor function of the bowel.

PROGNOSIS AND TREATMENT

Patience and education finally bring these sufferers to relative stability and ultimately to almost normal health. The road is long and the way beset with relapses that develop with the ills that befall mankind and with unfavorable environmental conditions. The conquering of fear and other emotions, and the acquisition by them of a convincing insight into the nature of their sickness—psychologic control, in other words—is the great foundation for cure. The physician must develop this understanding and teach proper management for the overtonic colon, just as he must restore tone and compensation to the dilated and stretched loops and segments of the redundant and other atonic forms.

Aside from these considerations, more specific treatment of the condition is included in the following suggestions:

A. In the abnormal bowel forms with redundancy and atonic decompensated loops, immediate relief of fecal retention is indicated. Treatment should include small flushings or repeated colon siphonage, followed by oil retention enemas and oil by mouth; the use of a peristaltic excitant, such as ampoules of pitressin, and of thyroid extract (especially when the basal metabolism is lowered), and, finally, the avoidance of all belladonna preparations to aid and not deter the craniosacral system.

The diet should be bland but contain much soft pulp and vitamins, especially vitamin B.

Only in the more resistant and extreme cases of obstinate, persistent constipation should sympathetic ganglionectomy and ramisectomy be resorted to. Many cases of megacolon may require such surgical aid. In all other respects the treatment is essentially that noted under B.

B. In the hypertonic and more irritable states, I have found the following procedures of the most value in the management of the colon:

1. Overcoming physical exhaustion. Bed rest and convalescent care.

2. Psychologic directions and readjustment; securing a favorable environment and outlook.

3. Sedative aids adjusted to needs of the individual; mild hypnotics; antispasmodics, such as belladonna, uovotropine, phenobarbital, bromides and amylal. Empirical use of calcium salt in large amounts, with perhaps parathyroid or viosterol. Usually avoidance of thyroid and pituitary extracts.

4. Control of stools: First, there must be the elimination of all laxatives and irrigations. Then lubrication is instituted by mouth and rectal oil retention as needed, and nonirritating mechanical stimulants are started in the spastic stage, such as soaked soft agar or strained psyllium. Variation of the diet, according to the appearance of the stools, must be taught.

5. A bland and nonirritating diet. No roughage is allowed. Bran and other nonsoluble irritants are forbidden. The diet should contain a list of foods to be taken if diarrhea develops. As the stools become formed and then hard and dry, addition of puréed vegetables and fruits is indicated. Selected vitamins that do not induce laxative reaction should be given. There must be the accepted balance in protein, carbohydrate and fat intake, with emphasis on proper nutrition. Ultimately, it should be made as general as the tolerance of the bowel will permit. Some allergic adjustments may need to be made.

6. Symptomatically such aids as are necessary in controlling dyspepsia must be given consideration, such as colloidal kaolin for bowel fermentation and gas, or acidophilus cultures; use of dilute hydrochloric acid or alkalis; digestive ferments, especially pancreatin, and possibly yeast.

SUMMARY

A critical analysis of chronic disorders of the bowel leads to a recognition of inflammatory states with lesions of the mucous membrane, properly called colitis, on the one hand, and, on the other, of disturbances related to the form and function of the bowel.

These disturbances, characterized by constipation and irregular diarrhea, seem fundamentally to depend on bowel form, motor function and the constitutional make up of the individual.

The limited benefit resulting from correction of local abdominal and rectal lesions, intestinal flora and allergic intolerances must be admitted. In studying these conditions the bowel form (length, loopings, decompensation) as well as degrees of hypertonia and atonia must be considered. Knowledge of the rôle of the autonomic nervous system, as exemplified by the varying control of the craniosacral and sympathetic divisions, is essential.

There are features of the clinical history and examination characteristic of functional colon disorders; and the diagnosis is made certain by the relatively negative examinations of stool analysis, roentgen studies and sigmoidoscopic examination.

Treatment is essentially soothing and sedative; reconstructive both psychologically and physically. It must include a regimen of colon management, which has been outlined in detail.

ABSTRACT OF DISCUSSION

DR. LEWELLYS F. BARKER, Baltimore: Dr. Kruse has emphasized the importance for therapy of rather sharply separating the disturbances of function of the large bowel that are associated with abnormal colonic forms, such as redundancy and megacolon, from those that in the absence of such abnormal forms depend mainly on unbalanced autonomic innervation, as in the irritable colon, the hypertonic or spastic colon, and the so-called mucous colopathy. In the latter group of cases, a thorough general diagnostic study is important. One should not be content with a diagnosis of the disturbance of the functions of the intestine alone but should push the study far enough to reveal all important deviations from normal structure and function in the whole organism, making a corresponding multi-dimensional diagnosis before planning the therapy. A study of this sort inspires the patient with confidence that his physician has made sure of the conditions that actually exist and that therefore nothing important is likely to be overlooked in treatment. Disturbances of the general state of nutrition, often with marked emaciation, are frequent accompaniments, as are functional neuroses and affective disorders of cyclothymic tendency. Adequate treatment of these when found may be the best measure also for overcoming the colonic disturbances. That organic disease of any of the abdominal or pelvic organs should be discovered if present and duly evaluated goes without saying. Surgery will sometimes be indicated, of course, but far less often than many general practitioners have thought. Unnecessary surgery does more harm than good, prolongs the illness, and, by its failure to cure, increases the discouragement of the patient. Dr. Kruse has outlined the fruitful medical measures, including general upbuilding, a caloric intake of bland diet suited to the caloric and metabolic needs, adequate physical and mental rest, sedatives for the nervous system, antispasmodics, especially methatropine, for the hyperkinetic colon, and careful kidney guidance with repeated reassurance during supervision until health is restored.

DR. WALTER L. PALMER, Chicago: The first problem in dealing with what I choose to call "bowel distress" is that of the exclusion of organic disease of the bowel. The term "colitis" should be reserved, as Bagen and others insist, for organic inflammatory disease of the colon. The diagnosis of amebic dysentery, nonspecific ulcerative colitis or carcinoma is ordinarily not difficult if one follows the usual procedure of a careful history, complete physical examination, endoscopic examination of the rectum and lower sigmoid, careful search in the stool for pus, blood and parasites, and finally roentgen examination. The second problem is that of excluding organic disease elsewhere in the body. I have in mind particularly early pulmonary tuberculosis and thyrotoxicosis, diseases that frequently manifest themselves by means of abdominal distress and for which the physician must always be on the watch. Cholelithiasis, peptic ulcer, carcinoma and other intra-abdominal diseases frequently simulate "bowel distress" and are easily overlooked. After organic disease has been excluded, there still remain, as the author has pointed out, the so-called functional cases of abdominal distress with chronic diarrhea or constipation. Much has been written of redundances and loopings, of mobile and immobile cecums, of high lying cecums and low lying cecums, of autonomic imbalance, of visceroptosis, and so on. It is necessary to maintain a critical and somewhat skeptical attitude toward all these innovations. The important consideration is not where the colon lies or how it twists but rather how it functions. This problem is relatively simple, for colonic function depends on the treatment the colon receives. Continued catharsis, repeated enemas and injudicious dietary habits result in colonic irritability, which usually subsides promptly when a bland diet is instituted and the chemical and mechanical insults to the colon are discontinued. In many cases, however, the disturbance cannot be related to dietetic or cathartic habits, and a diagnosis of visceral neurosis is made. This is the group of patients to which the author's phrase "the barometric abdomen" is particularly applicable. The abdomen is the barometer of the individual and attention should be directed not toward the bowel alone but rather toward the total personality of the patient. Every one is familiar with nervous diarrhea as an acute episode associated with some emotional disturbance, but

many fail to appreciate the frequency with which chronic motility derangements of the intestine are merely the organic manifestations or reflections of chronic emotional stress. In general, the colonic patient taxes to an unusual degree both the diagnostic acumen and the therapeutic skill of the physician.

DR. E. L. EGGLESTON, Battle Creek, Mich.: Dr. Kruse has called attention to a particularly severe type in which the diagnosis is easily made. On the contrary, a patient with mild involvement may suffer from symptoms only when under emotional stress, but if the cause is not relieved the trouble becomes more persistent and finally chronic. While constipation is the rule, an occasional loose movement may occur, after which the patient may complain of greater discomfort. The trouble is not primarily intestinal in origin. A nervous instability resulting from emotional stress, an anxiety state, is primarily the cause of the colon dysfunction. The autonomic nervous mechanism is not affected by the will but is profoundly disturbed by the emotions. This disturbance may not be limited to the colon but may affect the entire gastro-intestinal tract. Most of these cases when observed under the x-rays exhibit a rapid emptying stomach and small intestine, and the barium may reach the pelvic colon in two or three hours. Here the intestinal contents encounter an obstruction due to a more or less tonic spasm of the pelvic colon, so that what appears to be a rapid emptying of the colon develops into a very obstinate constipation. It is unfortunate that the causes of the instability of the autonomic nervous mechanism are not more thoroughly understood. Emotional strain, anxiety and insomnia are potent factors in causing this disturbance. That it is not due to dietetic indiscretions or to infections is apparently proved by the Negro. While his dietetic habits are notoriously bad and his use of liquor and tobacco is excessive, he is definitely susceptible to different types of infection. He apparently has not yet acquired the ability to worry and so is spared these troubles which are so distressing to his white brother. Not only is he free from the spastic colon, but peptic ulcer is rare among his race. I fear that Dr. Kruse may have left the impression that the hypertonic colon obtains in the physically unfit only. This, I regret to say, is not the case. Its presence is rather a mark of an advanced civilization, of a highly organized nervous mechanism. I am of the opinion that a sympathicotonia obtains more commonly with those individuals who are physically unfit from birth. There are those who consider the hypertonic colon an allergic reaction because of its similarity to asthma. Until more is known about the causes of allergy, I think it best to consider it a vagotonic manifestation, and I am in accord with Dr. Kruse in emphasizing that the real cure comes as a result of education rather than from some method that may temporarily relieve the constipation.

DR. WILLIAM LINTZ, Brooklyn: I find that most colopathies are in reality of allergic origin. The symptoms differ in no wise from those described. Of all the manifestations of allergy I find that the intestinal form is by far the most frequent. Bacteria and their toxins, foods and their split products, the most frequent of all, allergens, are found there in greatest amount. Histamine, with which one can reproduce all the various manifestations of anaphylaxis, is normally found there. The history is the most important point in the diagnosis and treatment of these patients. There are present other allergic manifestations in the patient, relatives and offspring. The skin testing in allergy depends on this principle. Allergic skin manifestation is so frequent in this intestinal form that it should be considered a symptom of the syndrome. The family history of allergy in relatives and offspring I found in 61 per cent of my series. Allergic intestines differ from all others in that a certain article of diet will give rise to moderate or violent symptoms. "Eggs gave me severe cramps and diarrhea." Milk or oatmeal act as physics. The odor of cooking chicken, lamb and fish produced bronchial asthma, and soups from these foods produced abdominal pain, cramps and diarrhea without asthma in the same patient. The bacterial flora and their products may act as a sensitizing focus on the allergic bowel. In one patient not only the colitis but the asthma as well vanished after the eradication of infected foci. The allergens producing intestinal manifestations are legion. A patient had constipation for days every time he took oatmeal. It took four different trials to convince another patient that liquid

petrolatum was the cause of his constipation. Surely, what is one man's meat is another one's poison. Quite frequently these patients turn tables to their advantage when they discover foods that have a mild hypersensitive effect on their allergic bowel, as when they use milk and numerous other foods as a laxative. A strong point in the history is that the elimination of the offending food eliminates the bowel symptoms and its restoration provokes it. When the vagus dominates, the patient is much more sensitive to his allergens. Allergic individuals are influenced psychically through this route. Not only the abdominal symptoms but the other neurologic and allergic manifestations disappear with it. Skin tests are correct in only 50 per cent of cases. This allergic bowel should be the last diagnosis. Every other lesion should be excluded first. The treatment should be the determination and exclusion of allergens or desensitization when this is impossible.

DR. FRED H. KRUSE, San Francisco: There are two issues that I will consider further: One is the matter of surgical treatment, its necessity and what one may hope to gain from it. Dr. Barker has emphasized the importance of a careful diagnostic survey as a preliminary measure in the care of patients suffering from functional colon disorders. Suppose in such a case stones are found in the gallbladder or a fibroid tumor in the pelvis. What is to be done about it? I have seen patients with irritable colon and quiescent pathologic conditions of this sort operated on without any resultant reflex benefit or improvement. In the long run, the patients have only a disturbing episode with an exacerbation of the chronic colon disorder to remember, and a continuance of the original disturbance. I believe that the course one is going to take should be determined by the nature of the physiologic disturbance present. When there are indications of apparent gallbladder dyspepsia, or evidence of trouble from a fibroid uterus, these should be removed. But they should not be removed with the idea that the patient will get a great deal of help for the irritated colon, especially if in the history and examination it is found that the patient has the earmarks of the constitutional and psychic make-up described here. I have been disappointed when such operations have been carried out. Ten years ago I did that regularly. If one operates on such patients for something that isn't really causing the bowel disorder, they are apt to spend three or four or six months in bed and are made much worse. Secondly, in reference to allergy, I agree with Dr. Lintz that there are many people who have allergic bowel reactions, exacerbating at least a chronic colon disorder. Such conclusions have been forced on me in several cases. All these possibilities must be kept in mind. Food allergy must be thought of. But, by and large, if the syndrome I have described is evident, both in the physical make-up and in the nervous and physiologic responses of an individual, sad experience has taught the futility of relying too heavily on the aid of surgery or allergy, be it by the desensitization or the food elimination method. I have tried them all.

Inspiration and Medical Schools.—The last function of a medical school or faculty that need be mentioned here is that of inspiration. It must be a poor school or university which cannot supply this, either through its general atmosphere or through the personality of one or more of its teachers. It is a real thing, and a necessary thing for the medical practitioner. Without it the student's acquirements will be imperfect, and his work, both during his studentship and thereafter through his professional career, a burden, or at least a source of infinitely less satisfaction than it might otherwise have been. In the words of Littré, "La puissance de l'éducation consiste à augmenter le nombre des motifs dans l'esprit de l'individu." If the student is not put in the way of acquiring, or of developing, some width of culture, a zest for knowledge, a love for his work, a real sympathy with human suffering and trouble, a profound respect for confidence reposed in him, an appreciation of nobility of character and of the dignity and peculiar requirements of professional life, to that extent will the contribution made by the medical school to his medical education have failed of its complete purpose, and to that extent will he pass out from it a liability rather than an asset to his profession and to the community.—Brackenbury, Sir Henry: The Training of the Medical Practitioner, *Brit M. J.* 2:381 (Sept. 1) 1934.

Clinical Notes, Suggestions and New Instruments

WHOOPIING COUGH CURED BY MUMPS

REPORT OF TWO CASES

EDMUND W. KLINEFELTER, M.D., YORK, PA.

Feb. 28, 1934, a mother of three children called me on the telephone, stating that her three children had whooping cough and were vomiting after each coughing paroxysm. I went to see the children on the same day and confirmed the diagnosis made by the mother. Each of the three children, a boy of 14 months, a girl of 3 years and a boy of 5 years, showed typical attacks of coughing followed by vomiting when I made an effort to examine their throats.

The oldest boy had been showing the typical paroxysms for the past week, the other two for only the past two days. For the past two days the paroxysms were occurring from three to four times every hour. The mother told me that either one or the other of the children would start off on a coughing spell and then the other two would join in. There was no elevation of temperature. Under antipyrine, belladonna and amylal medication a prompt diminution occurred in the number and severity of the paroxysms in the younger children. The 5 year old, however, was made worse by the antipyrine, belladonna and amylal. Therefore, March 3, I stopped giving this medication to the 5 year old and began the rectal administration of ether in oil. The ether in oil produced no improvement and was discontinued on March 6.

March 6, the mother called me early in the morning stating that the 5 year old had a swelling on the right side of his face about the size of a grapefruit. Examination showed the boy to have a typical case of mumps with the high temperature of 104 F. by mouth. Inspection of the throat at this time did not elicit a coughing paroxysm. From March 6 on there were no more paroxysms. Nourishment was taken without coughing or vomiting. At times there was a slight cough but no typical whooping cough. By March 12 the child was perfectly well with a normal temperature and no evidences of whooping cough or mumps. From March 6, no medication was administered. Pink and white colored blank tablets were given as placebos.

March 9 the 3 year old child developed a swelling on the right side of her face. Examination showed that this child also had a typical case of mumps. The temperature by rectum was 101 F. Inspection of the throat at this time did not elicit a paroxysm. With the onset of the mumps there was likewise in this case an abrupt cessation of the coughing paroxysms. By March 10 the temperature was normal and the antipyrine, belladonna and amylal medication was stopped. By March 17 the mumps had completely disappeared and the child was perfectly well. Neither during nor after the attack of mumps were there any whooping cough paroxysms.

Up until the middle of May, the 14 months old child suffered from typical whooping cough paroxysms. From May 15 on there was gradual improvement. The intermittent administration of antipyrine, belladonna and amylal served nicely to control the cough in this child.

Numerous cases are reported in medical literature showing that at times one disease may exert a favorable or curative influence on another disease. It has been reported that whooping cough can be checked during the eruptive stage of chickenpox. However, after the disappearance of the eruption the paroxysms again become severe.¹ Apparently vaccinia at times exerts a favorable influence on whooping cough.² Tuscherer³ observed two cases of whooping cough that were suddenly checked by an attack of measles. A review of the literature has shown no report of a case of whooping cough benefited or cured by an attack of mumps.

50 South Beaver Street.

1. Neter, E.: Natural Healing by Disease, *Med. Klin.* 29:264 (Feb. 17) 1933.

2. Schiavone, G. A.: Smallpox Vaccination in Treatment of Whooping Cough, *Sem. méd.* 37:1723 (Dec. 4) 1930; abstr. *J. A. M. A.* 96:905 (March 14) 1931.

3. Tuscherer, J.: Whooping Cough Checked by Infection with Measles, *Med. Klin.* 27:1214 (Aug. 24) 1931; abstr. *J. A. M. A.* 97:1342 (Oct. 31) 1931.

Special Article

THE TREATMENT OF CHRONIC BRIGHT'S DISEASE

CLINICAL LECTURE AT CLEVELAND SESSION

JAMES P. O'HARE, M.D.

BOSTON

The term "chronic Bright's disease" includes essentially three diseases: chronic glomerulonephritis, chronic vascular nephritis and chronic nephrosis. For this discussion on treatment, it is permissible to consider chronic glomerulonephritis and chronic vascular nephritis as one disease—chronic nephritis with hypertension.

There is nothing new or startling in the treatment of this nephritis. The therapy of the condition is more or less standardized in all textbooks, and until the late stages it is quite effective. In the uremic stage, treatment is at best palliative and eventually, of course, ineffectual. For such a gathering as this no detailed discussion of the standard treatment is, of course, necessary. It should suffice merely to indicate general principles and then to stress certain features that seem to me to be especially important and worthy of your attention.

The commonly accepted treatment aims at three primary objects:

1. First and foremost is the maintenance of the health of the whole body.

2. Secondly, it seeks the elimination of all toxins that in passage through the kidneys may increase the progress of the renal lesion. This means the eradication of all true sources of infection. It does not, however, mean ruthless surgery on such structures as the teeth, tonsils and sinuses that are mere objects of suspicion. It means also the avoidance of intercurrent infections as far as possible and prompt and efficient care of them when they do occur. It means proper care of the bowels to eliminate poisons from that source. Finally, it means a diet constructed to avoid undue strain on the kidneys by all products of excretion.

3. Lastly, signs must be recognized and cared for and the patient given relief for his symptoms as they arise.

The most important form of treatment, without doubt, is a diet that aims at a proper balance between food intake, the ability of the kidneys to excrete end products, and the general needs of the body.

Because of the enormous reserve power of the kidney, no great dietetic restriction is necessary or desirable in the early stages of this disease. Nothing more than simple instructions to avoid any excessive intake of protein, salt and fluid seems indicated. Meat or fish once a day, no salt added to the food after it comes to the table, and fluids limited to 4 pints is sufficiently restrictive.

As the disease advances and renal function falls, one is forced to make greater and greater restrictions. Much harm, however, can come from excessive protein reduction. Occasionally conditions demand a modified Karrell diet or a very low protein ration. These diets should be prescribed only with a full under-

standing of one's aims and the dangers involved. They should be used for as short a time as possible, after which there should be a prompt return to a basic dietetic regimen. For the last a good general rule to follow is this: As far as one possibly can, one should try at all times to give the patient a mixed diet of sufficient calories, with about 1 Gm of protein per kilogram of body weight. The salt intake should be limited to that which is in the food when it comes to the table (from 3 to 5 Gm). The fluid intake, at first restricted to 4 pints or less, may be increased gradually and carefully, as renal insufficiency becomes greater, up to 6 pints a day. This increase is to take advantage of the polyuria, which allows an excretion in dilute concentration of substances that cannot be eliminated in more concentrated form.

When renal decompensation has become great and definite signs of uremia appear, therapy is often difficult and unsatisfactory. It is necessary at times to choose between several evils. If one institutes too rigorous protein restriction to decrease the kidney load, the patient's own tissues may break down and increase the toxemia. If excessive fluid is administered, the heart may be embarrassed. If the patient is vomiting, much chloride may be lost and produce symptoms. Incidentally the blood chloride is often low in the late stages even without vomiting. Increased intake of salt by mouth or by clyses may be required.

In the vomiting patient the problem may be particularly difficult. Experience has taught me that the best solution for this problem is for the doctor to confine his attention to the administration of an adequate amount of fluid in the form of salt solution and dextrose given by vein, under the skin or by rectum. The feeding of the patient should be turned over to some tactful nurse or dietitian, who will often succeed when the doctor cannot. No restriction whatever should be placed on what she may feed the patient, although the protein-sparing carbohydrates should be encouraged. Every effort should be made to satisfy the patient's demands, no matter how queer they may seem. It is a well known fact that a patient will retain something he craves and reject foods that have no appeal. If he asks for beer and a ham sandwich, give them to him; he may retain them. Once the vomiting has ceased, the patient should be put back on his former diet.

The rest of the treatment of chronic hypertensive nephritis is purely symptomatic. No therapy for the anemia is entirely satisfactory. Iron in the form of pills of ferrous carbonate (Blaud's pills) has been used from early days without, however, much success. This lack of success may well be due to interference with absorption of this substance. Perhaps if the drug were given in 10 grain (0.65 Gm.) doses before meals greater success would be obtained. Transfusions, though of some value late in the disease, have merely a transitory effect.

Many of the cerebral symptoms that occur in uremia are said to be due to the absorption from the large bowel of toxic phenols and cresols, which seem to get into the circulation with great ease in these late stages. Cleansing the bowel by frequent saline catharsis and enemas seems to constitute the only remedies. These, by exhaustion of the patient, may introduce other difficulties. Sedatives, of course, are necessary. Of these phenobarbital by mouth or by injection, and chloral by rectum, are the most generally useful. For the con-

vulsive seizures, threatened or actual, magnesium sulphate (intramuscularly or intravenously), morphine sulphate, intravenous dextrose and possibly lumbar puncture are to be considered. For the extremely uncomfortable itch, nothing is as effective as sponging with vinegar or weak acetic acid. It is to be borne in mind that all drugs excreted by way of the kidney are retained longer when renal insufficiency is marked. Their effect is therefore more prolonged and more pronounced.

I will now consider certain parts of the problem that, to my way of thinking, require special attention. Ever since Bright's name was first given to this disease, many doctors have regarded nephritis as a disease of the kidneys alone. Intelligent treatment demands above all else a recognition of the fact that this is decidedly not so. In fact, there is no form of nephritis, acute or chronic, in which the disease is confined to the kidneys. Intelligent treatment demands further the realization that in many a patient the disturbances of other organs are far more serious and require far more attention than do the kidneys. The thoughtless physician who focuses his "oil immersion" on the kidneys alone may be rudely jolted by the sudden death of his patient from a heart attack or a cerebral hemorrhage. In his lack of knowledge he may attribute these to uremia. This is not merely incorrect but bad medicine. By recognition of what is going on and by the institution of appropriate therapy it is often possible to avoid such accidents. In the Peter Bent Brigham Hospital more than half our patients with chronic Bright's disease die from a nonrenal cause, often long before the kidneys have become completely insufficient. It is well then in every case of this disease to bear in mind at all times the condition of the heart, the cerebral vessels and the height of the blood pressure.

Often a remedy that might be of value for the kidneys is distinctly harmful to the heart. I have seen several patients develop pulmonary edema from too enthusiastic administration of fluids or from sweat baths, which, fortunately, have now been largely discarded. Even excessive purgation may exhaust the patient and bring about cardiac decompensation.

Another point that needs stressing is the danger of overtreatment. Great harm can come from too great dietetic restriction. In the past, physicians were undoubtedly all guilty in this respect. Patients were kept on a very low protein ration for long periods on the theory that the work of the kidneys was being spared. The rest of the body was neglected. Sister Mary Victor of the Mayo Clinic has made it plain that any diet containing less than 40 Gm. of protein cannot supply an adequate mineral content. Diets of 40 to 50 Gm. contain insufficient phosphorus and iron. Only diets containing 60 Gm. of protein or over are entirely adequate. This, of course, does not mean that one should never prescribe low protein diets. Such a diet should, however, be used only for a short period and with full knowledge of the risks involved.

The treatment of chronic lipid nephrosis is not so thoroughly standardized or satisfactory as that of chronic hypertensive nephritis. The results of therapy are exasperatingly variable. At times a brilliant result is achieved. More often, however, the brilliancy of the therapy is only apparent and the results have little to do with the form of treatment used. Spontaneous diuresis is almost the rule. The utmost conservatism,

therefore, must be maintained in the interpretation of any therapy. Let me illustrate:

On one occasion during ward rounds I suggested the intravenous injection of hypertonic dextrose for a markedly edematous patient and on my next visit was greatly pleased to note a doubling of the previous daily output of urine. Imagine my embarrassment when, after expressing great delight at the success of my suggestion, I was informed by the stammering house officer that he had forgotten to give it.

I recall vividly another patient on whom every known form of therapy had been tried over a period of three to four months without success. Because of some apparent infection of the teeth, the hospital dentist was consulted, and he advised the extraction of two teeth. The consultation occurred on Monday. He returned on the following Thursday and extracted the teeth. A diuresis was instituted and the patient in the course of the next few weeks became entirely edema free. From the point of view of the dentist and the interpretation of therapeutic results it was most unfortunate that his consultation occurred on Monday and the extraction of teeth on Thursday, for the diuresis started on Tuesday, the day after he first saw the patient. I am sure any one would have been justified in claiming "cause and effect" if the teeth had been removed on the day the patient was first seen by the dentist.

Finally, all treatment may be absolutely ineffective. Even treatment that has previously been known to produce a diuresis in a given case may fail to obtain a result at a later date.

The "sheet anchor" in the treatment of lipid nephrosis is undoubtedly the replacement of lost blood proteins by the high protein diet originally devised by Epstein. It no longer seems necessary to use the low fat intake originally suggested by him. This serves no useful purpose and apparently makes for greater difficulty in feeding the patient. For some time it has been our program to give a mixed diet containing adequate calories and protein ration of 100 to 150 Gm. daily for a period of from two to three weeks. This is usually enough to give the body a chance to replenish, to some degree at least, the depleted blood proteins. At the end of such a period the high intake has usually begun to become monotonous or difficult for the average patient. It is then wise to drop back to about 1 Gm. per kilogram of body weight, plus the average amount of albumin lost daily through the kidneys. The diet should, of course, be salt poor and the fluid intake limited to 1,000 cc. or less. In some patients with very low output (from 300 to 500 cc.) Volhard has advised an intake each day equivalent to the urinary excretion of the previous day.

Unfortunately it is only on a rare occasion that this high protein ration alone is sufficient to produce a complete clearing of the edema, and recourse must be made to other forms of therapy. Epstein and others have felt that the administration of thyroid extract adds to the value of the high protein regimen. My experience with this drug has been very disappointing.

Next to the high protein diet, the most successful therapy in my hands has been the administration of the mercurial diuretic salyrgan, given in doses of from 1 to 2 cc., intravenously or intramuscularly, every three or four days. It seems to work best in the presence of an acidosis, produced by the oral administration of from 8 to 12 Gm. of ammonium chloride each day. Other diuretics and other drugs producing acidosis have not

been as effective. Salyrgan is open to the objection that it must be injected by needle and is distinctly irritating. It may produce thrombosis of the veins, and if any of the solution gets into the subcutaneous tissues a painful slough occurs. The intramuscular route is perhaps more commonly used, but the results are not quite as good as when the drug is given intravenously.

Salyrgan sometimes fails, and for one reason or another its use may not be possible. One must then turn to other methods, most of which are, by and large, less effective. Urea by mouth, in daily doses of from 20 to 100 Gm., is probably the next best drug. Calcium chloride in doses of from 8 to 12 Gm. a day, and potassium chloride, from 2 to 5 Gm. a day, are worthy of trial. Barker of Chicago makes successful use of the latter drug in his high potassium, low sodium diet, which consists essentially of a neutral ash diet with the addition of considerable potassium chloride by mouth. Perhaps the success of the "alkaline therapy" of Osman and Izod Bennett may also be due to the high intake of potassium salts in the solution recommended by them. This treatment, which on occasions I have found to be effective in cases in which nothing else seemed to work, consists in keeping the urine alkaline with a strong solution of potassium citrate, potassium bicarbonate, sodium citrate and sodium bicarbonate.

Lashmet has reported excellent results with his "acid-ash diet." This, too, is primarily a neutral ash diet plus hydrochloric acid. My experience with this has been limited and not entirely favorable.

Repeated transfusions are worth considering, the object being the quick replacement of protein and the increase of osmotic tension. The results in our clinic have not been particularly striking. I have not found it necessary to use the treatment devised by Hartman to increase the osmotic tension of the blood. He claims excellent results by the intravenous injection of 30 per cent acacia.

When accumulations of fluid in the body cavities become embarrassing they must be removed mechanically. Fluid can be drained out of the legs by means of incisions or the Southey tubes. These methods, however, are at times extremely dangerous because of the probability of local infection, particularly the dreaded erysipelas. The previously outlined forms of treatment are those most commonly used and are, I believe, most worthy of consideration.

Brilliant results are obtained frequently in the treatment of syphilitic lipoid nephrosis by careful anti-syphilitic treatment plus the high protein diet.

In the early stages of nephrosis complicating chronic glomerular nephritis when renal function is good, the previously suggested treatment can be carried out. As renal function fails, however, great care must be exercised. The high protein diet may produce a marked rise of the blood urea nitrogen to levels that are dangerous. The protein intake must then be cut to definitely lower levels. Fortunately at this stage, with a progression of the glomerulonephritis, edema tends naturally to disappear, and treatment for the latter is less necessary. Diuretic drugs in glomerulonephritis are not effective and may well be followed by an actual decrease in urinary output, with signs of renal irritation.

In conclusion let me stress the three following points:

1. Chronic hypertensive nephritis is not a disease of the kidneys alone. Intelligent treatment demands an intelligent understanding of all the problems involved.

2. Overtreatment may be quite as harmful as undertreatment.

3. Chronic nephrosis is fully as great a nonrenal problem as chronic nephritis. Before thoroughly satisfactory treatment for this condition can be devised, much new knowledge must be forthcoming.

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Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

DISCUSSION OF PREVIOUSLY PUBLISHED ARTICLES

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

THERAPY OF FRESH ACCIDENTAL WOUNDS

To the Editor:—I have just read Dr. Bernard Fantus's article in *Therapeutics* in *THE JOURNAL*, July 14. Speaking of the treatment of fresh accidental wounds, he says: "If anesthesia is required for the treatment of the wound, nitrous oxide-oxygen inhalation is the agent of choice." No mention is made of the use of local anesthesia, and I suppose from my observation that it is either a general anesthesia or nothing in common practice. For many years I have been infiltrating the edges of such accidental wounds after a preliminary cleansing, to facilitate a proper painless cleansing, and placing of the necessary stitches. When the needle for infiltration is started through the fresh wound surface, it is painless. I have never seen any other physician use local anesthesia in such a case and after many trials can see no insurmountable objections to the method.

M.D.

DISCUSSION.—The suggestion advanced no doubt has distinct merit. The only question is whether wounds thus treated under local anesthesia might not be more susceptible to infection than those that are not. This question, of course, can be settled only by extensive clinical experience with adequate control. Such experience, no doubt, exists in the keeping of the dental profession. A query was sent to a number of eminent dental surgeons. Unfortunately, the replies were not such as to permit definite conclusions. There were practically as many opinions advanced that extraction wounds inflicted under general anesthesia healed more kindly than those under local anesthesia as there were that no difference existed. The entire situation is a good example of the need for controlled observations in therapeutics.

THERAPY OF CONJUNCTIVITIS

To the Editor:—I have been much interested in the article on the treatment of the eye by Dr. Gifford, as I have some positive ideas on the treatment of gonorrheal cases with silver nitrate.

In his treatment of ophthalmia neonatorum, I do not think he gives silver the credit it deserves. He puts much stress on irrigation, which certainly is of value; but the real cure of these cases is the silver nitrate when properly applied. He speaks of several drugs and says "They may be useful."

I believe it a crime for a baby to go blind with gonorrheal ophthalmia. I believe every case can be cured with perfect results as far as vision is concerned. In an experience of forty years I have never lost an eye in an adult or babe in my own cases. From 1893 to 1898 I had the eye clinic at the Cook County Hospital, where we had ophthalmia neonatorum in

abundance. And at the Post-Graduate Hospital for about thirty years gonorrheal cases were not scarce.

At the Cook County Hospital I learned the following method, which if faithfully followed will always give the best of results:

A swab is made on an applicator or a tooth pick (not too large) and dipped into a 25 per cent solution of silver nitrate and any surplus wiped off. The lids, which are usually much swollen, are then everted and gently painted with the silver. A nurse, ready with a dropper of water, washes off any surplus from the everted lids. This is not absolutely necessary, as I have treated cases alone and closed the lids at once and have never seen bad results following this. The lids must be treated twice a day, and at the end of a week the eyes will be on the way to a rapid recovery. It is surprising how rapidly the swelling will subside. Sometimes there will be a discharge after the eyes seem well; this conjunctivitis will disappear in a day or two with the following prescription:

Rx Antipyrine	3 grains
Hydrastis, solid extract.....	5 grains
Boric acid.....	10 grains
Distilled water.....	1 ounce

Sig. One drop in the eye several times a day. The solid extract must be used, as the fluid extract or the tincture does not work efficiently.

The possibility of injury to the cornea with such a strong solution is nil. I had an ulcer on a patient who had lost the right eye by the most foolish treatment by a family physician, and when he found the gonorrheal infection commencing in the left eye he turned the case over to me. The ulcer extended horizontally across the cornea from edge to edge and was about 2 mm. in width. Besides treating the lids I painted the ulcer with the 25 per cent silver. The eye was saved and the cornea remained clear with good vision. I have seen the patient many times in the past thirty years and she has retained useful vision, but in her old age she has had to contend with a glaucomatous attack. I have treated many gonorrheal ulcers in the same way, with satisfactory results. C. W. HAWLEY, M.D., Chicago.

DISCUSSION.—The letter was referred to Dr. Sanford R. Gifford, who writes: "I do believe that silver is indicated in some cases of gonorrheal ophthalmia but that most patients, especially children, get along as well, and perhaps better, without it if irrigations are efficiently performed. The 25 per cent silver nitrate solution is stronger than I have ever seen it used, and I doubt if it would be wise to advise such a solution for use by the average man. I have used 4 per cent and 8 per cent."

THERAPY OF FURUNCULOSIS

To the Editor:—Will you allow me to submit a treatment for furunculosis of the external auditory canal, which I have used over a period of fifteen years and which is not hastily devised or used without the most critical of observations. Failure is so rare that I resort to no other remedy. Pus formation occurs in a small percentage of cases, not to exceed 5 per cent, in the form of a small drop of pus, which comes away on the cotton; or, if the pus has approached the surface, it can be gently opened with an applicator.

As soon as a point can be localized or even when there is a general pain in the canal of the ear that one suspects may lead to furunculosis, pack the ear, over the tender point, with a cotton wad as solidly as it can be tolerated by the patient. The procedure is exactly this: Take as large a piece of cotton, of the very highest grade, that you think can be compressed into the canal of the ear. Then with any blunt instrument, such as the handle of an applicator, start to knead the cotton into the canal, and as the canal becomes filled and the plug of cotton becomes harder, it will be better to take some flat instrument like the one prong of a dressing forceps and fold the cotton in around the edge.

This treatment is quite painful, and the pain persists for from one-half to one hour, after which the pain ceases. The

patient returns in twenty-four hours. If the pain is relieved and the cotton is in place and firm, it is left for another twenty-four hours. If the cotton is not firm and in place or if the patient is in pain, remove and repack with cotton. Furunculosis thus treated generally does not come to the formation of pus. It practically always disappears without this. The case that comes to the formation of pus usually has but one drop.

HARRY A. SMITH, M.D., Whittier, Calif.

MYCOTIC INFECTION OF THE NAILS

To the Editor:—In an article by Dr. Bernard Fantus on the therapy of the mycoses (THE JOURNAL, September 15) it is stated that surgical removal of the nails is advised in stubborn cases of onychomycosis. Having studied and treated a goodly number of such cases the past five years, I do not believe that surgical treatment is either advisable or necessary. If the case is really fungous in origin, which must be proved either by microscopic or by cultural methods, conservative local therapy will produce a cure. Often clinical diagnosis of ringworm of the nails is really psoriasis. When the etiology is absolutely proved, competent treatment will cure, whereas the condition often recurs after surgical removal, which is drastic therapy.

CLEVELAND J. WHITE, M.D., Chicago.

TOXIC EFFECTS OF EMETINE HYDRO- CHLORIDE—FEVER REGIMEN: USE OF ALCOHOLIC BEVERAGES

To the Editor:—I have been reading with interest and profit "The Therapy of the Cook County Hospital," edited by Dr. Bernard Fantus. There are, however, two therapeutic points that I should like to mention.

In connection with the treatment of amebiasis (THE JOURNAL, June 9, p. 1940), I fully agree with Dr. Fantus that emetine hydrochloride is very efficacious for the control of dysenteric symptoms but I think that greater emphasis should be given to the toxic effects, which in my experience are frequent even when the average dosage is employed. For example, I have repeatedly been obliged to discontinue emetine therapy on account of the appearance of circulatory disorders even before the usual course of from 7 to 10 grains in daily doses of 1 grain had been completed. Marked reduction of blood pressure was observed repeatedly and it may persist for weeks if not for months.

I believe that (a) the use of emetine hydrochloride should be restricted to cases of severe, acute dysentery or of liver abscess of amebic origin; (b) the patient should be confined strictly to bed while this drug is being used, and (c) the blood pressure, pulse rate and cardiac rhythm should be observed and recorded at least twice daily when emetine is being used.

The following articles contain information on the toxic effects of emetine:

- Shattuck, G. C.: Outline of Treatment for Amebiasis, with Special Reference to the Use of Emetine, *Boston M. & S. J.* 190:766, 1924.
- Anderson, H. H., and Reed, A. C.: Untoward Effects of Antiamoebic Drugs, *Am. J. Trop. Med.* 14:269, 1934.

In the article entitled "Fever Regimen" (THE JOURNAL, August 18, p. 486) it is recommended that alcohol be administered freely to addicts when suffering from fever and that "in patients difficult to feed, most especially the aged, smaller doses . . . may be given with food."

I agree that addicts should not be deprived of their usual dose of alcohol during an attack of fever, but I believe also that alcohol may be used with even greater freedom in some cases of chronic infection with fever in which emaciation has resulted largely from inability to assimilate ordinary food in sufficient quantity. Under these conditions, even young persons who have never taken alcohol may absorb and utilize large quantities without showing the slightest evidence of intoxication and may, on the contrary, benefit greatly thereby.

GEORGE C. SHATTUCK, M.D., Boston.

Council on Physical Therapy

THE FOLLOWING ARTICLE HAS BEEN ADOPTED BY THE COUNCIL ON PHYSICAL THERAPY AND THE COMMITTEE ON STANDARDIZATION OF INSTRUMENTS AND DRUGS¹ OF THE SECTION ON OPHTHALMOLOGY OF THE AMERICAN MEDICAL ASSOCIATION.

H. A. CARTER, Secretary.

PATENTED LENSES

FACTS VERSUS ADVERTISING COPY

ALFRED COWAN, M.D.

PHILADELPHIA

Theoretically, an ophthalmic lens should be free from the faults of chromatic aberration, curvature of field, distortion, annoying reflections from the surfaces and astigmatism of oblique pencils; but it is impossible to correct all these faults in a lens made of a single piece of glass.

Clinically, however, it is known that chromatic aberration, distortion and curvature, in ordinary ophthalmic lenses, are not noticeable enough to cause discomfort to the wearer. Reflections from the surfaces are sometimes annoying but can usually be remedied by proper adjustment. The spherical aberration that must be corrected in a photographic lens in order to produce a clear image to the edge of the plate does not apply to an ophthalmic lens. A clear image out to the periphery of the retina, even if it were possible, could not be appreciated. The retinal image is distinctly seen only over an extremely small area at the fovea and, therefore, it is here and nowhere else that a clear image must be formed—imaged sharply or not, on any other part of the retina objects appear blurred. For this narrow pencil of light, necessary to form the foveal image, only a small portion of the correcting lens is used at one time.

Thus, if the eye were immovable, so that the relative position of the lens before it were unchanged and only a small portion at the center of the glass constantly utilized, the combination of an eye and its correcting glass would differ from nearly every other optical instrument in that none of the ordinary aberrations need be considered. Any type of lens having the proper dioptric power in the utilized portion would be satisfactory. But the eye continually moves around in the orbit and as it turns and looks through the periphery of the lens there is, besides other changes, a certain amount of blurring of the image due to the astigmatism of oblique pencils of light. This is the only aberration in an ophthalmic lens that is serious enough to require special attention and one which, fortunately, can be eliminated in a single piece of glass.

A convex surface produces a certain type of astigmatism of oblique pencils, which will be neutralized by an opposite type of astigmatism by a concave surface. The proper combination of convex and concave surfaces can be found by a tedious and complicated process for each particular lens power, so that the aberration of one surface will neutralize that of the other. The result is always a deep curved type of lens.

Provided the distance between a lens of required power and the center of rotation of the eye is known, and also the thickness of the glass, and the distance of the object viewed, the astigmatism of oblique pencils

of light can be corrected out almost to the rim of an ordinary spectacle lens by giving the lens a certain curvature or front-back combination of powers. (For example, disregarding certain small differences, a convex lens of 2 diopters may be bent from the flattest form—1 diopter on each side—through a plano on one side and +2 on the other, —2 on one side and +4 on the other, to —6 on one side and +8 on the other, and so forth, within limits, as long as the algebraic sum of the powers of the two sides equals +2.) This type of lens, the purpose of which is to minimize the astigmatism of oblique pencils, is generally known as a point focal, wide angle or corrected lens.

Tscherning in 1908 constructed a graph giving the various combinations of front and back surfaces which, when given to lenses, will correct out the astigmatism of oblique pencils within a solid angle of 60 degrees for powers ranging from —20 to +7 diopters.

To be exact, the lens must be constructed for a fixed object distance and if the calculation is made for an object placed at infinity, which is usually the case, the lens will be theoretically inaccurate for every other distance. That is to say that, for the same person, the lens designed for distant vision will have an entirely different colexure from that designed for the reading distance. This means that it is absolutely impossible to correct out the astigmatism of oblique pencils in both the distance and reading portions of bifocals. One or the other must be wrong. In order to produce a perfect wide angle or point focal lens, therefore, it would be necessary to have a different combination of surfaces for every dioptric power and for every object distance. To accomplish this, the power of each surface would need to run into three or more decimal places. Surfaces so accurate cannot be ground and, furthermore, it is impracticable from the standpoint of the manufacturer to grind different curves for every power; nor is this necessary for the requirements of an ophthalmic lens. An ophthalmic lens need only be approximately correct for practical purposes, especially in the low powers, since very small astigmatic errors as well as other aberrations are easily ignored by a healthy eye.

Those having any knowledge of the literature of geometric optics know that practically nothing of what has been stated here is new. Deeply curved or meniscus lenses were mentioned by Kepler as early as 1604 and recommended by Hertel in 1716. Toric lenses were ground by Anton Wagner in Philadelphia fifty years ago. Although the theory of wide angle lenses has been known for a great many years, certain manufacturers imply in their advertisements that they have made a new discovery and that they, and only they, have the ideal ophthalmic lenses—corrected to the very edge for both the error of marginal focal power and the astigmatism of oblique pencils, even in bifocals. No one knows better than they that this is not true. What is most glaring is that while no two of the many patented forms are alike, each is claimed to be perfect. As a matter of fact, a lens of this kind is a compromise at best and any one is just about as good as another—and no more comfortable to the average glass wearer than the series of lenses that I have suggested in several previous articles.

The following paragraph from the patent papers of one of the largest advertisers of wide angle glasses will show what has really been accomplished by the lens designers of most manufacturers and is much more in keeping with the truth than anything they care to state

1. The Committee on Standardization of Instruments and Drugs is composed of Dr. Sanford R. Gifford, chairman, Dr. Francis Heed Adler, Dr. Clifford Walker, Dr. Jonas Friedenwald and Dr. John MacNée.

in their advertising copy: "Always keeping in mind the commercial production of the various powers of lenses so that the same shape surfaces may be used for as many different power lenses as possible within limits of marginal error."

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DIPHThERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1934, p. 393).

Parke, Davis & Company, Detroit.

Diphtheria Toroid, Alum Precipitated (Refined)-P. D. & Co.—Prepared by detoxifying diphtheria toxin of 0.1 L+ dose with a 0.4 per cent solution of formaldehyde, adding to the resultant toxoid sufficient potassium aluminum sulphate to make a solution of 2 per cent, washing the precipitate with physiologic solution of sodium chloride and suspending in a sufficient amount of physiologic solution of sodium chloride to bring it back to the original volume. The finished product is preserved with sodium ethyl mercuric-thiosalicylate 1:10,000 (Merthiolate). It is standardized according to the requirement of the National Institute of Health: guinea pigs weighing 500 Gm. given one human dose must produce at the end of six weeks at least two units of diphtheria antitoxin in each cubic centimeter of blood.

Marketed in packages of one 1 cc. vial and in packages of one 10 cc. vial containing one and ten doses, respectively.

DEXTROSE (See New and Nonofficial Remedies, 1934, p. 270).

The following dosage forms have been accepted

Ampules Solution Dextrose (d-Glucose) U. S. P., 10 Gm., 20 cc.: Each ampule contains dextrose-U. S. P., 10 Gm., in distilled water to make 20 cc.

Prepared by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y.
Ampules Solution Dextrose (d-Glucose) U. S. P., 25 Gm., 50 cc.: Each ampule contains dextrose U. S. P., 25 Gm., in distilled water to make 50 cc., and is accompanied by an ampule containing 2 cc. of a buffer solution composed of dibasic sodium phosphate, 0.3 Gm., and monobasic potassium phosphate, 0.024 Gm., in distilled water.

Prepared by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y.
Ampules Solution Dextrose (d-Glucose) U. S. P., 50 Gm., 100 cc.: Each ampule contains dextrose U. S. P., 50 Gm., in distilled water to make 100 cc. and is accompanied by an ampule containing 4 cc. of a buffer solution composed of dibasic sodium phosphate, 0.6 Gm., and monobasic potassium phosphate, 0.048 Gm., in distilled water.

Prepared by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y.
Ampules Solution Dextrose (d-Glucose) U. S. P., 25 Gm., 50 cc. (Buffered): Each ampule contains dextrose-U. S. P., 25 Gm., in distilled water to make 50 cc. The solution is buffered with sodium citrate 0.25 per cent.

Prepared by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y.
Ampules Solution Dextrose (d-Glucose) U. S. P., 50 Gm., 100 cc. (Buffered): Each ampule contains dextrose U. S. P., 50 Gm., in distilled water to make 100 cc. The solution is buffered with sodium citrate 0.25 per cent.

Prepared by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y.

UCOLINE COD LIVER OIL CONCENTRATE.—

The unsaponifiable fraction of cod liver oil, prepared by the Marcus process, dissolved in a bland mineral oil. Each gram of the solution contains 5,500 U. S. P. X (1925) units of vitamin A and 1,800 A. D. M. A. units of vitamin D (according to the U. S. P. X, Revised, 1934, 7,700 units of vitamin A and 492 units of vitamin D).

Actions and Uses.—Ucoline Cod Liver Oil Concentrate possesses properties similar to those of cod liver oil so far as these depend on the fat soluble vitamin content of the latter.

Dosage.—From 3 to 6 drops of the concentrate solution three times daily (a glass dropper is included in the marketed package, designed to deliver one minim per drop); for the tablets, 1 to 2, three times daily.

Manufactured by the Ucoline Products Company, Chicago, under U. S. patent 1,690,091 (Oct. 30, 1928, expires 1945). No U. S. trade mark.

Ucoline Cod Liver Oil Concentrate Tablets—Each sugar coated tablet contains 0.02 Gm. of the dry concentrate. They are assayed to contain in each tablet not less than 1,000 U. S. P. X (1925) units of vitamin A and not less than 500 A. D. M. A. units of vitamin D (according to the U. S. P. X, Revised, 1934, 1,400 units of vitamin A and 150 units of vitamin D). This represents 1,790 U. S. P. X (1925) units of vitamin A (2,506 U. S. P. X, Revised, 1934), and 895 A. D. M. A. units of vitamin D (276 U. S. P. X, Revised, 1934) per gram of tablet.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

YEAST VITAMIN-HARRIS TABLETS AND BREWER'S YEAST-HARRIS, MEDICINAL, NOT ACCEPTABLE FOR NEW AND NONOFFICIAL REMEDIES

Yeast Vitamin-Harris Tablets and Brewer's Yeast-Harris, Medicinal, are among the vitamin preparations marketed by the Harris Laboratories, Tuckahoe, N. Y. (Isaac F. Harris, Ph.D., director). Recently these products have been widely advertised to the medical profession directly, and to the public indirectly, for a pretentious array of diseases and disorders, many of which are listed on the label and in the advertising.

Full-page advertisements have appeared in medical journals in which the product was referred to as having been

"... successfully used and prescribed in anemia, herpes infection, pellagra, ulcers, arthritis and diabetes."

The same claims appear on the folder that accompanied the trade package.

The claim that vitamin B may be used successfully in the treatment of diabetes is unwarranted. Diabetes represents, in part at least, a deficient activity on the part of the islands of Langerhans in the production of the metabolic hormone insulin. There is no evidence in all the extensive literature on diabetes that has been developed since the discovery of insulin that it (insulin) can be produced in any other manner or in any other place than by and in the islands of Langerhans of the pancreas. Nor has it been proved conclusively that there is any other drug, product or chemical compound having even a remotely similar effect on the blood sugar level. Further, there is lack of evidence that yeast, vitamin B, or any other known vitamin has any effect on the faulty dextrose utilization in uncomplicated diabetes.

The claim that yeast is effective in the treatment of pernicious anemia appears to be an obvious misinterpretation of known facts and published data. It has been shown (Castle and others) that autolyzed yeast and other substances containing the vitamin B complex, when mixed with normal gastric juice, may produce a reticulocytosis in patients with pernicious anemia. Although in a rare case autolyzed yeast alone may have some effect, yeast by itself must be considered ineffective and cannot be recommended as such in pernicious anemia. It may be of distinct value in certain other types of macrocytic anemia. However, in all such types of macrocytic anemia liver and stomach preparations are effective. In the macrocytic anemia of pregnancy in India, Wills has shown that autolyzed yeast is effective. Similarly, Castle and Rhoads have found autolyzed yeast effective in certain patients with sprue. The facts at present available indicate that the active agent in autolyzed yeast is not to be identified with any designated portion of the vitamin B complex, although this was the tentative suggestion of Castle and Strauss. Nor is there evidence that in Addisonian pernicious anemia any vitamin product by itself has a specific effect (such as is claimed for Yeast Vitamin-Harris) in increasing the reticulocyte count and restoring a normal blood picture. The only clinically proved indications at the present time for the use of vitamin B (and its related fractions) lie in the so-called deficiency diseases of beriberi, polyneuritis and, probably, pellagra.

The attempt of the Harris Laboratories to sell its products (as "useful and successful agents" in two such grave diseases as diabetes mellitus and pernicious anemia) by advertising in the medical journals is not a compliment to the intelligence of the medical profession. The conscientious practitioner would do well to adhere to the established armamentarium in combating such serious conditions as diabetes and pernicious anemia. Insulin and liver and stomach preparations are proved, whereas yeast has only the claims of a manufacturer to recommend it.

Neither the Harris trade package nor the accompanying literature contains any statement of potency, nor does the Council know of any published protocols on the assay of the products as purchased on the open market.

The Council declared Yeast Vitamin-Harris Tablets and Brewer's Yeast-Harris, Medicinal, not acceptable for New and

Nonofficial Remedies because they are marketed with no statement of potency on the labels; with names of diseases for which they are recommended appearing on the label; and with exaggerated, unwarranted and misleading therapeutic claims.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HFRWIG, Secretary

NOT ACCEPTABLE

CURTISS MILK NUT LOAF

The Curtiss Candy Company, Chicago, submitted to the Committee on Foods a chocolate enrobed candy containing corn syrup, sucrose, roasted peanuts, coconut butter, gelatin, glycerin, tapioca starch, vanillin and coumarin

Analysis (submitted by manufacturer).—

	per cent
Moisture	57
Ash	0.6
Fat (acid hydrolysis method)	20.5
Protein (N X 6.25)	6.2
Reducing sugars as dextrose	10.6
Sucrose (copper reduction method)	32.5
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	66.3

Discussion of Name.—The name "Milk Nut Loaf," signifying that milk is an important ingredient, is deceptive as to the composition and nutritional values of the candy, in that milk is not a component. Descriptive names for foods should be truthfully informative. Good advertising is not possible without correct and appropriate names for foods.

The company was informed of the criticisms of the Committee but for business reasons is unwilling to correct the name. The candy will therefore not be listed among the accepted products of the Committee on Foods.

ACCEPTANCES WITHDRAWN

APPROVAL TOMATO JUICE

Distributor.—M. E. Horton, Inc., Washington, D. C.

CALIFORNIA FRUIT GROWERS EXCHANGE ADVERTISING FOR SUNKIST ORANGES, LEMONS AND GRAPEFRUIT

Sponsor.—California Fruit Growers Exchange, Los Angeles

CEDAR HILL BRAND TOMATO JUICE

Distributor.—Hassendeubel Grocery Company, St. Louis

COMET BROWN RICE

COMET BROWN RICE FLAKES

Manufacturer.—Comet Rice Company, New York.

EVER READY BISCUIT FLOUR (PREPARED)

Manufacturer.—F. M. Brown's Sons, Sinking Springs, Pa.

HARDY'S TWIN LOAF BREAD

Manufacturer.—Hardy Baking Company, Flint, Mich.

HORLICK'S MALTED MILK LUNCH TABLETS (PLAIN AND CHOCOLATE FLAVORED)

Manufacturer.—Horlick's Malted Milk Corporation, Racine, Wis.

JEWEL COCOA

JEWEL EXTRA FANCY HEAD

BLUE ROSE RICE

Distributor.—Jewel Tea Company, Inc., Barrington, Ill.

LAUB'S QUALITY BREAD

Manufacturer.—The Jacob Laub Baking Company, Cleveland

LONG ROYAL BREAD

ROYAL TABLE QUEEN BREAD

Manufacturer.—Royal Baking Company, Ogden and Salt Lake City, Utah.

MEYERS CORN SYRUP WITH CANE FLAVOR

Distributor.—Meyers, Walnut Ridge, Ark.

MITY GOOD BRAND GOLDEN TABLE SYRUP

Distributor.—Fox River Grocery Company, Appleton, Wis.

MOTHER'S JUMBO BREAD

Manufacturer.—M. Erickson Bakery Company, Inc., LaCrosse, Wis.

MURI BRAND TOMATO JUICE

Distributor.—New England Importation Corporation, Boston.

NEW STATE BRAND TOMATO JUICE

Distributor.—The Williamson-Halsell-Frazier Company, Oklahoma City.

N. J. C. PURE FOOD BRAND JUICE OF FANCY WHOLE TOMATOES

N. J. C. PURE FOOD BRAND PANCAKE SYRUP

N. J. C. PURE FOOD BRAND FANCY WHITE SYRUP

Distributor.—Northern Jobbing Company, Chicago and St. Paul.

PORTAGE BRAND GOLDEN CORN SYRUP WITH CANE FLAVOR

PORTAGE BRAND CRYSTAL WHITE SYRUP
Distributor.—Portage Wholesale Company, Portage, Wis.

SAMOS BRAND WHITE CRYSTAL SYRUP

Distributor.—Samos Wholesale Grocery Company, Cleveland

STROEHMANN'S KEW BEE BREAD

STROEHMANN'S MILK BREAD

Manufacturer.—Stroehmann Brothers Company, Harrisburg, Pa.

USEMORE BRAND GOLDEN SYRUP

USEMORE BRAND WHITE TABLE SYRUP
Distributor.—Service Grocer Company, Detroit.

WALDENSIAN TAR HEEL BREAD

Manufacturer.—Waldensian Baking Company, Valdese, N. C.

YACHT CLUB BRAND CORN SYRUP WITH CANE FLAVOR

Distributor.—Bemis, Hooper, Hays Company, Oshkosh, Wis.

Acceptances Withdrawn.—The sponsors of the listed previously accepted foods are not willing to furnish the Committee with copy of all pieces of new advertising or to inform the Committee of changes in the composition of the products in accordance with the requirement of its amended Rules and Regulations. This material and information are necessary to assure the Committee that the conditions of acceptance of the products and the advertising are being fulfilled. The requirement is essential to the maintenance of the standards of food composition and advertising as expressed in the Rules and General Decisions of the Committee. There is no apparent justifiable reason why the sponsor of an accepted food who is manufacturing or distributing a wholesome product of full nutritional value and is using truthful and proper advertising should not be willing to agree to inform the Committee of changes in composition of the food and furnish copy of all pieces of advertising, involving only nominal expense and time.

Since the sponsors of the listed accepted foods are not willing to comply with this simple requirement to assure that the products and the advertising are being maintained acceptable, acceptance has been withdrawn.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 3, 1934

THE NATURE OF ANTIBODIES

The question of the nature of antibodies is of practical as well as theoretical importance. The more complete the knowledge of their nature, the more favorable the conditions for preparing them for therapeutic and diagnostic use. Insight into the mechanisms of immunity is dependent in large measure on an understanding of the composition and structure of antibodies. Many attempts have been made to separate the antibodies from the other constituents of serum. On variation in the salt concentration of serum the antibodies in general come down with the globulin fraction no matter what method is used, and as a rule antibodies are not associated with or limited to any particular form of globulin thus prepared. The methods now in use for the concentration and purification of diphtheria and other antitoxins are based on the salt precipitation of serum globulins. Under the proper conditions, alcohol precipitates proteins as well as antibodies without any damage to the latter, so long as the proteins are not denatured in the process. By precipitation in low salt concentration as well as with alcohol, the specific antibodies in antipneumococcus horse serum can be secured in relatively high purity in a fraction of the serum globulin. On adsorption by aluminum hydroxide and other substances as well as on cataphoresis, the antibodies appear to remain in association with the globulin.

Since antibodies form specific combinations with antigens, many efforts have been made to recover the antibody from the antigen-antibody compound; e. g., agglutinins from agglutinated bacteria or red corpuscles. In the experiments of this category, those dealing with the antigenic polysaccharides of pneumococci, which can be prepared free from protein, and antipneumococcus horse serum, appear to have yielded the best results. This antigen-antibody precipitate can be washed free from the inactive proteins in the horse serum and then the antibody protein in the precipitate can be dissociated by alkaline solution. Without going into details, let it suffice to say that Felton¹ has recom-

bined the antibody protein and the antigen into the original complex. Felton concludes that the antibodies in his antipneumococcus horse serum are of protein nature. This conclusion is in full harmony with the outcome of the attempts so far to prepare antibodies in pure form from antiserum; namely, that they cannot be separated from proteins. Heat, alcohol, organic solvents and other factors that alter or denature proteins also change or destroy the peculiar properties of proteins. When specific precipitin serum is added to a serum containing agglutinin or antitoxin, the agglutinin or antitoxin is removed in the resulting precipitate; in the case of diphtheria, antitoxin diphtheria toxin is bound by such a precipitate.

Further evidence of the protein nature of antibodies is furnished by the precipitate in the specific precipitin reaction. This precipitate contains more protein than can be derived from the antigen used in the reaction; in fact, the precipitate consists largely of globulin from the antiserum. When bacteria or red corpuscles are acted on by specific antiserum they conduct themselves in an electric field as if coated by a layer of globulin, and the globulin or protein attached to particulate antigens in these and similar experiments has been shown by immunologic reactions to be the same as that in the antiserum. Quantitative tests point to this globulin as the actual antibody. Marrack² concludes a thorough and detailed report of the work on the nature of antibodies with the statement that according to their properties antibodies "consist of modified serum globulin," the antibody molecules differing from the normal globulin molecules either by rearrangement in structure or by the presence of a prosthetic group, which gives them the power to combine with antigen.

HETEROTOPIC INTESTINAL MUCOSA AS A POSSIBLE FACTOR IN THE GENESIS OF GASTRIC ULCER

The occurrence of heterotopic intestinal mucosa in the mucous membrane of diseased stomachs has been known for some time. It has been found in cases of chronic gastritis, carcinoma, achylia and pernicious anemia. Most observers regard it as an instance of metaplasia arising on a basis of an inflammatory process. This theory found its support in the fact that heterotopic islands of intestinal mucosa occurred with greatest frequency in chronic atrophic gastritis and only rarely in normal stomachs. According to this view, defects in the gastric mucosa resulting from an inflammatory process permit the growth of a new and indifferent epithelium, which may later differentiate into the type resembling intestinal epithelium. The regeneration is therefore of a faulty, atypical kind rather than a true metaplasia. Moszkowitz³ in fact designated it

1. Felton, L. D.: Pneumococcus Antibodies—What Are They? Science 79: 277 (March 23) 1934.

2. Marrack, J. R.: The Chemistry of Antigens and Antibodies, Medical Research Council, Special Report Series, No. 194, London, 1934.
3. Moszkowitz: Zur Pathologie des ulcusbereiten Magens, Arch. f. klin. Chir. 122, 1922.

as "indirect metaplasia." This view was shared by Lubarsch, Faber, Heyrovsky and, more recently, by Puhl, Stoerck, Konetzny and others.

The recent report by Clar² from Schloffer's clinic in Prague is interesting because it offers observations that seem to refute the correctness of the metaplastic theory. Clar views this heterotopic tissue not as a metaplasia but as a true congenital displacement. In their relation to the gastric juice these heterotopic islands of intestinal mucosa constitute a *locus minoris resistentiae* and therefore a possible factor in the genesis of the gastric ulcer. In an examination of fifteen fetuses, Clar found intestinal mucosa regularly present in the stomachs of fetuses up to the seventh month. The frequency of the occurrence diminishes with increase in age. Thus, in three full term infants this condition was present in only one. In twelve cadavers whose histories do not mention gastric disease and in twenty-six gastric specimens resected for the cure of a duodenal ulcer this heterotopy was not found once. Apparently these displacements tend to disappear with further growth of the individual because of the comparatively weaker growth than that of the environmental tissues. Clar found such islands in six out of ten gastric specimens resected for gastric ulcer and in one out of three specimens resected for a pyloric ulcer. It is noteworthy that these elements were found not only in the immediate neighborhood of the ulcer but in other parts of the stomach as well, sometimes as far as 10 cm. away from the ulcer. The tissue in question was surrounded by a normal gastric mucosa. It varied in size from a single crypt, or a few crypts, to circular formations 4 by 5 mm. in diameter. Their epithelium, according to Clar, resembled that of intestinal mucosa in every characteristic. There were to be seen the columnar cuticular cells, goblet cells, Paneth's cells and chromaffin cells. Clar failed to find evidence of a chronic gastritis in any of his cases. As congenital displacements these islands bear comparison with islands of gastric mucosa found in the esophagus and in Meckel's diverticulum, and with islands of pancreatic tissue found in the stomach wall. The author admits the far more frequent occurrence of heterotopic intestinal mucosa in the stomachs the seat of a pathologic process, particularly of chronic atrophic gastritis, but believes that the intestinal epithelium covering these defects was derived from a preexisting intestinal epithelium which proliferated under the stimulus of inflammation.

Müller³ called attention to developmental disturbances as a possible basis for the formation of a gastric ulcer. He pointed out that, when an ulcer develops in a Meckel's diverticulum containing gastric mucosa, the

initial peptic damage is seen most frequently not in the gastric tissue but in the intestinal tissue. This localization speaks for a direct peptic damage of the exposed intestinal mucosa by the secretion of the adjacent gastric mucosa. While unanimity is absent on the question of whether the intestinal mucosa can be digested by the gastric juice, the author feels that Buchner's answer in the positive is sufficiently supported by facts to be accepted. The latter points to the case of an ulcer in Meckel's diverticulum, to the well known postoperative jejunal ulcer of a gastro-enterostomy, and to the ulcer in the Mann-Williamson animal experiment. It appears, therefore, that heterotopic islands of intestinal mucosa occurring in the gastric mucosa constitute a *locus minoris resistentiae* and as such may play a part in the genesis of the gastric ulcer. Its rôle perhaps is the creation of the primary defect in Aschoff's sense. The primary defect or erosion may develop further in the presence of other factors favoring an inflammatory-ulcerative process.

Regarded in the light of J. Bauer's concept, a congenital displacement of the kind that has been discussed confers a predisposing constitutional inferiority on the stomach containing it. The localization of this heterotopic tissue in the pyloric, prepyloric and lesser curvature areas explains, in accordance with the mechanical-functional factors elucidated by Aschoff and K. H. Bauer, the failure on the part of the primary defect or erosion to heal.

The heterotopic islands of intestinal mucosa found in the stomach the seat of gastritis or of an ulcer is therefore not the result of the existing pathologic condition but its cause. This adds another theory to some forty already existing, which attempt to elucidate the genesis of the gastric ulcer.

ARTIFICIAL FEVER THERAPY

The limitations for the use of artificial fever therapy are becoming more clearly defined. A recent report of Simpson¹ is based on the use of the Ketting hypertherm, a simple air conditioned cabinet with which it is possible to elevate the patient's temperature rapidly and to maintain it at the desired level for an extended period. The use of this form of hyperpyrexia has been largely concentrated on syphilis. One hundred and seventeen syphilitic patients were treated, and in eighty-seven the course was completed. The best results were obtained by combining antisyphilitic therapy (e. g., bismuth compounds, iodobismutol or tryparsamide) with at least fifty hours of sustained fever at approximately 106 F. The sessions of fever were usually given weekly for ten weeks, with five hours of sustained fever at each session. The anti-syphilitic drug was injected half an hour before each session of fever. After completion of this program

2. Clar, Fritz: Ueber Heterotopie Darm-Schleimhaut im Magen und ihre Bedeutung für die Ulcusgenese, Beitr. z. klin. Chir. 160: 145-160 (No. 2) 1934.

3. Müller, P. F.: Ueber das Ulcus pept. perforans des persist. Meckelsches Divertikel und seine Verwandtschaft mit dem Ulcus Ventriculi, Beitr. z. klin. Chir. 115: 560, 1919.

1. Simpson, W. M.: Artificial Fever Therapy, Proc. Staff Meet., Mayo Clin. 9: 567 (Sept. 19) 1934.

the patients were given a follow-up course of anti-syphilitic chemotherapy at weekly intervals for twenty weeks.

Of sixteen patients with dementia paralytica, twelve obtained complete clinical remission, two improved markedly and were restored to a working status, one showed moderate improvement, and one was unimproved. The spinal fluid Wassermann and Kahn reactions were reversed to negative in six instances, became less strongly positive in six and remained positive in three. The blood Wassermann and Kahn reactions were reversed to negative in eight, became less positive in three and remained positive in four. There were seven patients in the taboparetic group. Improvement in mental orientation occurred in six. Subsidence of root pains occurred in all, but two patients experienced recurrence of pain, which was controlled by additional treatment. In four of the five patients with ataxia, the gait improved. The spinal fluid Wassermann and Kahn reactions were reversed to negative in two instances, became less strongly positive in one and remained positive in four. The blood Wassermann and Kahn reactions were reversed to negative in one, became less positive in one, remained positive in two, remained negative in three and became more strongly positive in one. One patient in this series had a syphilitic neuroretinitis, which responded promptly to the treatment.

Of nine patients with tabes dorsalis, ataxia was a prominent symptom in eight; two were restored to a normal gait, two showed 50 per cent improvement, two showed 75 per cent improvement and two were not improved. Root pains were abolished in all. In one patient the symptoms of cord bladder disappeared. The spinal fluid reactions were reversed to negative in two, became less strongly positive in three and remained positive in four instances. In a group of ten patients with diffuse central nervous system syphilis with eye symptoms predominating, favorable results were promptly obtained in six with interstitial keratitis, two with choroiditis, one with neuroretinitis and one with iritis. In six patients with asymptomatic neurosyphilis, the spinal fluid Wassermann and Kahn reactions of all were reversed to negative. There were six so-called blood Wassermann-fast cases. The serologic reactions were reversed to negative in three, became less strongly positive in two and remained positive in one.

Simpson reports some studies on the use of this treatment in early syphilis and in arthritis. He believes that in early syphilis the results are often favorable, though there has been insufficient observation from which to draw conclusions. The problem in arthritis appears to be one of selection of the proper type of patients. In the hands of unskilled workers, he believes, the possibility of doing harm with this form of therapy is perhaps greater than that of doing good. Its use should therefore be confined for the present to those having an intimate knowledge of the subject.

Current Comment

NOBEL PRIZE AWARDS IN MEDICINE

The Nobel prize in medicine for 1934 was awarded last week to three physicians of the United States: Drs. George R. Minot and William P. Murphy of Boston and Dr. George H. Whipple of Rochester, N. Y. The sum to be awarded is reported to be \$41,000. The research leading to the present clinical use of liver in pernicious anemia has been repeatedly reviewed in these columns. Many of the significant studies appeared first in *THE JOURNAL*. Briefly, Whipple and his associates showed that certain foods, especially liver, will induce rapid regeneration of blood in dogs made anemic by bleeding. Thereafter, Minot and Murphy applied the method clinically, made controlled studies in the hospital, and published their most significant early paper in *THE JOURNAL* in August 1926. One may, as is usual in such cases, find occasional references to the use of liver in the diet as far back as the published literature of medicine goes, but the prize is awarded to the investigators mentioned because of their establishment by scientific methods of facts that have led to the almost universal use of their suggestions in the treatment of the anemias. The story of the anemias, as Dr. Whipple modestly remarked when informed of the award, is far from finished and the work must go on. Like other new conceptions in the field of medicine, the new phase in the treatment of pernicious anemia has opened up a great land of promise for investigators of the blood in health and in disease. The deficiencies of leukocytes, of thrombocytes and of various chemical constituents of the blood offer a great opportunity for further study. When one realizes how far we have progressed since 1920 in relationship to our knowledge of the blood and its disorders, the hope for the future is greatly enhanced. By such awards as the Nobel prize, civilization pays some part of its debt to the accomplishments of medical science. That debt is already so great, however, that it can never be fully repaid. Yet the medical scientist has asked but little in the way of recompense for his efforts; he merely hopes to continue at his work without the obstructions of unenlightened interference from political or commercial sources.

EFFECTS OF TOBACCO SMOKING

The possible important physiologic effects of tobacco smoking have been investigated from several angles. Recently Dill, Edwards and Forbes¹ reported on the relation of smoking to blood sugar, blood lactic acid and metabolism. The subjects for their experiments remained at rest in the fasting state for ninety minutes before smoking and for forty-five minutes afterward. Each subject smoked one cigaret, inhaling the smoke during a period of from five to ten minutes. Capillary blood was obtained twice before smoking, one or more times during smoking, and frequently during the sub-

1. Dill, D. B.; Edwards, H. T., and Forbes, W. H.: Tobacco Smoking in Relation to Blood Sugar, Blood Lactic Acid and Metabolism, *Am. J. Physiol.* 109: 118 (July) 1934.

sequent forty-five minutes. Three samples of venous blood were also obtained. The sugar determinations were made by the micro method of Folin and Malmros. In addition to observations made on ten subjects in the fasting state, similar experiments were carried out on two subjects beginning about three hours after a light breakfast. They concluded that smoking one cigaret produced no change in blood sugar, lactic acid or respiratory quotient. In regard to oxygen consumption, however, there appeared to be significant alterations subsequent to smoking. While the oxygen consumption after smoking may remain unchanged in some subjects, in others it may increase as much as 10 or 15 per cent. Although this increase is of small magnitude and of doubtful general importance, it does indicate that subjects for basal metabolic rate testing should not smoke in the morning during which the test is to be made.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

- November 8. Your Child's Sleep.
- November 15. The Health Audit.
- November 22. Eat, Drink and Be Merry.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- November 6. The Fight Against Appendicitis, W. W. Bauer, M.D.
- November 13. Does Medicine Cost Too Much? Morris Fishbein, M.D.
- November 20. The Doctor of Tomorrow, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—At a meeting of the Tuscaloosa County Medical Society at Bryce Hospital, Tuscaloosa, October 15, members of the staff presented the program. Drs. James S. Tarwater and Frank A. Kay discussed dementia praecox, and Dr. Toombs Lawrence exhibited cases of paranoia. Dr. Thomas K. Lewis, Birmingham, addressed the society in September on treatment of heart block.

University News.—Dr. James S. McLester, professor of medicine, University of Alabama School of Medicine, and President-Elect, American Medical Association, delivered the annual Gorgas address before the La Fayette Guild Chapter of the Gorgas Medical Society at the university, October 3. The occasion was in commemoration of the eightieth anniversary of the birth of William Crawford Gorgas. Dr. Allan Walker Blair has resigned as associate professor in pathology and bacteriology to accept a surgical appointment in the Winnipeg General Hospital, and Dr. James B. McLester, Birmingham, has been appointed clinical assistant in medicine at the university.

DELAWARE

Society News.—Dr. Temple S. Fay, Philadelphia, addressed the New Castle County Medical Society, October 16, on "Neurologic Signs in General Practice." Dr. Fay is professor of neurosurgery in Temple University School of Medicine. Dr. Fielding H. Garrison, Baltimore, discussed "English Medicine and Anglo-Saxon Life" before the society, September 18.

State Medical Meeting and Election.—Dr. Jerome D. Niles, Townsend, was elected president of the Medical Society of Delaware at its annual meeting in Dover, October 9-10. Vice presidents elected are Drs. Joseph B. Waples Jr., Georgetown, and Clarence J. Prickett, Smyrna. The next annual meeting will be held in Wilmington in October. The scientific program included, among others, the following speakers:

- Dr. Joseph S. McDaniel, Dover, The History and Progress of Medicine.
- Dr. Joseph P. Wales, Wilmington, A Preliminary Report on Tuberculosis Prevention in Delaware.
- Dr. Robert W. Tomlinson, Wilmington, Gastro-Intestinal Disease: Some Recognized Essential Diagnostic Procedures.
- Dr. Lay Martin, Baltimore, Recent Investigations on the Physiology of Gastric Secretion and Its Relation to Clinical Medicine.
- Dr. Henry D. Jump, Philadelphia, Treatment of Pneumonia by Means of Serum, Oxygen Tent and Pneumothorax.
- Dr. P. Brooke Bland, Philadelphia, Intracranial Injuries of the New-Born from the Standpoint of the General Practitioner.
- Hon. Daniel J. Layton, chief justice of Delaware, Medicolegal Problems.
- Dr. Charles E. Wagner, Wilmington, Pyelitis in Children.
- Dr. John B. Baker, Milford, Infant Feeding, with Special Reference to Lemon Feeding.
- Dr. George C. McElfatrick, Wilmington, Results of High Voltage X-Ray Treatment in Metastatic Carcinoma of Bones.
- Dr. Douglas M. Gay, Wilmington, Prevention and Cure of Cancer.
- Dr. Emil R. Mayerberg, Wilmington, Nasal Accessory Sinuses from the Standpoint of the General Practitioner.
- Dr. William Bates, Philadelphia, Faulty Body Mechanics a Factor Causing Diagnostic Errors.

ILLINOIS

Society News.—Speakers before the St. Clair County Medical Society in East St. Louis and Belleville in October were, respectively, Drs. Ellis Fischel and Clinton W. Lane, St. Louis, on "Cancer of the Breast" and "Skin Diseases in General Practice," respectively.

Silver Nitrate Not Being Used.—The Illinois State Department of Health calls attention to the fact that silver nitrate solution is not being used as contemplated by the law enacted last year requiring the use of this material in the eyes of all new-born children. The department furnishes this solution without cost. Four counties in the state have obtained no silver nitrate solution at all from the department this year, and nearly a dozen others have obtained only insignificant amounts.

Chicago

Dr. Lewis to Lecture at Rush.—Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, will deliver the third E. R. DeBoth Memorial Lecture at Rush Medical College, November 6, at noon. His subject will be "The Story of the Hypophysis."

Personal.—Dr. Aaron Arkin has been promoted to associate clinical professor of medicine at Rush Medical College. —Prof. David Adlersberg of the University of Vienna lectured at Mount Sinai Hospital, October 22, and at the Cook County Graduate School of Medicine, October 23, on "The Dietetic Management of Diabetes."

Lay Educational Program.—The Chicago Medical Society will sponsor a lay educational program, November 14, in the auditorium of the Medical and Dental Arts Building. Speakers will be Drs. Lloyd L. Arnold, professor of bacteriology and preventive medicine, University of Illinois College of Medicine, and Logan Clendening, clinical professor of medicine, University of Kansas School of Medicine. They will discuss "You and Your Germs."

Society News.—Speakers before the Chicago Neurological Society, October 18, were Drs. Paul C. Bucy and Arthur Earl Walker, Chicago, on "Congenital Dermal Sinuses"; Isidore Finkelman and William Mary Stephens, Elgin, Ill., "Dinitrophenol in Dementia Praecox," and Dr. Walker on "Encephalography in Children." —At a meeting of the McDonagh Society for Clinical Research, October 19, Dr. Arthur Trevenning Harris, Gary, Ind., spoke on "Colitis and Its Complications." —Dr. Fred J. Taussig, St. Louis, was the guest speaker before the Chicago Gynecological Society, October 19. Other speakers were Drs. Fred L. Adair and Morris Edward Davis on "Chronic Atrophic Dermatitis of the Vulva," and Carl Henry Davis, Milwaukee, "Use of the Colposcope in the Diagnosis of Cervical Lesions." —Dr. Joseph L. Miller will address the annual meeting of the Institute of Medicine, December 24, on "The Influence of Claude Bernard's Experimental Methods on Medicine."

INDIANA

Cancer Program.—Dr Max Cutler, Chicago, will address a dinner meeting of the St Joseph County Medical Society, South Bend, November 7, on "The More Recent Developments in the Treatment of Cancer by X-Rays and Radium." This lecture is one of a series sponsored by the society which opened October 2, when Dr Marcus W Lyon Jr, South Bend, spoke on "The History and Etiology of Cancer." Dr Alfred S Giordano, South Bend, discussed "The Role of the Pathologist in the Cancer Problem," October 18, Dr Fred R Clapp, South Bend, October 23, "Cancer of the Female Reproductive Organs," and Dr James L Wilson, South Bend, "Cancer of the Gastro Intestinal Tract." Subsequent speakers, all of South Bend, will be

Drs Carroll C Hyde and Louis A Sandoz, November 13, on Cancer of the Genito Urinary Tract and Skin Cancer

Drs Slocumb R Edwards and John C Boone, November 27, Cancer of the Eye and Cancer of the Ear, Nose and Throat

Dr George T Green, December 11, Breast Tumors

Dr Robert B Acker, December 18, Bone Tumors

District Meetings.—The fifty-second semiannual meeting of the Eleventh Indiana Council District Medical Association was held at Logansport, October 17, at the Northern Indiana Hospital. Dr Franklin G Ebaugh, Denver, addressed the scientific session on "Psychotherapy in the General Practice of Medicine," and Dr Lawrence H Gilman, Indianapolis, "Meningitis." Entertainment in the evening included a banquet and minstrel show. —At a meeting of the Tenth District Medical Society in Gary, October 24, the following program was presented

Dr Claud R G Forrester, clinical professor of surgery, Loyola University School of Medicine, Chicago, Reduction of Fractures Under Local Anesthesia with Ambulatory Treatment

Dr Austin A Hayden, Secretary, Board of Trustees American Medical Association, Chicago, What the Socialization of Medicine Means to the General Practitioner

Dr Russell L Cecil, professor of clinical medicine, Cornell University College of Medicine, New York Pneumonia

Dr Robert Sonnenschein, assistant clinical professor of laryngology and otology, Rush Medical College Chicago, Practical Points of Otolaryngology for the General Practitioner

State Medical Meeting and Election.—Dr Roscoe L Sensenich, South Bend, was chosen president-elect of the Indiana State Medical Association at its annual meeting in Indianapolis, October 9-11. Dr Walter J Leach, New Albany, the incoming president, will take over his duties January 1, succeeding Dr Everett E Padgett, Indianapolis. The next annual meeting will be held in Gary. Speakers at the meeting included the following physicians

David W MacKenzie, clinical professor of urology, McGill University Faculty of Medicine, Montreal, Quebec Mechanical Factors in Renal Infections

Isidor S Ravdin, professor of surgical research, University of Pennsylvania School of Medicine, Philadelphia, Problems of Acute Appendicitis

Robert A Strong, professor of pediatrics Tulane University of Louisiana School of Medicine, New Orleans, Erythroblastic Anemia of Childhood

Emil Novak, associate in gynecology, Johns Hopkins University School of Medicine, Baltimore Endocrine Aspects of Gynecology

Lucius E Burch, professor of clinical gynecology and obstetrics, Vanderbilt University School of Medicine, Nashville, Tenn, Diagnosis and Treatment of Uterine Bleeding

Walter M Simpson, director, diagnostic laboratories, Miami Valley Hospital, Dayton, Ohio, Undulant Fever

Ralph A Fenton, clinical professor and head of the department of otolaryngology, University of Oregon Medical School, Portland Modern Views About Nasal Infections

George R Minot, professor of medicine, Harvard Medical School, Boston Some Aspects of Anemia

Sir Frederick G Banting, professor of medical research, University of Toronto Faculty of Medicine, Toronto, Silicosis

Frank H Lahey, Boston, Diagnosis and Management of Thyroid States

Dr James S McLester, Birmingham, Ala., President-Elect, American Medical Association, made an address at the annual banquet on "Borderline States of Nutritional Failure"

IOWA

Annual Clinic.—The University of Iowa College of Medicine will hold its twenty-third annual clinic in Iowa City, November 9-10. In addition to the various clinics, case presentations and laboratory demonstrations, there will be a dinner and social hour Friday evening, November 9. Dr Logan Clendenen, Kansas City, Mo., will be the speaker and discuss "Medical Subjects in Classical Art." The Purdue-Iowa football game, Saturday afternoon, will be an added attraction.

Society News.—The Bremer County Medical Society devoted its meeting in Waverly, September 20, to a symposium on socialized medicine. The speakers were Drs Charles H Graening, Waverly, Edward M Myers, Boone, Merlyn B Call, Greene, and John H Henkin, Sioux City. —Dr Ray

A Fox, Charles City, addressed the Buchanan County Medical Society in Independence, September 13, on "Treatment of Varicose Veins and Hemorrhoids by the Injection Method." —The proposed basic science law was considered by Drs Fred Moore, Des Moines, and Ransom D Bernard, Clarion before the Callhoun County Medical Society at Lohrville, September 11. —Speakers at the eighty-first anniversary meeting of the Dubuque County Medical Society, September 11, included Drs Porter P Vinson, Rochester, Minn., on "Bronchoscopic Diagnosis and Treatment of Lung Conditions", Frederick A Figi, Rochester, Minn., "Fractures of Nose, Jaws and Other Facial Bones," and Leo G Rigler, Minneapolis, "Early Diagnosis of Cancer." —Dr Jay Arthur Myers, Minneapolis addressed the Wapello County Medical Society in Wapello October 16, on "Diagnosis, Treatment and Prevention of Tuberculosis." —Dr Robert A Strong, New Orleans, will address the Linn County Medical Society, November 30, in Cedar Rapids, on "Treatment of Empyema in Children."

MAINE

Examination of Food Handlers Discontinued.—The advisory council of the state department of health and welfare rescinded the regulations relating to the examination of food handlers, September 26. According to the state medical journal, other clauses in the regulations fully take care of this problem. This action is in line with a similar plan announced by the New York City Department of Health, which in the future will stress the personal hygiene of food handlers and the entire matter of food sanitation. The health commissioner of New York stated that the cost of examination of food handlers is enormously out of proportion to the returns yielded to the people of the city.

MASSACHUSETTS

Dr. Burwell Gives Cutter Lecture.—Dr Charles Sidney Burwell, professor of medicine, Vanderbilt University School of Medicine, Nashville, Tenn., will deliver the Cutter Lecture on Preventive Medicine at Harvard Medical School, Boston, November 8. His subject will be "The Prevention or Postponement of Death from Heart Failure."

Tribute to Dr. Cushing.—A life size relief in bronze of Dr Harvey Cushing, formerly Moseley professor of surgery at Harvard University Medical School, will be presented to the medical school in November by a group of pupils, friends and associates. A bronze medallion in reduction of the original is available for those who wish a memento. The original medallion has been purchased by the Boston Museum of Fine Arts. Both the medallion and the bronze relief are the work of Paul Adrian Brodeur, Wellesley Hills. Dr Cushing is at present Sterling professor of neurology at Yale University School of Medicine, New Haven.

Mental Hygiene Survey of Teachers' Colleges.—Nine state teachers' colleges in Massachusetts were studied in a survey conducted over a two year period by Dr Henry B Elkind, medical director of the Massachusetts Society for Mental Hygiene, at the request of the commissioner of education and the presidents of the colleges. Its objectives were to ascertain the extent and method of teaching mental hygiene to learn whether the pedagogy taught maintains a mental hygiene point of view, to ascertain what is being done for the mental health of the student-teachers and for their personal development, and to offer recommendations leading to improvements of curriculum or of personnel policies. The survey was limited to a consideration of the teaching of education, educational psychology, testing, hygiene and physical and health education. The practice or training school of each college was especially observed. It was recommended, among other things, that the courses in educational psychology should be modified to include more mental hygiene content and that mental and educational tests should be given a larger place in the curriculum.

MINNESOTA

Personal.—Dr Charles Dexter Lufkin, Northfield, has been named assistant professor of health and physical education for men and physician in the college health service at Carleton College.

Society News.—Speakers before the Scott-Carver County Medical Society at Montgomery, September 11, were Drs Walter A Fansler, Minneapolis, on "Treatment of Hemorrhoids," and Myron O Henry, Minneapolis, "Complications of Elbow Fractures." —At a meeting of the Hennepin County Medical Society, September 25, speakers were Drs Chauncey

A McKinlay, on "Dimitrophenol in the Treatment of Obesity," and Willis H Thompson, "Influence of Certain Salts on Glucose Metabolism and Blood Pressure in Young Diabetics" —At a meeting of the Minnesota Academy of Medicine, October 10, Drs Samuel E Sweitzer and Carl W Laymon, Minneapolis, discussed "Multiple Areas of Cutaneous Gangrene Following Scarlet Fever," and Waltman Walters and Gerald T Church, Rochester, "Gastritis, a Phenomenon of Pyloric Obstruction, and Its Relation to Duodenal Ulcer"

MISSOURI

Personal.—The Southwestern Branch of the American Urological Association dedicated the program of its fourteenth annual meeting in St Louis, October 22-24, to Dr Bransford Lewis, St Louis, in honor of his fiftieth year in the practice of urology. A formal banquet was also held in his honor. A graduate of Missouri Medical College, 1884, Dr Lewis is emeritus professor of urology at St Louis University School of Medicine.

Midwife's License Again Revoked.—The license of Mrs Mary Ann Elizabeth Murphy, St Louis, to practice midwifery was revoked by the state board of health, September 13, on charges of "dishonest and unprofessional conduct," newspapers reported. It was the first time the board has heard charges against a midwife since 1906, in that year Mrs Murphy's license was revoked on charges of sending obscene matter through the mails. However, her license was restored in 1917. According to the reports, the complaint specifically charged Mrs Murphy with conducting a maternity home without a license, with performing four illegal operations, and with failure to file a birth certificate within ten days after a birth.

Society News.—Members of the staff of the University of Missouri School of Medicine, Columbia, offered the program of the St Louis Medical Society at its meeting, October 16. Drs Dan G Stine, professor of medicine, spoke on "The Prognostic Value of Leukocyte Counts in Pulmonary Tuberculosis," Milton D Overholser, associate professor and chairman, department of anatomy, "Recent Theories Concerning the Relationship of Hormones to Certain New Growths," Claude R Bruner, associate professor of ophthalmology and otology, "Present Status of Endoscopy," and Charles W Greene, Ph D, professor of physiology and pharmacology, "New Experimental Evidence of the Nerve Control of the Coronary Circulation and Its Significance in Clinical Cardiology." —At a meeting of the St Louis Neuropsychiatric Society, October 22, Dr Paul E Kubitschek discussed "Reading Disabilities, Etiology, Complications and Treatment." —Dr Edward A Schumann, Philadelphia, will present a review of ectopic pregnancy before the Kansas City Academy of Medicine, November 16. —Speakers before the Jackson County Medical Society in Kansas City, October 9, were Drs John L Myers on physical therapy, and Vincent T Williams on cardiac hazard of gallbladder surgery.

NEBRASKA

Society News.—Speakers at the meeting of the Omaha-Douglas County Medical Society, October 9, presented a symposium on the thyroid gland, as follows: Drs Raymond L Traynor, Maine C Anderson, Augustus D Cloyd, James F Kelly and Nymphus F Hicken. —Drs Samuel F Haines and Alfred W Adson, Rochester, Minn, addressed the Elkhorn Valley Medical Society at Norfolk, August 24, on "Preoperative Preparation of Exophthalmic Goiter" and "Indications for and Results of Sympathectomy in the Treatment of Thrombo-Angitis Obliterans," respectively. —Dr John F Allen, Omaha, addressed the Otoe County Medical Society, Syracuse, August 28, on recent advances in diagnosis of early tuberculosis. —Drs Donald J Wilson and Ernest L MacQuiddy, Omaha, were the speakers at a meeting of the Madison Six Counties Medical Society at Wisner, September 18, on "Diagnosis and Treatment of Common Skin Diseases" and "Practical Aspects of Allergy," respectively.

NEW HAMPSHIRE

Sanitation of Lumber Camps.—The state board of health recently promulgated regulations designed to improve sanitary conditions in lumber camps. This action was the result of demands for unemployment relief in recent months, according to *Health*, the board's bulletin. The new regulations deal with such matters as proper location of camps, layout of buildings, construction of bunk houses, character and care of bedding to be provided, water supply, garbage and refuse disposal, location and construction of toilets, manure and wastes disposal, protection of public water supplies, sanitation of food handling, examination of food handlers and care of the sick.

NEW JERSEY

Allied Professions Conference.—Representatives of the Medical Society of the State of New Jersey, the New Jersey State Dental Society, the New Jersey Pharmaceutical Association and the New Jersey State Nurses' Association at a meeting, September 12, in the offices of the medical society in Trenton, perfected an organization to be known as the Conference of Allied Medical Professions of the State of New Jersey. The purpose of this society is to provide a medium for discussing matters of common interest to the various groups. It is planned to foster the organization of county and district groups. Meetings are to be held at least once a year and other meetings may be called by the chairman or by action of the conference.

NEW YORK

Society News.—Drs Benjamin I Ashe and Carl H Greene, New York, addressed the Medical Society of Westchester County, October 16, on "Diagnosis and Treatment of Bright's Disease" and "The Modern Viewpoint of Diseases of the Biliary Tract," respectively. —Speakers before the Medical Society of the County of Albany, October 31, included Drs Arthur F Holding and Arthur M Dickinson on "Need for Improved Technic in Tonsillectomy" and "The Schilling Hemo-gram Its Value to the Surgeon," respectively.

New York City

Afternoon Lectures at the Academy.—The annual series of Friday afternoon lectures at the New York Academy of Medicine will begin November 9, with Dr Arthur M Fishberg as the speaker, on "Recognition and Treatment of Peripheral Circulatory Failure (Shock)." The remaining lectures for November and December will be as follows:

- Dr Arthur C DeGraff, November 16, Therapeutic and Toxic Actions of Some Drugs Recently Introduced in the Treatment of Cardiac Disorders
- Dr Edward M Livingston, November 23, Signs and Symptoms in Abdominal Diagnosis
- Dr Robert B Osgood, Boston, December 7, Interpretation of Low Back Pain
- Dr Charles G Kerley, December 14, The Handicapped Child
- Dr Walton Martin, December 21, The Significance of Excision in Treatment of Local Tuberculosis in Bones, Joints and Lymph Glands as Exemplified in the Treatment of Tuberculosis of the Thoracic Wall
- Dr Henry G Bugbee, December 28, Present Status of the Prostatic Problem

Society News.—Drs Soma Weiss, Boston, and William Lintz addressed the Medical Society of the County of Kings, October 16, on "Interpretation and Management of Syndromes Associated with Arterial Hypertension" and "Gastro-Intestinal Allergy," respectively. —Speakers before the Medical Society of the County of New York, October 29, were Drs Arthur F Chace and Eugene H Pool on medical and surgical aspects, respectively, of the diagnosis and treatment of peptic ulcer, and Fordyce B St John, on treatment of carcinoma of the stomach. —Drs Madeline Penke, Corona, and Charles E Farr presented a paper on "Meckel's Diverticulum" before the New York Surgical Society, October 24. —Dr Leonard G Rowntree, Philadelphia, addressed the New York Endocrinological Society, October 24, on "Diagnostic Criteria and Therapeutic Procedures in Diseases of the Adrenal Glands." —Drs Thomas R Brown and Theodore H Morrison, Baltimore, addressed the National Society for the Advancement of Gastro-Enterology, October 24, on "Digestive Symptoms in Diseases Elsewhere" and "Idiopathic Ulcerative Colitis," respectively. —Drs Isaiah A Lehman and Harry Gordon addressed the Bronx Gynecological and Obstetrical Society, October 22, on "Evaluation of Results of Electrosurgical Treatment of Chronic Endocervicitis."

OHIO

Society News.—Dr Harry H McClellan, Dayton, addressed the Hardin County Medical Society, September 20, on "Physical Causes of Mental Diseases." —Drs Charles E Turner, Columbus, and Robert W Lukens, Wheeling, W Va, addressed the Fayette County Medical Society, Washington Court House, September 6, on "Obstetric Hemorrhages" and "Early Diagnosis of Pregnancy," respectively. —Dr William W Weis, Piqua, presented a paper on "The Maggot Treatment of Suppurating Wounds and Osteomyelitis" before the Miami County Medical Society, Troy, September 7. —Dr Roy W Scott, Cleveland, was guest speaker at the first fall meeting of the Marion Academy of Medicine, September 4, on "Problems of Heart Disease from the Practitioners' Standpoint." —Dr Maxwell Harbin, Cleveland, addressed the Stark

County Medical Society, September 11, on management of fractures.—Dr. Carl S. Bickel, Wheeling, W. Va., addressed the Belmont County Medical Society, Bellaire, September 6, on "Toxemias of Pregnancy."—Dr. Robert H. Crawford, Indianapolis, addressed the Toledo Academy of Medicine, October 5, on "Relation of Cell Size to the Classification of Some Commonly Encountered Anemias."—Dr. Norris W. Gillette, Toledo, addressed the Academy of Medicine of Lima and Allen County in Lima, September 18, on "Abdominal Surgery in Children."

PENNSYLVANIA

Record Low Birth Rate.—Health department statisticians have announced a total of 157,059 live births in Pennsylvania during 1933, a rate of 15.8 per thousand of population. Both the actual number and the rate established low records. The birth rate has declined steadily since 1921, when it was 25.9. Last year 96 per cent of all live births were attended by physicians, 3 per cent by midwives, and 1 per cent by persons other than a doctor or midwife.

The Furlough Plan at Sanatoriums.—The state department of health has recently announced a furlough plan for the three state tuberculosis sanatoriums, with a view to decreasing the waiting list, which now numbers more than a thousand. Patients who are successfully receiving artificial pneumothorax treatment are to be returned to their homes and will receive treatment at special clinics. Field nurses and clinicians will watch these patients carefully and return to the sanatorium any who do not show sufficient improvement.

Philadelphia

Meeting on Ophthalmia Neonatorum.—A report on a survey of 27,000 hospital birth records and 2,000 cases of ophthalmia neonatorum made to determine the limitation in the use of silver nitrate was presented by Dr. Louis Lehrfeld at the regular meeting of the Philadelphia County Medical Society, October 24. Dr. Lehrfeld's study was undertaken under the sponsorship of the Philadelphia Committee on the Conservation of Vision, a similar committee of the Medical Society of the State of Pennsylvania, the Philadelphia Department of Public Health and the Philadelphia Health League. It was financed by funds supplied by the Civil Works Administration. Mr. Lewis H. Carris, New York, managing director of the National Society for the Prevention of Blindness, and Drs. J. Norman Henry, George E. de Schweinitz, Barton Cooke Hirst and William R. Nicholson discussed the subject.

RHODE ISLAND

Hospital News.—Drs. William B. Castle and Maurice B. Strauss, Boston, presented papers at a meeting at the Rhode Island State Hospital for Mental Diseases, Howard, October 23, on "Practical Treatment of Anemia" and "Polyneuritis, Spinal Cord Sclerosis and Korsakoff's Syndrome," respectively.

Society News.—Dr. Emanuel A. Henkle, New London, Conn., addressed the Washington County Medical Association, Westerly, October 10, on obstetric problems.—Dr. William Jason Mixer, Boston, addressed the Providence Medical Association, October 1, on "Rupture of Intervertebral Disk as a Clinical Entity."

TENNESSEE

Personal.—Dr. Andrew Richard Bliss Jr., formerly chief of the division of pharmacology of the University of Tennessee College of Medicine, has been appointed professor of pharmacology and to the newly created office of dean of pharmacy at Howard College, Birmingham, Ala., *Science* reports.

Society News.—Drs. Edward A. Oliver, Chicago, and Charles A. Aldrich, Winnetka, Ill., addressed the Gibson County Medical Society, September 24, on diseases of the skin and diseases of children, respectively.—Dr. Tinsley R. Harrison, Nashville, was guest speaker at a meeting of the Madison County Medical Society, Jackson, October 2, on "Treatment of Congestive Heart Failure."—Dr. William D. Haggard, Nashville, addressed the Sullivan-Johnson Counties Medical Society, Kingsport, September 5, on cancer of the colon.—Drs. William W. Wilkerson Jr. and Murray B. Davis, Nashville, discussed eye injuries and abdominal injuries, respectively, as guest speakers before the Robertson County Medical Society, Springfield, in August.—Drs. Edward G. Thompson and John J. Shea addressed the Memphis and Shelby County Medical Society, Memphis, September 4, on "Problems of the Obese" and "Management of Fractures of the Face," respectively.

VIRGINIA

Society News.—Dr. James P. Baker Jr., Richmond, addressed the Southside Virginia Medical Association, September 11, on cardiac asthma. Drs. Dean B. Colc, Frank S. Johns, Richmond, and John A. Proffitt, Burkeville, demonstrated collapse therapy of tuberculosis.—Speakers at a meeting of the Mid-Tidewater Medical Society at Gloucester, July 24, were three Richmond physicians: Drs. Lawrence T. Price, on hematuria; Reuben F. Simms, granuloma inguinale, and Frank S. Johns, surgical gynecology.

State Medical Election.—Dr. Philip S. Moncure, Norfolk, was chosen president-elect of the Medical Society of Virginia at its annual meeting in Alexandria, October 11. Drs. Carrington Williams, Richmond, Samuel B. Moore, Alexandria, and Alexander F. Robertson Jr., Staunton, were elected vice presidents and Miss Agnes V. Edwards, Richmond, was renamed executive secretary. Dr. Francis H. Smith, Abingdon, was installed as president for the coming year. Next year's meeting will be held in Norfolk.

WISCONSIN

Personal.—Dr. George R. Love, Oconomowoc, won the president's cup in the annual golf tournament of the State Medical Society of Wisconsin in Green Bay, in September, with a score of 75.—Dr. Roy T. Hansen has been chosen health officer of Wauwautosa to succeed Dr. Enoch F. Peterson.

Society News.—Drs. Robert S. Baldwin, Marshfield, and Stephen E. Williams, Chippewa Falls, addressed the Clark County Medical Society, September 5, on tuberculous meningitis and anesthesia, respectively.—Dr. Chester M. Kurtz, Madison, presented a paper on "The Physician's Heart" at a meeting of the Dane County Medical Society, Stoughton, September 20.—Speakers before the Tenth District Medical Society at Eau Claire, September 27, were Drs. Alfred A. Strauss, Chicago, on "Surgical Treatment of Gastric and Duodenal Ulcers"; William T. Peyton, Minneapolis, "Diagnosis and Treatment of Malignancy," and William D. Stovall, Madison, "Prophylactic Immunization."—Dr. William P. Murphy, Boston, addressed the University of Wisconsin Medical Society, Madison, September 28, on "The Present Status of Pernicious Anemia."

GENERAL

Society News.—The American Association of School Physicians has established new headquarters at 883 Broadway, Albany, N. Y. Dr. William A. Howe, Albany, secretary of the association, will henceforth devote most of his time to its affairs. Dr. Charles H. Keene, Buffalo, N. Y., is the present president of the association, installed at its recent meeting in Pasadena, Calif.—Dr. John M. Wheeler, New York, was elected president of the Society of Plastic and Reconstructive Surgery at its recent annual meeting in New York; Drs. Warren B. Davis, Philadelphia, and Isadore Goldstein, New York, were elected vice presidents, and Dr. Arthur Palmer, New York, general secretary.—Dr. Robin C. Buerki, Madison, Wis., was named president-elect of the American Hospital Association at its annual session in Philadelphia, and Mr. Robert Jolly, Houston, Texas, was installed as president.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Hospital, Philadelphia, \$5,000 by the will of Dr. Edwin A. Jarecki, former chief resident physician of the hospital.

New York Hospital, New York, \$100,000 by the will of Edward Wright Sheldon, late president of the hospital.

Montefiore and Mount Sinai hospitals, New York Tuberculosis and Health Association and American Red Cross, New York, \$1,000 each by the will of the late Minnie Dessauer.

Hospital for Joint Diseases, New York, \$100,000 by the will of the late Edward W. Browning.

St. Mary's Free Hospital for Children, \$8,000 by the will of Fannie Henrietta Youngs.

Methodist Hospital and James Whitcomb Riley Hospital, Indianapolis, \$100,000 and \$50,000, respectively, by the will of the late Louis H. Levy.

New York Homeopathic Medical College and Flower Hospital, \$50,000 from the estate of the late Dr. John E. L. Davis, made available through the death of Mrs. Davis.

Research on Leprosy.—During the current year the Leonard Wood Memorial for the Eradication of Leprosy has made grants for research in its special field to the following workers:

Dr. Charles M. Carpenter, University of Rochester (N. Y.) School of Medicine, for study of radiothermic treatment of leprosy.

Edmund V. Cowdry, Ph.D., Washington University School of Medicine, St. Louis, for study of histophysiology of lesions of leprosy by micro-incineration.

Dr. Esmond R. Long, University of Pennsylvania School of Medicine, Philadelphia, comparative study of acid-fast bacteria.

Dr. Clarence A. Mills, University of Cincinnati College of Medicine, survey of climate on the incidence of leprosy.

Malcolm H. Soule, LL.D., University of Michigan Medical School, Ann Arbor, Mich., methods of blood culture in tuberculosis and leprosy.

Support of the memorial laboratory completed last year in Culion, P. I., was continued and additional facilities were provided for the Eversley Childs Treatment Station and the Cebu skin clinic built by the Wood memorial and presented to the Philippine Health Service. The memorial fund also supports the *International Journal of Leprosy*.

Hygiene Association Withdraws Sponsorship of Film.—The American Social Hygiene Association announces that it has withdrawn its sponsorship of the commercially produced film "Damaged Lives," which deals with syphilis in family life. Dr. William F. Snow, New York, general director of the association, states that apparently it has been impossible for the owner of the film, the Weldon Pictures Corporation, to control undesirable and unauthorized activities of distributors and exhibitors in the local advertising and showing of the film. The association has notified the firm that the name of the American Social Hygiene Association must be removed from the film and all prints therefrom and from all material used in connection with its showings and has requested the return of the negative and all prints of the lecture film dealing with syphilis, which was shown jointly with the picture. The executive committee believes that the experience, which was undertaken after consultation with health officers, physicians and educators, has been worth while and will possibly pave the way for entirely successful projects in the future. In his letter addressed to members and cooperating agencies, Dr. Snow states that although the films are not being scheduled for future showings, a number of copies have not been turned in and comments from one city indicate that it has been shown there with undesirable and unauthorized modifications of the approved program. He asks that the association be notified if these films are shown or announced in any community.

Southern Medical Association.—The twenty-eighth annual meeting of the Southern Medical Association will be held in San Antonio, Texas, November 13-16, under the presidency of Dr. Hugh Leslie Moore, Dallas. The speakers at the general sessions will be as follows:

- Dr. Robert U. Patterson, Surgeon General, M. C., U. S. Army, Washington, D. C., Military Training of Medical Officers, Regular Reserve and National Guard.
Dr. Frank K. Boland, Atlanta, Interpretation of Abdominal Pain.
Dr. Joseph L. Baer, Chicago, Some Phases of the Conduct of Labor.
Dr. Miley B. Wesson, San Francisco, Urography and the General Practitioner.
Dr. William T. Coughlin, St. Louis, Surgical Relief of Pain About the Head.
Dr. George M. MacKee, New York, Treatment of Skin Diseases by Physical Therapeutic Methods.
Dr. William P. Wherry, Omaha, Chronic Sinusitis from a General Practitioner's Viewpoint.
Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, Heart Disease and the General Practitioner.
Dr. Francisco de P. Miranda, Mexico City, Physiology of Heart Failure.
Dr. Bernard Myers, London, England, Reminiscences of Interesting Pediatric Clinical Cases.
Dr. Jacques Forestier, Aix-les-Bains, France, Relief of Pains of the Locomotor System by Means of Local Injections of Lipiodol and Their Control by X-Rays.
Dr. H. Kennon Dunham, Cincinnati, Pulmonary Emphysema, an Important Sequela of Chronic Lung Lesions.
Dr. James S. Mc Lester, Birmingham, Ala., President-Elect, American Medical Association, Nutritional Failure as a Clinical Problem.
Dr. Albert H. Rowe, San Francisco, Food Allergy, a Common Problem in Practice.

Discoverers of Liver Treatment Share Nobel Prize.—Drs. George R. Minot and William P. Murphy of Harvard Medical School, Boston, and George H. Whipple of the University of Rochester, Rochester, N. Y., have been named winners of the Nobel Prize in medicine for 1934. The prize, which this year totals \$41,000, was awarded to the three physicians "for liver therapy in anemia." Dr. Minot, who is 49 years of age, graduated from Harvard in 1912. During his career he has been associated with Johns Hopkins University School of Medicine and various institutions affiliated with Harvard, where, since 1928, he has been professor of medicine. In 1928 he was awarded the Kober gold medal of the Association of American Physicians and the Charles Mickie fellowship of the University of Toronto; in 1930, the Cameron prize of the University of Edinburgh and the gold medal of the National Institute of Social Sciences; and in 1931 shared with Dr. Whipple the gold medal and \$10,000 award of *Popular Science Monthly*. Dr. Whipple graduated in medicine at Johns Hopkins University in 1905. He is 56 years of age. In 1914 he left Johns Hopkins, where he had been a member of the faculty since 1909, to become professor of research medicine at the University of California and director of the Hooper Foundation for Medical Research, San Francisco. He was dean of the medical school from 1920 to 1921, when he was appointed dean and professor of pathology of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., his present position. Dr. Murphy is 42 years of age

and an alumnus of Harvard, where he is now instructor in medicine. In 1930 he shared the Cameron Prize with Dr. Minot.

Rockefeller Foundation Aids Research in Mental Health.—The major emphasis of the activities of the Rockefeller Foundation in 1933 in the field of medical science was placed on the problem of mental health. Of a total of \$9,890,806.31 expended by the foundation for philanthropic projects, \$1,173,853 was appropriated for the advancement of medical science. Programs concentrating specifically on psychiatry and public health teaching were aided at Johns Hopkins University School of Medicine for research in psychiatry; University College, London, for work in biophysics and neurophysiology; Washington University, St. Louis, for investigations in nerve physiology, and Harvard Medical School and Massachusetts General Hospital for cooperative work in psychiatry. In addition Dalhousie University, Halifax, N. S., received an appropriation for development of teaching in public health. During 1933 the foundation provided 295 fellowships in the medical sciences and by research grants enabled sixty-one scientists or groups of scientists to carry on research. For public health work during the year the foundation expended \$3,286,063.01. Projects for the control of yellow fever were supported in Africa, Brazil, Bolivia and New York; malaria control in three states of the United States and seventeen foreign countries; studies of hookworm disease in Palestine, Egypt, Straits Settlements and Puerto Rico; studies of Endamoeba histolytica, Rocky Mountain spotted fever, tuberculosis, sprue anemia, filariasis, schistosomiasis, and the diseases affecting the races of the Pacific. Among other activities the foundation also aided the government of India in conducting experiments on the disposal of refuse; sponsored studies of statistical epidemiology; contributed to development of health service in many foreign countries, as well as in various areas in the United States; contributed to the support of schools of hygiene and public health and centers of training in Japan, Puerto Rico, Central America, South America, Europe and the United States. Appropriations in the field of the natural sciences included funds to the National Research Council for research in problems of sex and the effects of radiation on living organisms and to the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Maine, for research in mammalian genetics. The remainder of the year's appropriations were placed in the fields of social sciences and the humanities and in emergency grants, the last including funds contributed to both American and European universities for salaries of scholars displaced from their positions in foreign schools for political reasons.

Government Services

Medical Director Appointed for FERA

Dr. Clifford E. Waller, assistant surgeon general in charge of the states relations division of the U. S. Public Health Service, has been appointed medical director for the Federal Emergency Relief Administration. Dr. Waller will direct the policies and activities of the administration in the field of medical relief for the unemployed and advise the various divisions on health and sanitation matters. He will also advise in the development of work-relief activities that promote health, such as the malaria control projects and nursing work. He will continue to devote part of his time to his work with the public health service.

Changes in Public Health Service

Passed Asst. Surg. Fred W. Kratz, relieved at Angel Island, Calif., and assigned at Portland, Ore., in charge of service activities at that place.

Medical Director Emil Krulish, relieved at Portland and assigned at Los Angeles, in charge of the relief station.

Asst. Surg. Ralph J. Mitchell, relieved at New Orleans Marine Hospital and assigned at Marine Hospital, San Francisco.

Passed Asst. Surg. Frank S. Fellows, relieved at Albuquerque, N. M., and assigned at the Marine Hospital, New Orleans.

Sr. Surg. Robert H. Heterick, relieved at Los Angeles and assigned at Albuquerque, N. M., for duty in connection with the supervision of administrative affairs in connection with the control of communicable diseases among the Indians.

Surg. William Y. Hollingsworth, relieved at Marine Hospital, New Orleans, and assigned at Louisville in charge of the Marine Hospital.

Surg. Frank V. Meriwether, relieved at Ellis Island, N. Y., and assigned at Oslo, Norway, for duty in the office of the American Consul for the examination of aliens.

Passed Asst. Surg. Ralph Gregg, relieved at Dublin, I. F. S., and assigned at Ellis Island, N. Y.

Asst. Surg. Alexander G. Gilliam, relieved at Los Angeles and assigned at the Marine Hospital, Seattle, Wash.

Surg. Walter G. Nelson, relieved at Oslo, Norway, and assigned at Dublin, for duty in the office of the American consul general, in connection with the examination of aliens.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 5, 1934.

The Health of the Nation

In the annual report for 1933 of the Chief Medical Officer of the Ministry of Health (Sir George Newman), the estimated population in England and Wales in the middle of the year is stated to have been 40,350,000.

THE DECLINING BIRTH AND DEATH RATES

The two great features of English vital statistics during the past half century are the considerable declines in the birth and death rates. In the decade 1871-1880 the annual birth rate averaged 35.4 per thousand persons living. A continuous fall then set in. In the decade 1921-1930 the rate was almost halved, being only 18.3. Moreover, the individual years throughout this decade, as well as those which have followed, have shown a rapid and almost continuous fall. In 1926 the birth rate was 17.8; in 1927, 16.6; in 1928, 16.7; in 1929, 16.3; in 1930, 16.3; in 1931, 15.8; in 1932, 15.3, and in 1933 (the year now under review) 14.4. The fall of the birth rate is such that statisticians have calculated that in 1940 the population will cease to increase and after that will decline.

As to the death rate, this averaged 21.4 in the decade 1871-1880. The great advances in hygiene have so reduced it that in the decade 1921-1930 it was only 12.1. In 1933 it was 12.3. The five principal causes of death gave the following figures per thousand deaths for 1933: diseases of the heart and circulatory system, 269; cancer, 124; respiratory diseases, 113; diseases of the nervous system, 79; tuberculosis, 67. The infant mortality has also shown a great decline. In the quinquennium 1871-1875 the deaths of infants under 1 year averaged 153 per thousand live births; in 1930 the figure was only 60, the lowest on record; in 1933 it was 64.

INFECTIOUS DISEASES

The decline in the mortality of the infectious diseases in the last thirty years is remarkable. The typhoid death rate fell from 174 per million persons in 1900 to 6 in 1932. For ages under 19 years the measles death rate, calculated in the same way, showed a fall from 1,199 to 455; the scarlet fever, from 340 to 46; the diphtheria, from 936 to 229, and the whooping cough from 1,090 to 310. But incidence has not always kept pace with mortality. The annual number of cases of diphtheria has been practically constant for twenty years.

TUBERCULOSIS

In 1933 there were 33,259 deaths from tuberculosis, against 33,658 in 1932. In the decade 1871-1880 the average annual death rate from tuberculosis per thousand of population was 2.88; in that of 1881-1890, 2.43; 1891-1900, 2.02; 1901-1910, 1.66; 1911-1920, 1.43, and 1921-1930, 1.01. In curious contrast to this general fall, however, a rise in the death rate of single young women (aged from 15 to 25 years) became apparent in 1917 and the subsequent years and was most marked in London. The report states that the causes of this increase have never been definitely ascertained. The increase in the number of women employed in industry, with the fatigue consequent on the nature of the employment and the journeys to and from home in overcrowded trains, buses and trams, want of rest and late going to bed after dancing and other amusements have been suggested as causes; also unsatisfactory meals, such as the "tea and bun" lunch.

VENEREAL DISEASES

The official scheme for the treatment of venereal diseases has been in operation for eighteen years. Its principles are

the education of the public in the danger of these diseases and the provision of centers for their treatment. In the treatment of syphilis considerable success has been attained. The greater number of persons infected resort to the centers. The new cases treated there amounted to 42,805 in 1920. In 1924 they fell to 22,010 and in 1933 to 21,525, the lowest number on record. Syphilis is not now transmitted to wives and offspring to the same extent as in the past.

CANCER

The deaths per million of population from cancer were 1,526 in 1933, an increase of 16 over 1932. The increase of cancer is shown by the following figures: In the quinquennium 1901-1905 the crude death rate from cancer per million was 867; in 1926-1930, 1,411. The increase in the crude death rate is attributed to the average lengthening of life of the population. Sir George Newman considers that there is a changing outlook in cancer prevention. When cancer became a subject of experimental research it was thought that some method of causation would be discovered which would indicate a road to prevention. It is now thought that the changes in the cells which have undergone malignant transformation are no more than pathologic, perhaps even physiologic, reactions to one or more of a wide variety of stimuli, more or less peculiar to the different organs affected. The need is for minute investigation of the abnormal conditions which determine the emergence of cancer, conditions which probably differ widely for different organs. There is a feeling of growing dissatisfaction with the results of laboratory research, and it is suggested that in the future attention will be turned to clinical research.

Nutrition and the Industrial Depression

The evidence collected indicates that the general health of the population is well maintained in spite of economic difficulties. The health of the unemployed and their dependents, as a whole, is not suffering seriously or generally, though of course there are exceptions. Many of the unemployed in the distressed area show the inevitable physical signs of prolonged deprivation, though not deprivation comparable in degree with that of certain periods in the nineteenth century. There is no question that the nutrition of the English people today is better than that at any period of which there are records. So far as the death rate is any criterion, of the six English and Welsh counties most seriously affected by the industrial depression, two had a general death rate actually below the average for the country and in the others it was only slightly higher. But the infant death rate in nearly all these areas was above the national average.

Aerial Medical Service in Australia

In the sparsely settled parts of Central and Northern Australia, the aerial medical service of the Australian Inland Mission has proved a great boon. Recently a woman in a cattle station hundreds of miles from the nearest township was taken suddenly ill. Within thirty-six hours she had been taken 700 miles to a hospital at Camooweal. This feat was accomplished by the aid of wireless and airplane. When it became apparent that the illness was serious a girl motored 70 miles to another cattle station, which is equipped with one of the mission's pedal-transmitter wireless sets. These sets are an Australian invention and are so simple that no training is required to use them. A message describing the woman's illness was tapped out on a device like a typewriter, operated by pedals like those of a bicycle. As the operator spelled out each word it was converted into Morse by the machine and automatically transmitted by wireless telegraphy. The message was picked up at the mission's chief country center at Cloncurry, North Queensland. A few minutes later listeners at the cattle station heard the voice of the "flying doctor," Dr. J. M. Rossell, asking for more information about the woman.

This was again spelled out on the pedal-transmitter. An airplane with a pilot and the doctor on board left Cloncurry for the station where the woman was ill. On arriving the doctor attended to the patient, placed her on a stretcher in a special compartment of the airplane and flew with her to the hospital at Camooweal, where the operation was performed. The Australian Inland Mission has twenty wireless sets of the pedal-transmitter type at key positions in Northern Australia. This particular airplane has flown more than 100,000 miles for the mission without a serious accident, a remarkable performance considering that it mostly has to land on rough station paddocks.

PARIS

(From Our Regular Correspondent)

Oct. 8, 1934.

Suppression of a Burdensome Tax on Physicians

The French medical profession has just been given an important reduction in taxes. According to a law dating back to 1880, a physician was obliged to pay a relatively high percentage on his net income (after deduction of expenses incurred in the exercise of his profession).

There were two other taxes, one similar to the personal property tax in the United States, which amounted to about 25 per cent of the rental of his domicile, and a second more obnoxious form of taxation, termed the "patente," or privilege to practice, also based on the rental value of his domicile, which was equally burdensome, amounting to about 40 per cent of the rent paid. If a physician had an office in another building than that in which he resided, he was obliged to pay the "patente" a second time, and even a third time if he had a country home. The result has been that medical practitioners have been greatly handicapped, being obliged to adapt themselves to inadequate facilities in their domiciles.

These various taxes have left physicians but little of their hard-earned income and have been a discouragement to young men about to engage in practice. Fortunately, one of these taxes, the "patente," which does not exist in the United States, has just been suppressed, so that the burden has been considerably lightened.

In spite of their reputation for honesty and neglectful of the immense amount of services rendered gratuitously, the taxing powers do not trust French physicians. In order to keep a check on medical incomes, every practitioner is now obliged to keep a book giving the name of every patient treated, and the amount received from each one. In order to maintain professional secrecy, a patient can be given a number instead of being listed by name.

Rôle of the Filtrable Virus in Infantile Tuberculosis

At the French Pediatric Congress in July, Paiseau and Valtis read a paper on the rôle of the filtrable virus in infantile tuberculosis. The presence of a filtrable tuberculosis virus in the organs of both healthy children at birth and in guinea-pigs whose mothers were tuberculous is well established by the work of Calmette and others. The authors have obtained similar results by the inoculation of guinea-pigs with nonfiltered tuberculous material obtained from human beings. This raises the questions not only of whether heredity plays a part in tuberculosis, but also that of the part played by the filtrable virus in the pathogenesis of human tuberculosis.

The authors emphasize the necessity of protecting the healthy infant from being infected by a tuberculous mother or other member of the family, despite the apparent handicap which these investigations imply as to heredity and antepartum infection. Infection from those who are suffering from tuberculous lesions in close contact with children must still remain the most common source.

The studies made by these authors reveal the existence of a difference between reactions to tuberculin and to the filtrable ultravirus, which can perhaps be utilized to distinguish certain types of "inflammatory tuberculosis" in which the filtrable virus plays an important part.

One can isolate in cases of polyarticular rheumatism, nephritis, purpuras and other diseases, both in adults and in children, acid-fast bacilli that present most of the characteristics of the elements obtained from the filtrable virus. This permits one to make the deduction that in these diseases there is a pathogenic action by the filtrable elements of the tubercle bacillus.

The missing link in the chain of evidence of the relation between so-called inflammatory tuberculous diseases and tuberculosis as it has been accepted up to the present time is that in the former group one does not find the lesions which, since Poncet, have been regarded as typical of infection by the tubercle bacillus. Views on the results of guinea-pig inoculation with tuberculous products from the human being must be modified. In the future, the absence of typical tuberculous lesions in the inoculated guinea-pig does not imply the non-existence of tubercle bacilli in the secretion, excretion or tissue from which the inoculated material was taken.

Ribadeau-Dumas, in the discussion of this paper, stated that a maternal tuberculosis did not seem to have much influence on healthy new-born infants, and the impregnation of the human organism by the filtrable tuberculosis virus could not be regarded as much of a menace.

Paiseau, in closing, drew attention to the fact that there still exist many anomalous factors in the question of research on the subject of tuberculosis. There may be some other still unsolved question than that of the filtrable ultravirus. If the bacillus and the tubercle are not constantly associated, one fails to see why the virulence of the bacillus should be the sole invariable factor.

Commemoration of the Services of the American Ambulance of Neuilly During the World War

In the presence of American and French officials, a tablet has just been placed in the Neuilly high school building, which was used as a hospital by the first ambulance corps to be placed in service during the World War. Less than a month after the declaration of war, the organization was ready to convey the wounded to Paris. About 250 physicians and surgeons and 650 civilians of both sexes devoted their energies to the care of the wounded in this hospital. From Sept. 1, 1914, to July 1917, more than 12,000 French soldiers were cared for. After the United States entered the war, a large number of American soldiers were cared for in the building and it became a part of the army medical service.

Coexistence of Hyperthyroidism and Hyperpituitarism

At the July 10 meeting of the Academy of Medicine, Drs. Etienne and Drouet said that the reason failures occur in the treatment of hyperthyroidism is the inability to appreciate the fact that there is an alteration in the function of the hypophysis as an associated lesion. The fact that the basal metabolic rate is lowered by simple irradiation of the hypophysis proves that the hyperactivity of this gland dominates hyperthyroidism. Under these conditions, one ought not to limit the treatment of hyperthyroidism to radiotherapy, administration of iodine or thyroidectomy. It is essential to treat the excessive activity of the hypophysis at the same time by radiotherapy of this structure.

Radiotherapy of Furuncles of Upper Lip

Dr. Faure and his associates report excellent results following the use of radiotherapy in this grave localization of pyogenic organisms. Surgeons feel that operative measures are often of no avail in preventing intracranial complications of furuncles

of the upper lip and hence the authors feel that their success in six cases merits the application of radiotherapy. The rapid improvement (after a few days) was striking. They cite the statistics of Baensch, who treated 109 furuncles of the face (twenty-one of the upper lip and twenty-four of the nose) with a mortality of only 1.9 per cent following the use of radiotherapy alone. In the fatal cases there were already symptoms of thrombosis of the cavernous sinus at the time treatment was begun. In 103 cases treated surgically at an adjacent clinic there was a mortality of 10.3 per cent.

Renal Intolerance of the Type of Lipoid Nephrosis Following Treatment for Syphilis

At a recent meeting, Dr. Tzank and his associates reported two cases of lipoid nephrosis following the administration of small doses of antisyphilitic drugs. The same observations have been reported after the use of gold salts in pulmonary tuberculosis and after scrotherapy. The authors believe that there is a type of renal intolerance which presents clinically the symptoms of a lipoid nephrosis. This corroborates the opinion held in France as to this form of nephrosis; viz., that it is a clinical syndrome the etiology and character of which depend on a number of different pathologic lesions.

Death of Prof. Léon Bernard

One of the leaders in the international fight against tuberculosis has just died of cerebral hemorrhage. He was one of the first to create a special service in public hospitals for the treatment of pulmonary tuberculosis. This new ward service and the outpatient department were under his constant supervision. They served as models for the remarkable organization that now exists in all parts of France and its colonies, in the form of services in city hospitals, dispensaries and sanatoriums, all well coordinated to combat a disease that is prevalent in France. Léon Bernard also played an important part in the organization of the International Congress on Tuberculosis and was for a time its secretary general.

BERLIN

(From Our Regular Correspondent)

Sept. 3, 1934

The Causes of the Heavy Mortality of Male Fetuses

Professor von Pfaundler, pediatrician, of Munich, delivered an address recently on "The Causes and the Significance of the Heavy Mortality of Male Fetuses." By "early death" is meant deaths that occur before the end of the first year of life, including also the prenatal deaths. The so-called stillbirths occur between the eighth and the tenth month of pregnancy (about 30,000 in Germany), while the miscarriages occur during the first seven months of pregnancy. Reliable statistics are not available, particularly in regard to the miscarriages of the first few months. One can, however, make an estimate. From statistics that included no wilful abortions, Pfaundler estimated that there are 280 miscarriages for each thousand births. Of 2,010,000 conceptions annually, 910,000 reach the first year of life. Fetal deaths are, therefore, much more frequent than is supposed. Since greater importance attaches to the quality of offspring than to the quantity, the question arises what values are lost. Is this high mortality a weeding-out process of nature? In comparisons with animals, it has been found that in pigs there are 28 abortions to 100 conceptions; in rats, 33 abortions, and in man, 22 abortions. Of the human procreations, 45 per cent die before they reach the procreative stage. In all animals and plants the proportions are less favorable. In illustration, it was stated that the female sturgeon deposits several million eggs, all of which are impregnated. If only one million survived and matured and reproduced, in the third generation the sturgeon spawn would be

unable to find sufficient room on earth, and in the fourth generation sturgeon spawn would exceed in mass the earth itself; hence the early death of multitudes is here an absolute necessity.

The pathologist can shed light on the cause of fetal deaths. According to these observations, eighty out of a hundred pregnancies end with birth; of the remaining twenty, seven are abortions; one is a monster; the twelve fully developed fetuses are not always normal; in fact, most of them show abnormalities that may be regarded as the consequences of actual malformations. Malformations are regarded as of hereditary origin. Among the miscarriages there are more males than females, the percentage of males becoming relatively greater the nearer the deaths lie, in point of time, to the conception period. By applying extrapolation methods it may be computed that 146 males are conceived as against 100 female individuals. The mortality among the females is slight, being about the same as in infants. With the males it is different; for, by the end of the first month after conception, 200 out of a thousand have perished. The higher death rate of one sex is well known, a genotypic illustration being the fact that only men die from the effects of hemophilia. In the opinion of Lenz, the deaths among the male embryos are conditioned by recessive, sex-bound lethal factors. These causes can cause damage only in the genotype, this being associated with the composition of the twenty-fourth chromosome; that is to say, lethal factors and hereditary units, which, with external manifestations not understood in detail, lead to an early death of the individual. According to this conception, the higher mortality among the male embryos would effect a wholesale elimination of recessive lethal factors. These views appear to harmonize with the known figures.

The deaths occurring at term or thereabouts are associated, for the most part, with injuries in the mother, so that probably here also selective processes are at work. It is highly probable that the defects of the mother find expression in the genotype of the child. Likewise during the birth period the percentage of male deaths is relatively higher. Aside from the fact that the head of males is larger than that of females, Pfaundler thinks that also a sublethal factor is involved, since the excess mortality observed in males holds good still in the group delivered by cesarean section. The male sex is, in point of fact, the weaker, with its forty-seven nuclear fibers as against forty-eight in females. More boys die from all possible diseases, including constitutional diseases, as is revealed by the statistics of the German reich. Pertussis alone constitutes an exception, for the incidence and the mortality of this disease are higher among females. The reasons for this fact are not understood.

Influence of the Weather on Eye Diseases

It has been shown by Professor de Rudder that disturbing layers of the atmosphere that appear at the junction of two bodies of air play a part in the origin of so-called weather diseases. The presence of such a layer can be ascertained by the weather bureaus by observations on the barometer, the temperature, cloud formation and the amount of precipitation. Of the eye disorders caused by the weather, acute attacks of glaucoma are well known. Dr. Rohrschneider of Greifswald points out that research has shown that many cases of herpes corneae present all the characteristics of a weather disease. The weather is the nonspecific cause of the disease manifestation, its effects being brought about by modification of the reactivity of the vegetative nervous system; in addition there is of course also a specific cause.

Distinct from the weather diseases are the "seasonal diseases." The precipitating factor in the seasonal diseases has not yet been ascertained. For example, *ulcus serpens* in Greifswald (Pomerania) shows a peak at harvest time, in July and August.

An example of a genuine seasonal disease, with a summer peak, is conjunctivitis induced by diplobacilli, with its peak in June and July. The scrofulous diseases of the eye give evidence of a regular increased incidence in spring, with the peak falling in March.

Dr. Ortman, of the Pathologic Institute of the University of Berlin, recently endeavored to discover whether the weather plays a part in the causation of death. It was not possible to demonstrate a distinct dependence of the mortality figures on atmospheric pressure, temperature, vapor tension, humidity, direction and velocity of the wind, cloud formations and precipitations, but he was able to demonstrate the influence of disturbing strata of the atmosphere. Peaks in the mortality coincided with so-called front days; that is, with days on which a cold wave or a warm wave passed over Berlin. A differentiation proved possible also between the various types of disease, between summer and winter, and between the actions of various changes in the weather.

Foreigners Subject to the Sterilization Law

A decision of the Berlin eugenics court has been approved in a comment by the referee of the minister of justice to whom the matter was submitted. The comment confirms that the court rightfully assumes that foreigners also are subject to the law for the prevention of hereditary defects in posterity. The correctness of his view is evident from the general principle that foreigners, during the period of their stay in Germany, are subject to the German laws. The eugenics court is likewise correct in calling attention to the fact that the foreigner can justly claim the right to leave the territory of the reich and thus escape the execution of the order. The purpose of the federal law is to remove from the German people the menace of hereditary diseases. That purpose is attained if the foreigner with hereditary and transmissible defects shall leave the territory of the reich.

MADRID

(From Our Regular Correspondent)

Sept. 5, 1934.

Health Conditions in Spain

Dr. Palanca, formerly director of public health and hygiene, recently published some important data on health conditions in Spain. In dealing with the problem of sewage in Madrid, he said that the sewers empty into the Manzanares River without any previous treatment. The sewage waters in Madrid increased from 12,500,000 liters daily in 1877 to 250,000 cubic meters at the present time, which is more than 4 cubic meters a second. The Manzanares River has a flow of about 700 liters a second, which is a small quantity of water for the dilution of the sewage from Madrid. Water from the Manzanares River is used to water vegetable gardens in Madrid, and these gardens seem to be responsible for epidemics of typhoid. Some time ago Drs. Palanca, La Rosa and Vallejo studied the bacteriologic changes of the waters of the Manzanares River in its course. They found that as soon as the sewage waters from Madrid empty into it their bacteriologic conditions improve a great deal, and it is only 60 kilometers from Madrid, at Aranjuez, that the waters of the Manzanares, having now emptied into the Jarama River (an affluent of the Tagus River) become normal. Dr. Palanca stated that, although it is claimed that sewage waters improve the conditions of horticulture, their use is unhygienic. He reviewed the causes of the higher incidence of infections in the cities than in rural communities. The statistics of 1932 and 1933 gave an average mortality of 16.44 per thousand inhabitants for the nation in a whole. All the Spanish cities except Madrid, Barcelona, Palma de Mallorca, Valencia, Santa Cruz de Tenerife, San Sebastián and four others gave an average mortality higher than that. Palencia

gave the highest average mortality (29.93 per thousand inhabitants). No provincial capital gave a lower mortality rate than that of its province in a whole. The mortality due to infections was 4.69 per thousand in provincial capitals and 3.94 for the nation as a whole. The birth rate diminished from 28.34 per thousand in 1932 to 27.81 in 1933. Almeria and Barcelona were the provinces with the highest birth rate (38.18 and 16.39 per thousand, respectively). The mortality from heart diseases and typhoid was higher in 1933 than in 1932, while that from measles and diphtheria diminished. The mortality from homicide increased from 1.02 per thousand in 1932 to 1.36 in 1933; that is, more than 50 per cent.

The Value of Cholecystography

In a lecture before the Academia Medicoquirurgica Española on the value of cholecystography and of duodenal catheterization in the study of evacuation of the gallbladder, Dr. Larrú, a radiologist, described his investigations on the cholecystokinetic power of butter when it is added to several food substances. Boyden's meal consists of four egg yolks added to 280 Gm. of cream. The ingestion of egg yolks alone is efficacious in evacuation of the gallbladder. The speaker made investigations on the cholecystokinetic action of several drugs: thyroxine, acetylcholine, parathyroid extract, solution of pituitary (by the intravenous or the subcutaneous route) estrogenic substance and magnesium sulphate (through a duodenal sound). The results of the administration of these drugs are inconstant, and their cholecystokinetic action is far behind that of egg yolk. The duodenal injection, through a catheter, of either a 25 or 30 per cent solution of magnesium sulphate, or of a 5 or 10 per cent solution of Witte's peptone in water, according to Stepp's method, or of a mixture of the two substances, failed to evacuate the gallbladder; yet the roentgen shadow of the gallbladder rapidly disappeared following the injection of egg yolks through the duodenal sound. A diagnosis of the functional condition of the gallbladder cannot be based on the results of duodenal catheterization, since the duodenal catheter reaches a duodenal crossway where there are secretions from the gallbladder, the bile ducts, the duodenum, the pancreas and the stomach, which make a diagnostic interpretation difficult. Except when indicated, it is advisable to avoid repeated duodenal catheterization of certain patients, because it has a harmful effect on the hepatic cells. As a treatment for retarded evacuation of the gallbladder, which frequently complicates infections, as typhoid, it is advisable to give the patient some egg yolk. This treatment is not indicated if there is calculous cholecystitis.

Dr. Vital Aza spoke on the dangers of the intravenous injection of solution of pituitary used as a cholecystokinetic agent. In regard to the cholecystokinetic action of egg yolk he said that Napolcon, who suffered from a gastrohepatic disease, frequently resorted to the ingestion of two egg yolks in some milk, which was followed by an abundant bowel evacuation with a great quantity of bile in the feces.

Dr. Oliver said that the data given by the duodenal catheterization on the functions of the gallbladder are more exact than those given by cholecystography. The gallbladder, which from the clinical point of view and from the results of the duodenal catheterization can be considered as atonic, cannot be so considered sometimes by the results of cholecystography. The problem of atony of the gallbladder bears a certain relation to the physiology of the duodenum, and the treatment of atony of the gallbladder is the same as that of duodenitis. In the treatment of duodenitis, Dr. Oliver uses vaccines prepared from cultures of duodenal secretions given through a duodenal sound.

Clinical Value of Continuous Proctoelysis

Dr. Vital Aza, before the members of the Academia Medicoquirurgica de Madrid, discussed the clinical value of continuous

proctoclysis. According to the teachings in Forgue Massaban's Gynecology (1916), continuous proctoclysis permits the rectal absorption of enormous quantities of liquid (from 8 to 12 liters in twenty-four hours). It is said that under its influence the vascular tension rises, the diuresis increases, thirst attenuates and peristalsis is reestablished. Fifty drops of fluid is injected in a minute, which makes 180 cc. an hour and 4,320 cc. a day. Since the injections are given with intervals of rest (one hour of administration and an hour of intestinal rest), this reduces the amount of fluid to be injected to 2 liters a day. There are other factors, such as variations in the technique, the uneven intestinal absorption in different cases, the care of the patient by nurses, the intestinal reflux of more or less quantities of the fluid and the expulsion of the fluid after a temporary storage in the intestine, which bring the quantity absorbed to about 300 or 400 cc. a day. Continuous proctoclysis is of value to promote the reestablishment of the intestinal peristalsis, which is necessary for the treatment of postoperative intestinal paresis, but not for the absorption of large quantities of fluid by the organism.

Dr. Gutierrez Arrese stated that dextrose solution provokes congestion of the intestinal mucosa. The absorptive capacity of the rectum is scanty, especially beyond the ascending and transverse segments of the colon. In order to restore hydration of a patient it is advisable to resort to the hypodermic route of administration. In many cases continuous proctoclysis provokes a local irritation and catarrhal rectitis, frequently of an intense form, owing to the presence of the sound in the rectum.

Canine Leishmaniosis in Madrid and Infantile Kala-Azar

Dr. Rivera Bandres recently did some research on the presence of canine leishmaniosis in Madrid and its relation to endemic infantile kala-azar. As material for his studies he used dogs from the municipal department of unclaimed dogs. From February 1933 up to the present he has performed necropsies on 450 dogs. Special studies were made with the spleen, the liver and the bone marrow. Leishmaniosis was discovered in twenty-nine dogs, or 6.4 per cent. The lesions were cutaneous and mucocutaneous in 24 per cent of the cases. Their anatomicopathologic characteristics were of a chronic type. The areas having a higher incidence of infantile kala-azar in Madrid coincide with those infested with canine leishmaniosis. Dogs with leishmaniosis frequently showed the presence of ocular lesions (purulent conjunctivitis and specific keratitis). The parasites of human and canine leishmaniosis are probably identical, although adapted in the latter case to the conditions of the host. Cutaneous lesions perhaps constitute the port of entry and the primary localization of the parasite. The presence of leishmaniosis in dogs without any manifestations suggests the possible existence of latent human carriers. The investigator stated that dogs can be considered as reservoirs of the virus of leishmaniosis. Dogs with cutaneous and mucocutaneous leishmaniosis may spread the disease through insects, especially fleas and *Phlebotomus*.

Defenders of the Medical Profession in Madrid

The medical profession in Spain, especially in Madrid, can be divided into two groups: The first consists of a few physicians who have political influence, with many positions and a profitable practice; the second group, the majority, comprises those physicians whose income from the profession hardly provides the necessities of life. The three principal causes of the critical economic conditions of the Spanish medical profession at present are (1) the admission of patients to free consultation, (2) the uneven distribution of positions controlled by the few, and (3) the health insurance societies. Four fifths of the population in Madrid belong to these insurance societies.

A group of young physicians recently formed *La Liga de Defensa Médica*, to defend the rights of the medical profession in Madrid. The members of the league have put in effect, since last December, the regulations given by the *Colegio de Médicos de Madrid* (an association of physicians), according to which free medical care should be given only in emergency cases and when the poverty of the patients has been proved. The centers of free medical consultation have been notified of the regulations, which will be maintained by force, if necessary. They also hope to find, in the near future, a solution for the problems of monopolization of positions by a few physicians and of those that arise from the insurance societies for medical care.

Internal Secretions of Sex Glands and Gout

Dr. Marañón recently reported to the *Academia Nacional de Medicina* of Madrid his experimental observations on the relation between internal secretions of the sex glands and gout. Gout is frequent in ovarian insufficiency and in the early menopause. In man it is frequent after sexual excesses. The speaker believes that the female sex hormone is antagonistic to gout while the male sex hormone favors it. By injecting 500 units of estrogenic substance in a group of women and by keeping them on a uniform diet for a week, he was able to observe in twelve of the women the mobilization of blood uric acid and its appearance in the urine. The results were less manifest with injections of corpus luteum extract. The male hormone does not seem to exercise any mobilizing effect on blood uric acid.

The Adulteration of Food in Madrid

The prices for food in Spain are high. In spite of this fact, food, especially milk, is frequently adulterated. The technicians in the municipal department for the control of the quality of milk sold in Madrid find that more than half of the samples examined have been adulterated, by the addition of the milk of other animals (sheep or goats) or of other substances. The sale of sheep's milk is prohibited in Madrid. Nevertheless more than 100,000 liters of it is sold daily in the city. Municipal regulations require that the public be informed when the milk on sale is from goats, but this milk is sold without notification of its nature. The bacterial contents of milk for the general daily supply should not exceed 30,000 bacteria per cubic centimeter in Italy and the United States and 50,000 per cubic centimeter in England. In Spain it contains about 1,000,000 bacteria per cubic centimeter.

Synthetic products have largely been substituted also for the natural juices of fruits. Dyes are used to falsify the natural color of cold meats and the color of egg yolks in pastry. Wines and chocolate are also adulterated. Of 17,397 samples of food examined during the last year at the municipal laboratory of Madrid, 50 per cent of the samples had been adulterated.

Dining Room for Indigent Patients with Diabetes

Dr. Carrasco Cadenas, a specialist in nutritional diseases, opened a free dining room for indigent diabetic patients in Madrid. The injection of insulin is given, also free, to patients who need it. The wife of Mr. Alexander Lerroux, the president of the cabinet of ministers, devotes a great deal of time to this work. Some persons have criticized the institution, saying that the money thus spent ought to be spent in the fight against tuberculosis.

Dr. Huertas

Dr. Francisco Huertas, aged 86, professor of clinical medicine at the General Hospital of Madrid for sixty years, is dead. He represented the Spanish medical profession at several international congresses of medicine. He was a member of the *Academia Nacional de Medicina* of Madrid and author of several books on internal medicine.

Marriages

PAUL E. WYLIE, Hohenwald, Tenn., to Miss Virginia Fischer of Hazen, Ark., in Scotts Hill, Tenn., September 15.

JAMES F. REILLY, Vincennes, Ind., to Miss Amy Louise Spencer of Logansport, in Terre Haute, October 13.

VIRGIL MORRISON, Atchison, Kan., to Mrs. Louise Sheeks of Kansas City, Mo., at Liberty, Mo., September 4.

AUGUST H. WITTENBORG to Miss Margaret Kroesche, both of Memphis, Tenn., in New York, September 15.

STUART H. PERRIN, Superior, Wis., to Miss Esther Catherine Cleary of Prior Lake, Minn., September 29.

WILLIAM BRUCE SCHAEFER, Toccoa, Ga., to Miss Orville Tyler of Barnesville at Griffin, October 6.

GEORGE BUTTERFIELD SALTER, Norfolk, Neb., to Miss Audrey Bauer of Erie, Pa., in August.

MORRIS HARRIS, Morristown, N. J., to Miss Rachel Spitz of Poughkeepsie, N. Y., September 4.

JOHN J. D'URSO, Lawrence, Mass., to Miss Vera M. Shannon of Philadelphia, July 14.

THEODORE W. FALKE, Dayton, Ohio, to Miss Betty Celeste McKirch of Chicago, October 20.

VERONICA C. BARRETT, Brooklyn, to Mr. William F. Fagan of Pascoag, R. I., September 22.

CRAWFORD FANNIN BARNETT JR. to Miss Penelope Brown, both of Atlanta, Ga., October 9.

CHARLES SHERBURNE SENTELL to Miss Sallie Hutton, both of Minden, La., October 2.

CARL J. WOLF, Fremont, Ohio, to Miss Marian Ickes at Cincinnati, September 24.

KENNETH K. KRANING to Miss Virginia Speicher, both of Indianapolis, August 29.

EARL CONOVER to Miss Mildred Lawrence, both of Evansville, Ind., September 3.

LAWRENCE E. ARNOLD to Miss Ann Holt, both of Dallas, Texas, September 8.

JAMES H. ALLEN to Miss Ruth Sanford, both of Iowa City, Iowa, August 18.

ARTHUR LEWIS MILLER, Kimball, to Miss Florence Uhl, recently.

Deaths

William Francis Drewry ☉ Richmond, Va.; Medical College of Virginia, Richmond, 1884; member of the House of Delegates of the American Medical Association in 1907; past president of the Virginia Conference on Charities and Corrections, American Psychiatric Association, Medical Society of Virginia, and the National Association for the Study of Epilepsy; member, 1924-1929, and since 1929 director of the bureau of mental hygiene, Virginia State Department of Public Welfare; member of the state board of health, 1916-1924; contract surgeon in the U. S. Army and psychiatrist to the National Guard in 1917; since 1920 member of the State Prison Board of Psychiatry; city manager of Petersburg, 1924-1928; member of the board of visitors of the University of Virginia, 1908-1916; for twenty-eight years member of the board of directors of the Petersburg Hospital; superintendent of the Central State Hospital, Petersburg, 1896-1924; aged 74; died, October 19, of carcinoma of the prostate.

Ray William Matson ☉ Portland, Ore.; University of Oregon Medical School, Portland, 1902; assistant clinical professor of medicine at his alma mater; member of the American Association for Thoracic Surgery and the American Climatological and Clinical Association; member of the executive committee of the National Tuberculosis Association; medical director of the Portland Open Air Sanatorium, Milwaukie; on the staffs of the Veterans' Administration Facility, Good Samaritan and Multnomah County hospitals; aged 54; died, September 12, as the result of an automobile accident.

George Barclay McCallum, Monroe, Mich.; University of Michigan Medical School, Ann Arbor, 1880; College of Physicians and Surgeons in the City of New York, Medical Department of Columbia College, New York, 1881; member of the Michigan State Medical Society; past president and secretary of the Monroe County Medical Society; aged 79; formerly on the staff of the Mercy Hospital, where he died, October 1, of coronary thrombosis.

Shirley Quincy Elmore ☉ Major, M. C., U. S. Army, Fort Logan, Colo.; Creighton University School of Medicine, Omaha, 1907; served during the World War; entered the Medical Corps of the U. S. Army as a captain in 1920 and in 1929 was promoted to major; aged 53; died, August 7, of coronary thrombosis, while aboard a boat bound for Honolulu.

Elijah McCulloch Harris, Russellville, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1887; member and life counsellor of the seventh district of the Medical Association of the State of Alabama; past president of the Franklin County Medical Society; aged 72; died, September 26, of angina pectoris.

William Emilus Hart ☉ Elyria, Ohio; Western Reserve University Medical Department, Cleveland, 1886; past president and secretary of the Lorain County Medical Society; served during the World War; on the staff of the Elyria Memorial Hospital; aged 72; died, September 23, of heart disease.

George E. Welch, Palatka, Fla.; Kentucky School of Medicine, Louisville, 1884; formerly member of the fifth district of the state board of medical examiners, mayor and bank president; aged 75; died, September 15, in a hospital at Jacksonville, as the result of cerebral hemorrhage and fracture of the hip.

Edward True Alford ☉ Waterloo, Iowa; Rush Medical College, Chicago, 1901; fellow of the American College of Surgeons; attending surgeon to the Presbyterian, Allen Memorial and St. Francis hospitals; aged 59; died, September 22, in West Palm Beach, Fla., of heart disease.

John Elwell McQuain, Spencer, W. Va.; Louisville (Ky.) Medical College, 1888; member of the West Virginia State Medical Association; served during the World War; aged 65; superintendent of the Spencer State Hospital, where he died, September 19, of cirrhosis of the liver.

Annie Lee Hamilton, Sandwich, Mass.; Woman's Medical College of the New York Infirmary for Women and Children, 1898; member of the Massachusetts Medical Society; aged 70; died, September 23, in Jamaica Plain, of chronic myocarditis and cerebral hemorrhage.

Henry Thomas Obuchowski ☉ Newark, N. J.; Tufts College Medical School, Boston, 1925; on the staffs of the Newark City Hospital, St. James' and Presbyterian hospitals; aged 34; died, August 8, in St. Francis Hospital, Hartford, Conn., of subacute bacterial endocarditis.

Robert Alexander McReynolds, McRoberts, Ky.; Memphis (Tenn.) Hospital Medical College, 1906; member of the Mississippi State Medical Association and the Kentucky State Medical Association; aged 49; died, September 8, of coronary thrombosis and hypertension.

Emanuel Frederick Oehler ☉ St. Louis; St. Louis University School of Medicine, 1906; aged 56; on the staffs of the Missouri Baptist Hospital and the Deaconess Hospital, where he died, September 7, of a streptococcal infection, contracted while operating on a patient.

Gerald Marvin Buchanan, Scotch Plains, N. J.; Vanderbilt University School of Medicine, Nashville, Tenn., 1909; on the staff of the Bonnie Burn Sanatorium; aged 52; died, September 18, in the Protestant Hospital at Nashville, of acute appendicitis and peritonitis.

Gustave Herman E. Starke, Tupper Lake, N. Y.; University of the City of New York Medical Department, 1889; member of the Medical Society of the State of New York; aged 75; died, August 23, in Phoenicia, of cerebral hemorrhage and arteriosclerosis.

William C. Mitchell, Bradford, Ill.; St. Louis College of Physicians and Surgeons, 1904; served during the World War; aged 59; died, September 21, in the Veterans' Administration Facility, Hines, of lethargic encephalitis, parkinsonian syndrome and bronchopneumonia.

Daniel Robbins Nettles, Peterman, Ala.; Medical College of Alabama, Mobile, 1901; member of the Medical Association of the State of Alabama; president of the Monroe County Medical Society; aged 57; died, September 13, in Clearwater, Fla., of heart disease.

Walter Owen Allen, Detroit; Indiana University School of Medicine, Indianapolis, 1921; member of the Michigan State Medical Society; aged 43; died, September 19, in the Parkside Hospital, of cellulitis of the abdominal wall following an appendectomy.

Harry Alfred Halgren, Watertown, Minn.; University of Minnesota Medical School, Minneapolis, 1897; member of the Minnesota State Medical Association; owner of the Cottage Hospital; aged 64; died, September 15, of arteriosclerosis and heart disease.

Erskine Patrick Odeneal ☉ Gulfport, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1892; served during the World War; aged 62; died, August 3, in the Touro Infirmary at New Orleans, of carcinoma of the head of the pancreas.

Robert Gill Reed, Cincinnati; Pulte Medical College, Cincinnati, 1889; at one time professor of otology at his alma mater; formerly on the staff of the Bethesda Hospital; aged 73; died, September 17, of multiple sclerosis and cerebral hemorrhage.

Jefferson D. McCullough, Columbus, Miss.; Medical College of Alabama, Mobile, 1888; formerly member of the state legislature; at one time city health officer; aged 73; died, September 8, in the Fite Hospital, of an abscess and diabetes mellitus.

Michele Nigro, Medford, Mass.; Harvard University Medical School, Boston, 1915; member of the Massachusetts Medical Society and the New England Pediatric Society; aged 51; died, August 3, of acute myocarditis and coronary thrombosis.

Henry Shelby McKenzie, Kansas City, Kan.; Kansas City (Mo.) Hahnemann Medical College, 1909; Eclectic Medical University, Kansas City, 1911; member of the Kansas Medical Society; aged 49; died, in September, of myocarditis.

Daniel Chauncey Dye, Utica, N. Y.; University of Michigan Medical School, Ann Arbor, 1885; veteran of the Spanish-American War; on the staff of St. Elizabeth Hospital; aged 74; died, August 31, of chronic myocarditis.

James Kingsland Morange Perrine, San Francisco; Hahnemann Medical College and Hospital of Philadelphia, 1893; served during the World War; aged 62; died, August 30, of coronary occlusion and arteriosclerosis.

James Henry Haslett, Phelps, N. Y.; University of the City of New York Medical Department, 1886; member of the Medical Society of the State of New York; aged 71; was found dead, September 2, at Sodus Point.

Harvey Ellsworth Hall, La Junta, Colo.; Rush Medical College, Chicago, 1890; served during the World War; health officer of La Junta district in Otero County; aged 70; died, September 18, of cerebral hemorrhage.

Henry Watkins Anderson, Covington, Va.; Baltimore Medical College, 1883; member of the Medical Society of Virginia; formerly councilman and county coroner; aged 78; died, September 4, of thrombosis.

William H. W. Sale, Covington, Tenn.; Tulane University of Louisiana Medical Department, New Orleans, 1896; member of the Tennessee State Medical Association; aged 62; died, August 30, of peritonitis.

Francis Xavier Zinger, Detroit; Detroit College of Medicine, 1907; member of the Michigan State Medical Society; aged 51; died, September 2, in the Providence Hospital, of carcinoma of the pylorus.

Edward Houston Hice, Rock Spring, Ga.; Chattanooga (Tenn.) Medical College, 1894; member of the Medical Association of Georgia; aged 65; died, August 24, in a hospital at Chattanooga, Tenn.

Smith McMullin ☉ Yuba City, Calif.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1900; aged 69; died, August 9, in the Southern Pacific Hospital, San Francisco.

Stephen Farrar Dunn, Wilmington, Vt.; University of Vermont College of Medicine, Burlington, 1904; member of the Vermont State Medical Society; aged 57; died, September 3, of pneumonia.

Charles Coyne Elliott, Leicester, England; Western University Faculty of Medicine, London, Ont., Canada, 1900; formerly a medical missionary in China; aged 56; died, August 10, of carcinoma.

Ralph Coffey Walker, Portland, Ore.; University of Oregon Medical School, Portland, 1904; member of the American Roentgen Ray Society; aged 56; died, October 1, of cerebral hemorrhage.

Davis L. Field, Jeffersonville, Ind.; University of Louisville (Ky.) School of Medicine, 1868; formerly health officer of Jeffersonville; aged 90; died, September 19, of acute myocarditis.

Calvin McCarroll, Nicosia, Cyprus Island; Detroit College of Medicine, 1904; for many years a medical missionary; aged 59; died, September 9, in the Harper Hospital, Detroit, of pneumonia.

John Alexander Macleod, Kingston, Ont., Canada; University of Toronto Faculty of Medicine, 1907; on the staff of the Ontario Hospital; died suddenly, August 20, of heart disease.

James Malcolm Stewart, Katy, Texas; Louisville (Ky.) Medical College, 1897; aged 56; died, September 7, in the John Sealy Hospital, Galveston, of arteriosclerosis and heart disease.

James Forney Dungan, Exeter, Calif.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; aged 68; died, August 30, in San Francisco, of arteriosclerosis and heart disease.

John Thompson Maloy ☉ Bedford, Iowa; Marion-Sims College of Medicine, St. Louis, 1892; president of the Taylor County Medical Society; aged 63; died, September 14, of heart disease.

William H. McKie, Wynne, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Arkansas Medical Society; aged 54; died, August 31, of cirrhosis of the liver.

Hugh Walden Allan, Taos, N. M.; University of Louisville (Ky.) School of Medicine, 1910; served during the World War; aged 48; died, September 15, of pulmonary tuberculosis.

Thomas James Morgan, Covington, Ky.; Medical College of Ohio, Cincinnati, 1901; past president of the school board; aged 69; died, August 24, of chronic nephritis and myocarditis.

Frederick Henry Odendahl, St. Paul; Missouri Medical College, St. Louis, 1891; Rush Medical College, Chicago, 1892; aged 67; died, September 2, of carcinoma of the pancreas.

J. Du Bois Van Derlyn ☉ New Paltz, N. Y.; University of Maryland School of Medicine, Baltimore, 1894; aged 69; died, September 2, of chronic myocarditis and aortitis.

William D. Hankins, Birmingham, Ala.; Memphis (Tenn.) Hospital Medical College, 1896; aged 62; died, September 3, in Atlanta, of coronary occlusion and chronic nephritis.

Emil Victor Lonigo, San Francisco; University of California Medical Department, San Francisco, 1883; aged 87; died, August 17, of bronchopneumonia and myocarditis.

William Baumgarten, San Francisco; University of California Medical Department, San Francisco, 1902; aged 56; died, August 11, of chronic aortitis and arteriosclerosis.

Levi Lewis Dorr, San Francisco; Bellevue Hospital Medical College, New York, 1866; Civil War veteran; aged 94; died, September 10, of chronic myocarditis.

George W. Roberts, Wynne Wood, Okla.; Medical College of Indiana, Indianapolis, 1883; aged 79; died, August 7, in Oklahoma City, of myocarditis.

Charles Loyal Sexton ☉ Los Angeles; Cooper Medical College, San Francisco, 1895; aged 66; died, August 23, of arteriosclerosis and heart disease.

Joseph William Davis, Denver; University of Kansas School of Medicine, Kansas City, 1906; aged 57; died, September 8, of heart disease.

Simon Oltsik, New York; University of Vladimara, Russia, 1922; aged 43; was killed, August 14, when he fell as the result of an epileptic fit.

William Seymour Davis, Los Angeles; Miami Medical College, Cincinnati, 1885; aged 73; died, August 31, of carcinoma of the bladder.

Homer Clark Miller, Altoona, Pa.; Starling Medical College, Columbus, Ohio, 1898; aged 60; died, September 2, of cerebral hemorrhage.

Roy Ricketts Shafer, Rich Hill, Mo.; Barnes Medical College, St. Louis, 1902; aged 57; died, September 5, of carcinoma of the throat.

Joseph W. Enos, Chicago; Hahnemann Medical College and Hospital, Chicago, 1881; aged 76; died, October 11, of chronic myocarditis.

Van Buren McConnaughey, Hillsboro, Ohio; Ohio Medical University, Columbus, 1893; aged 72; died, August 28, of cerebral hemorrhage.

Jokichi Oguri ☉ New York; Fordham University School of Medicine, 1914; aged 60; died, August 10, of myocarditis and arteriosclerosis.

Louis Doray, Pointe du Lac, Que., Canada; School of Medicine and Surgery of Montreal, 1897; aged 60; died in July, at Montreal.

William C. Mobley, Blue Mountain, Ark.; Missouri Medical College, St. Louis, 1887; aged 76; died, July 6, of myocarditis.

Thomas McCurdy, Coaticook, Que., Canada; McGill University Faculty of Medicine, Montreal, 1889; aged 66; died, August 5.

Correspondence

"COARCTATION OF THE AORTA"

To the Editor:—In the case report by Dr. Wilmot F. Pierce on coarctation of the aorta in *THE JOURNAL*, September 15, there is the statement on page 831 at the top, "The heart rhythm was absolutely irregular." It was my impression that such a statement has become obsolete except when modified by something more definite, as suggesting sinus arrhythmia, auricular fibrillation or extrasystoles. More than 80 per cent of irregular heart rhythms may be diagnosed definitely without the use of the electrocardiogram. The second sentence following the one quoted gives the electrocardiogram reading, which states that "there was left axis deviation, simple tachycardia, and left ventricle and right ventricle extrasystoles." This seems to indicate that one must have an electrocardiogram to know whether an irregular cardiac rhythm is or is not due to ventricular extrasystoles. Too often this appears to be the case, that is, let the electrocardiogram make the diagnosis of the irregularity. The electrocardiogram has its valued place. Why one cannot base a definite opinion of cardiac irregularities on his own hearing backed up by experience, and then take an electrocardiogram to confirm it, if possible—that would be preferable. *THE JOURNAL* should set the style by not accepting any statements of the "heart rhythm being irregular or absolutely irregular." A proper physiologic cardiac diagnosis should take its place even if the electrocardiogram does not confirm the original opinion.

NATHAN FLAXMAN, M.D., Chicago.

[This letter was referred to Dr. Pierce, who replies:]

To the Editor:—The correspondent is justified in criticizing the expression "absolutely irregular" as applied to the heart rhythm. It would have been better to say "quite irregular from numerous extrasystoles." "Perpetual arrhythmia," "complete irregularity," if used at all nowadays are usually meant to imply auricular fibrillation. I have no quarrel with him over his contention that an "irregularity" can generally be diagnosed without the electrocardiogram. This should be attempted always. The electrocardiogram should be confirmatory or corrective. This was the procedure in the case reported and I regret that there was not greater care in the use of terms.

WILMOT F. PIERCE, M.D., Chicago.

"BREAST AND ARTIFICIAL FEEDING"

To the Editor:—I should like to offer a criticism of the work reported by Drs. Grulee, Sanford and Herron in *THE JOURNAL*, September 8, page 735. The authors have done a fine piece of work but I feel that they make a generalization which does not follow the results of their work when they deduce that in order "to decrease further the infant mortality of this country it must be done by encouraging breast feeding."

The authors use as material the records taken from 20,061 babies who were under the care of the Infant Welfare Society of Chicago for as long as nine months during the years 1924-1929 inclusive. The society has stations in the poorest sections of the city.

These infants, in my opinion, do not represent (as the authors claim) "a true cross section of the national urban life," for there are no corresponding data about the infants of the better hygienic or wealthier sections of the city. Nor do better mortality rates of the babies studied (as compared with "nonstation" infants in the same district) make these infants a true cross section of the national urban life. The advantage of good medical and nursing care would lower the infant mortality of any group of infants in any district.

In 1930 I published a study (*New England J. Med.* 203:626 [Sept. 25] 1930) of breast and bottle fed infants who attended well baby clinics in two different districts in the city of Boston, one "poor district" (North End) and one "better district" (Roslindale). This study included the vital statistics of 1,566 infants and a detailed study (nutrition, development, frequency of infection and presence of deficiency diseases) of 217 infants. Both groups were followed for a period of one year.

In the "poor district" the results were consistent with those reported by Drs. Grulee, Sanford and Herron. The bottle fed infants had a mortality rate seven times that of the breast fed infants. The incidence of infection favored the breast fed by a ratio of 8 to 5. The clinic infants had a mortality rate of about one-half the mortality rates among the nonclinic infants in the same district.

In the "better district" the results were strikingly different. The bottle fed infants compared favorably (to say the least) with the breast fed infants in nutrition, development, presence of deficiency disease, and mortality rates. Also the bottle fed infants had less incidence of infection than the breast fed infants.

I found that the mothers in the "poorer district" were "sold" on the idea that breast feeding was best for the infant and bottle feeding was not considered until the breast fed infant did poorly. As a result the bottle fed infant in this district started with a distinct disadvantage. Again lack of cooperation (often the father would not permit the use of any sugar in the milk; water and sugar formulas were used) and faulty technique and procedure in preparing and feeding the formula, plus improper hygiene (overcrowding and so on) gave the bottle fed infant a definite disadvantage.

In the "better district," although the medical care and nursing care were the same as in the "poorer district," the better economic and hygienic conditions with a higher degree of intelligence and uniform cooperation resulted in the group of bottle fed infants comparing favorably with the breast fed infants.

I feel that it is no longer a question of breast or bottle feeding but one of proper nursing and medical care plus intelligent cooperation from the parents, plus proper hygienic and economic conditions. Drs. Grulee, Sanford and Herron prove what I have suggested before, that in a "poorer district" the bottle fed infant is at a distinct disadvantage as compared with the breast fed infant.

Finally, I suggest that the infant mortality of this country will be decreased by improving the hygienic and economic conditions of the poorer sections of the cities and by a program of persistent "infant education" with special emphasis on correcting the "breast feeding at any price" attitude among these people, so that there will be less delay in bottle feeding (in whole or in part) when there is a deficient or defective breast milk.

MANUEL M. GLAZIER, M.D., Boston.

[This letter was referred to Dr. Grulee, who replies:]

To the Editor:—Apparently from Dr. Glazier's remarks, we are talking about two different things. The group of artificially fed infants, as explained in the text, were fed artificially from the very first and these we followed for a period of nine months. These children were practically all first seen in the first month of life. The cases which he refers to would be included in our second group, or those partially breast fed. In that group there were two classes of cases: first, those that were simply complemented because of insufficient supply of breast milk and, second, those who were breast fed at first and artificially fed later. It is true that these children were in the poorer districts and that they were subject to more infection than we would expect to find among the better classes of the community.

On the other hand, the death rate was extremely low, about one fourth of the general death rate of the community at large.

I am under the impression that the general death rate in Boston is higher than it is in Chicago. After all is said and done, the fact still remains that for those children who are entirely breast fed the death rate was so low as to be near the vanishing point and certainly I cannot see how Dr. Glazier can claim that his statistics in any group of artificially fed children, under any conditions, are better than those for the group of breast fed children in our paper.

Dr. Glazier objects to the statement that "this is a true cross section of national urban life." It is a true cross section only perhaps so far as nationality is concerned and was meant to convey that impression. Then, as far as mortality is concerned, the results are far better than those obtained throughout the city for the same age group. The report of Dr. Glazier is inconclusive because of the small number of cases which he has reported. Certainly he cannot claim much for his statistics other than those for the 217 of the detailed study.

In conclusion, Dr. Glazier states "that infant mortality of this country will be decreased by improving the hygienic and economic conditions of the poorer sections of the cities and by a program of persistent 'infant education' with special emphasis on correcting the "breast feeding at any price" attitude among these people." If Dr. Glazier feels that way after reviewing our statistics, I am sure I do not know how we can persuade him that he is wrong. To me these statistics are very conclusive evidence that breast feeding does protect the child under adverse conditions. In my opinion it is utopian to think that such adverse "hygienic and economic" conditions as the poor of large cities now experience will be overcome at any time in the near future. CLIFFORD G. GRULEE, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF SYPHILIS WITH TUBERCULOSIS

To the Editor:—I have a woman patient 30 years of age whose sputum is positive for tuberculosis and whose temperature ranges between 99.5 and 100.5 by mouth. Six weeks ago iritis developed and a blood Wassermann reaction was four plus. An attempt was made to treat her with a soluble bismuth compound intramuscularly and the temperature was increased and the patient complained of pain in the gums. A few days later an injection of mercuric salicylate intramuscularly was given and this time the temperature was not increased but the patient had severe pains about the gums and marked salivation. Four days later I decided to try an intravenous injection of 0.3 Gm. of nearsphenamine. This resulted in a chill, and the temperature rose to 102. As a result of all three treatments the eye condition has cleared up to a marked degree, but I am wondering what to do for her as far as her syphilitic condition is concerned. She obviously is not reacting well to bismuth or mercury compounds or nearsphenamine, possibly on account of her pulmonary condition. Also on account of her tuberculosis, I am afraid to give her potassium iodide. In spite of both diseases the patient feels fine, is free from any pain or discomfort, has a good appetite and is not losing in weight. She has had the pulmonary condition for about two and a half years, but for the past year and a half examination of the sputum has been negative until the iritis developed. What treatment would you advise at the present time? Please omit name. M.D., New York.

ANSWER.—The treatment of syphilis coincident with tuberculosis depends, in general, on the status of the two disease processes. The inquiry does not supply sufficient information as to the age of the syphilitic infection, though it may be presumed that the occurrence of the iritis, if indeed it is syphilitic, would place the spirochetal infection within the first two or three years of its course. It should be noted also that the inquirer does not mention the confirmation of the positive serologic test by repetition and by the use of at least two laboratory technics. This is important, because false positives are known to occur in tuberculosis in the absence of syphilis, to say nothing of the possibility that a single four plus Wassermann reaction may be the result of a laboratory error. If the iritis is nonsyphilitic instead of syphilitic and the syphilitic infection is of prenatal type or a well established latency, there is less

demand for intensive antisyphilitic treatment from the standpoint of the syphilis, and the open tuberculosis as such should receive the major portion of attention. The merits of these various situations have been considered in the literature by Petersen and Hecht, Habliston, Schlesinger, Landis, Gloyne and particularly in a valuable study by Gallant. The work of these observers is summarized in Moore's and Stokes's (second edition) textbooks. Gallant's study of 346 cases showed clearly the unfavorable effect of the untreated syphilis on tuberculosis, the mortality in cases untreated for syphilis being 57 per cent and that in those who received treatment for syphilis 21.5 per cent. Coincidentally, improvement under treatment for syphilis rose from 20.9 per cent to 51 per cent. Using the National Tuberculosis Association's classification, Gallant found that the best results with treatment of the syphilis occurred in the minimal group, and the poorest results in the advanced cases. Moore believes that the relatively less intensive treatment used by physicians in charge of tuberculosis sanatoriums and the advantages of sanatorium care largely explain the superior results of this type of management as compared with ambulatory and outpatient treatment. He recommends that open tuberculosis be placed under sanatorium conditions as rapidly as possible when treatment for syphilis is indicated. Gallant and Stokes both point out that very active tuberculous disease with high temperature is made definitely worse after antisyphilitic treatment, and the terminal stages of tuberculosis with cachexia are contraindications. On the other hand, Gallant found that even the increased tendency to reaction was not often harmful even in advanced cases, and that antisyphilitic treatment apparently reduced the death rate among them none the less. Gallant found the arsenicals in general to be responsible for increasingly favorable results. Stokes prefers nearsphenamine to arsphenamine, and Gallant reduces the arsenical dosage to one-half or one-third the usual amount. The difficulty with the administration of bismuth compounds in the case described may be due to neglect of mouth prophylaxis or to initial overdosage, for bismuth should, in general, be well tolerated by the tuberculous patient and is easily adaptable to the special difficulties of treatment. The effect of treatment on the eye in this case does not necessarily prove the etiology of the iritis to be syphilitic, although of course it suggests it.

It is advised that after a more careful attempt to determine the status of the syphilitic infection this patient be, if possible, given the benefit of sanatorium care, that lower nearsphenamine dosage be employed and that bismuth compounds likewise in materially reduced dosage be used instead of mercury for the heavy metal phase of the treatment.

VARICOSE ECZEMA WITH RINGWORM INFECTION

To the Editor:—A woman, aged 76, whose family and medical history are otherwise negative, has been suffering from varicose veins of the legs for many years. Occasionally a varicose ulcer has developed on one of her legs, which always healed without much difficulty. About nine months ago this ulcer again reappeared in a mild form. This time there was a dermatitis of the skin surrounding the ulcer area. This gradually extended up toward the knee. It would improve considerably and then would suddenly reappear over night and was occasionally associated with small blebs. About four months ago she began to notice a slight dermatitis associated with marked itching. This was all over her body, particularly the arms, neck and legs. This varied in intensity from day to day and when it had nearly disappeared would again reappear over night in increased severity. At present she has this dermatitis over the entire body, with considerable induration of the skin of the forearms. She has no other symptoms than itching due to the dermatitis. Physical examination revealed nothing except the skin eruption. The urine is normal. The blood pressure is 116 systolic, 84 diastolic. The blood sugar is 87 per cent; leukocytes, 12,000; polymorphonuclears, 38 per cent; small lymphocytes, 35 per cent; large lymphocytes, 3 per cent; eosinophils, 24 per cent. Kindly express an opinion as to the diagnosis and advise treatment. Please omit name. M.D., Pennsylvania.

ANSWER.—Varicose eczema, with the possibility of a superimposed ringworm infection, is not rare. The generalized, itching dermatitis, however, together with the finding of 24 per cent eosinophils may suggest a sensitization reaction on an allergic basis. It must be remembered, however, that a great many skin diseases show eosinophilia. Large doses of calcium gluconate and slow intravenous injection of 10 per cent sodium thiosulphate may alleviate the symptoms, provided further sensitizations do not occur. One should be sure that the original lesion around the ulcer is not maintained by a ringworm infection, in which case suitable treatment should be instituted. The possibility of a chemical dermatitis from salves applied to the ulcer, which may provoke a generalized reaction, should also be considered. The patient may benefit by consulting a competent dermatologist who is interested in the cutaneous phenomena of allergy.

PHYSIOLOGY OF LACTATION

To the Editor:—Will you kindly explain the cause and give the treatment of the following phenomenon: A girl, aged 18, can express an ounce or more of milk from each breast at will. This condition has existed for five months to the patient's knowledge and may have existed longer. There is no appreciable evidence of glandular disturbance; she is not pregnant and is apparently normal in all other respects. Please omit name and city.

M.D., District of Columbia.

ANSWER.—The cause of the apparently spontaneous lactation by both male and virgin mammals, otherwise normal, has not been determined. Lactation has been induced experimentally in both male and virgin laboratory mammals in a number of different ways, the chief one being the injection of extracts of the anterior lobe of the hypophysis which contain the active principle termed prolactin. Lactation has been observed experimentally in animals after producing lesions of the ovary, which tends to confirm the suspicion of some older clinicians that "ovarian irritation" was responsible for lactation in a virgin. In most cases in either sex spontaneous lactation is the result of a mechanical stimulus applied to the breast, the usual and most potent stimulus being sucking. It rarely occurs associated with acromegaly, pituitary enlargement, uterine myomas and pseudocyesis. It has occurred as a sequel of endemic encephalitis. In the male, spontaneous lactation (colostrum or milky fluid) has occurred associated with chorionepithelioma of the testis and also hypernephroma and pineal tumor. The most recent reference is by Krestin (*Lancet* 1:928 [April 30] 1932).

There is no satisfactory treatment. From the aspect of hormone therapy, lactation in the rabbit may be inhibited by large doses of estrogenic substance. The luteinizing fraction of pregnancy urine inhibits lactation in nursing mice. Theoretically, progestin (the corpus luteum principle) should also be effective. However, there is so much species variation in the ovarian-pituitary-mammary gland interrelationship and so little is known definitely about this interrelationship in man that any hormone therapy would be entirely experimental. Further, it is possible in view of the age of the patient that hormone therapy might do harm. Roentgen therapy over each breast has been used in cases of spontaneous lactation and galactorrhea, definite diminution of secretion being obtained. How lasting the effects of roentgen therapy would be, or its effect on future functioning of the gland, is not answered in the literature. The simple treatment of a tight binder with boric acid dressing of the nipples to prevent infection should be tried.

CONTACT DERMATITIS FROM WEEDS

To the Editor:—A patient of mine, a farmer, has a yearly rash, which covers his face, his forehead and the front of his neck. It is characterized by intense burning and itching. He states that the rash comes on each year about the first of August when he starts weeding his potatoes and, if he continues to work among the weeds, continues until frost kills the weeds off. When I saw him the region outlined was subacutely inflamed and was "weeping" considerably. Can you give me any idea as to the nature of the weeds that might cause this? What can be done in the way of treatment to give permanent relief? Please omit name.

M.D., Massachusetts.

ANSWER.—The type of case cited is not uncommon. It is undoubtedly an instance of contact dermatitis, most likely due to contact with a plant. This form of dermatitis constitutes a hypersensitiveness that does not fit in the group commonly called allergy. The irritation is usually due to the ether-soluble fraction of the plant or to its pollen rather than to the protein fraction. Contact dermatitis caused by hay fever plants is usually present in the absence of any hay fever symptoms. An individual may be sensitive to almost any plant. The various species of ragweeds have been known to cause dermatitis rather frequently. In the region of the inquirer the short ragweed (*Ambrosia elatior*) is the only species of ragweed present in any abundance. It should be remembered, however, that almost any plant growing in the season mentioned may be responsible. The potato vine must not be disregarded.

In order to make a definite diagnosis of the causative agent, the following procedure is advised: A specimen of every weed and plant in the field should be obtained. A small piece of the leaf of each plant should be placed on a separate piece of gauze about an inch square. If the leaf is too dry, it may be moistened with liquid petrolatum. This "patch" is applied with the leaf next to the surface of the skin. The gauze is then covered with a square of oiled silk and the patch is fastened to the skin with adhesive tape. A number of such patches may be applied to the back at one time. The patches are removed in from twenty-four to forty-eight hours. If there is marked irritation underneath any of them it may be removed

sooner. A positive reaction will be evidenced by a redness, going on to vesiculation and edema and accompanied by a burning and itching sensation.

When the causative factor has been determined, specific treatment is possible. This usually consists of intramuscular injections of an extract of the ether-soluble portion in almond oil. No definite strength of doses can be recommended, since that would depend on the nature of the plant, the potency of the extract and the degree of sensitiveness of the individual. One must be guided by the reaction of the patient and begin with high dilutions, as is customary in other types of desensitization. The success of such treatment is not certain, although it holds forth encouragement. Because of the technical difficulties in preparation of such an extract it would be advisable to have it prepared by an allergist or a laboratory accustomed to prepare such extracts.

ALLERGY TO PIN OAK

To the Editor:—Will you please inform me as to the usual allergic manifestations from pin oak and just how they are caused, other than by contact? Is this form of allergy common and has it any age preference? What treatment would you suggest? Please omit name.

M.D., Philadelphia.

ANSWER.—Pin oak (*Quercus palustris*) is only one of the many varieties of oak that are found in North America. In the United States there are about sixty-five different species. The other important varieties of oak are the red, scarlet, black, white and post oak.

Pin oak, in the section east of the Mississippi River and north of Tennessee and North Carolina, pollinates from about the 10th to the 26th of May. Other varieties of oak pollinate for longer periods and the post and black oak throw out their pollen as late as about the middle of June, so that oak pollen is in the air from about May 10 to about June 15.

The various species of oak tree are probably the most important causes of tree hay fever and the symptoms appear at the time of pollination of the various kinds of oak. A patient who is hypersensitive to one variety of oak is usually also susceptible to the other species. About 5 to 10 per cent of all hay fever is due to tree pollen. A considerable proportion, perhaps as high as 40 per cent who are sensitive to tree pollen develop bronchial asthma.

There seem to be no age preference.

The treatment of hay fever and bronchial asthma due to any variety of oak is similar to that due to the pollen of grasses and ragweeds; that is, complete skin tests are done, including not only the various pollens but also tests, if possible, for the epidermals, foods and miscellaneous proteins; and injections of mixed oak pollen extract should be started about three months before the season, about March 1, and from fifteen to twenty-five injections should be given with gradual increase in strength so that the maximum dose may be given just before May 10.

The extracts with minute directions may be purchased from several different pharmaceutical firms. It is important to follow the instructions so as to avoid possible reactions that may occur after the injections.

DIPHTHERIA

To the Editor:—Is there any way one can tell whether or not a child who has had diphtheria antitoxin did or did not have diphtheria? How soon, in your opinion, after the antitoxin is given will a culture show negative?

J. L. WILLIAMSON, M.D., Burnet, Texas.

ANSWER.—The cultivation of diphtheria bacilli from the local lesion is the only certain way of telling that a child has diphtheria. After recovery the bacilli often persist, in which case their presence strongly suggests that the preceding disease was diphtheria. It may happen that a carrier of diphtheria bacilli who is immune and gives a negative Schick reaction may develop tonsillitis from other forms of infection. Here the cultivation of diphtheria bacilli would not be proof that the disease was diphtheria. It is always hazardous to predict when negative cultures will be secured in an individual case. The giving of diphtheria antitoxin does not directly influence the bacilli or determine the occurrence of negative cultures. Observations in large series of cases have indicated that after diphtheria about 20 per cent become negative during the first week and that about 50 per cent of those which are positive at the beginning of each subsequent week become negative during that week. About 70 per cent become negative three weeks and about 85 per cent four weeks from the onset of the disease. Bacilli can be cultivated from but few after six or seven weeks. A few become persistent carriers for an indefinite time.

TREATMENT OF HYPERTENSION

To the Editor:—A man, aged 54, has a blood pressure between 240 and 290, causing severe headaches and inability to do any type of work although he was always active up to the time of his first attack, five years ago. I have been unable to find a cause for this hypertension. All different types of nitrites have been tried; a salt-free diet has been rigorously enforced, and his weight has been brought down from 210 pounds (95 Kg.) to 145 pounds (66 Kg.) by observance of this diet. Phlebotomy has been the only real relief given, and it is done at monthly intervals at least. During his last stay in the hospital I used magnesium sulphate 25 per cent, 10 cc. intravenously, which gave him relief for a short time but almost caused death while being injected. The only diagnosis that I have been able to make is essential hypertension. Have you any idea what effect the use of ergotamine tartrate would have? Kindly omit name.

M.D., New York.

ANSWER.—It is unfortunate that the diastolic pressure of this patient was not stated. It must be repeatedly and emphatically reiterated that from the points of view of diagnosis, prognosis and therapy, the diastolic tension is essential to a clear understanding of the circulatory difficulty. As regards the cause of this patient's excessive hypertension, information is lacking with regard to pertinent questions of his history. It may be stated as a generalization that probably hereditary and familial factors of physical and emotional constitution are the most common etiologic factors in hypertensive arterial disease. However, the instances in which the disease is due to but one factor are exceptionally rare; almost invariably there are numerous superimposed insults to the circulatory apparatus (Stieglitz, E. J.: *Arterial Hypertension*, New York, P. B. Hoeber, 1930). Commonly the etiologic factors have ceased to exist and are no longer operative by the time the hypertensive disease is discovered, for the onset of this disease is insidious, gradual and as a rule wholly asymptomatic. The disease tends to progress continuously despite the disappearance of the original initiating factors, for, once started, the pathogenic changes are progressive and largely self-perpetuating. Therefore it is in the past that one must look for the probable etiologic factors of the disease. Just when these were operative can usually be approximated by a careful analysis of the patient's history. In this instance the onset was probably from ten to twenty years ago.

From the query it may be assumed that either extensive sclerotic changes have already occurred or that some active but as yet undiscovered etiologic factor is still operative. The failure of all the various nitrites and other vasodilators to reduce the arterial tension justifies this conclusion. A remote possibility is that this rigid hypertension is due to coarctation of the aorta; this could be readily ascertained by observation of the arterial tension in the legs as contrasted with that in the arms. The patient's age, however, makes this possibility extremely remote. If extensive arteriosclerosis has already occurred, none of the vasodilating drugs can be expected to accomplish much. In fact, as all his symptoms appear to be cerebral, violent vasodilatation may be most precarious; it has been shown that amyl nitrite may increase the intracranial tension with a rise in spinal fluid pressure (Hare, C. C.: *Bull. Neurol. Institute of New York* 3:513 [March] 1934). Hypertonic dextrose solution injected intravenously may cause a transient rise in spinal fluid pressure, followed by a fall for two or three hours and then a rise to above the original level (Masserman, J. M.: *Effects of Intravenous Administration of Hypertonic Solutions of Dextrose*, *THE JOURNAL*, June 23, 1934, p. 2084). The risks of magnesium sulphate, when given intravenously in hypertonic solution, are sufficient to preclude its justification in this type of patient. Acute cardiac reactions are not uncommon (Adair, F. L., and Stieglitz, E. J.: *Obstetric Medicine*, Philadelphia, Lea & Febiger, 1934, p. 434). Hirschfelder has pointed out the dangers of increased blood magnesium, which may be responsible for coma (Hirschfelder, A. D.: *Clinical Manifestations of High and Low Plasma Magnesium*, *THE JOURNAL*, April 7, 1934, p. 1138). Ergotamine tartrate cannot be expected to accomplish anything for this patient and even may be injurious. The reduction of the patient's weight, if not carried too far, is certainly desirable. Not knowing how tall he is, one cannot say how marked his obesity was. Phlebotomy, if not too extensive or repeated too frequently, is quite justified so long as repeated examinations of the blood are made so that any secondary anemia may be prevented. In the long run such therapy is usually unwise, for the presence of an anemia is markedly aggravated with the progressive changes of the disease and the severity of the cerebral, cardiac and renal impairment. In this particular instance blood volume studies might be illuminating, although changes in blood volume are almost never a factor in long continued hypertensive disease.

If the assumptions are correct, and they can be no more than assumptions from the data at hand, the most satisfactory

therapy for this patient should be the administration of mild, nontoxic sedatives, such as the bromides, over a relatively long period. These should aid in obtaining some symptomatic relief and if the arteriosclerosis is as extensive as it appears to be, symptomatic relief and reassurance are all that one may hope to accomplish.

ANTIPILOGISTIC ACTION OF ANALGESICS

To the Editor:—In recent years a note of caution has been sounded in regard to massive doses of salicylates on the ground that their analgesic effect on rheumatic arthritis was due to their depression of the reactivity of serous surfaces, the implication being that this depression of defensive function might extend to the endocardium and predispose to an endocarditis. Does this depressant action of the salicylates extend to other inflammatory processes? I recently observed a patient with a boil on his face—in fact, a hydra-headed monster that might more accurately be termed a carbuncle. One-half grain (0.03 Gm.) doses of codeine had almost no effect on the pain, but 10 grains (0.65 Gm.) of acetylsalicylic acid would give complete relief for three or four hours. It was interesting to note that not only pain but local tenderness was greatly diminished while the salicylates were in effect. It seemed unlikely that this was purely a central nervous system effect, as codeine was ineffective. On the other hand, if the effect was due to a depression of the inflammatory reaction with consequent diminution of tension it was a microscopic action, as the degree of redness and swelling appeared unchanged. The question naturally arises as to whether such a presumed depression of normal tissue response is justified for the sake of relieving pain. Is one thereby prolonging the process of necrosis and liquefaction and perhaps interfering with normal protective mechanisms? Please omit name.

M.D., Massachusetts.

ANSWER.—It is an interesting fact, an instance of which is shown in the effect of the 0.65 Gm. dose of acetylsalicylic acid on the boil, that analgesics also have an antipilogistic action. This, however, is true also of opiates such as codeine; but it would have required a larger dose than the 0.03 Gm. dose employed to demonstrate this action. That such an effect is obtainable from codeine is illustrated by the observations recently made regarding the efficiency of this agent in the treatment of coryza (Harold S. Diehl, 1933). The effect is probably similar to that which occurs when a person who has a cold and a running nose, requiring continued use of the handkerchief, goes to sleep: the discharge almost ceases during the sleeping hours. It is doubtful that this diminution of the inflammatory reaction is sufficient in degree to be dangerous, but it is evident that it does not really help in overcoming the infection.

MEMBRANES AND PLACENTA OF QUINTUPLETS

To the Editor:—As no doubt others have done, I wish to call your attention to the report on the Dionne quintuplets by Dr. Dafeo in *THE JOURNAL*, September 1. The question arises in my mind as to how it was possible for the last two babies to be born with membranes intact and yet for the placenta and cords to remain unseparated in the uterus, as the report would seem to suggest.

L. V. BLUM, M.D., Wilmington, Del.

ANSWER.—It is possible for a fetus to be delivered in an intact amniotic sack, the amnion having stripped completely away from the chorion. Such an occurrence has often been noted in early abortions, in which event the cord usually breaks off with the amnion at the placenta. In the later months such a condition is much rarer and then usually the amnion is stripped off of the cord to the baby's navel, there being an accumulation of the fluid between the amnion and Wharton's jelly.

MYCOTIC DERMATITIS

To the Editor:—I have been treating a case of mycotic dermatitis in the axilla for eight months without a complete cure. The medication that has given the most relief is the salicylic acid, sulphur and zinc oxide ointment. However, this does not clear it up in the cases of the axilla. What would you suggest? Ultraviolet rays and x-rays have been of no value. Please omit name.

M.D., Minnesota.

ANSWER.—The diagnosis of mycotic dermatitis implies that the diagnosis has been confirmed by the demonstration of fungi in scrapings from the axilla. Epidermophyton inguinale is frequently the cause of such a dermatosis, although many other fungi have been reported as causing the disease. The upper part of the thighs and under pendulous breasts are also common sites for the appearance of this condition. The use of salicylic acid and sulphur in strengths varying from 1 to 5 per cent is frequently efficient, although a solution of sodium thiosulphate (10 to 15 per cent strength), sopped on two or three times a day, may be more comfortable than an ointment. Care must be exercised not to apply keratolytics which are too strong to the axillae, groin or under the breasts, because a

secondary dermatitis may develop in these areas from comparatively weak applications. A solution of benzene containing 2 per cent iodine painted on once a day or calamine lotion to which 0.005 per cent phenol has been added is useful in the "finishing off" of treatment. In obese individuals a restriction in the amount of sugar and other carbohydrates ingested is often of value, as Caro has shown that fungi produce dermatitis in the axillae, groin and under the breasts more frequently in those patients in whom the sugar content of the sweat is higher than normal, although no evidence of diabetes mellitus can be demonstrated.

HEADACHES AT MENSTRUAL PERIOD

To the Editor—I have a patient aged 34 who has been having headaches one week before each menstrual period for the past seven and one half years. She has one child, aged 14 but has had no other pregnancies. The headaches are sometimes frontal and sometimes temporal but never in the temporal and frontal regions at the same time. Physical examination reveals no abnormalities and no evidence of disease. Wassermann and Kahn tests are negative. Blood count, urine and metabolism rates are normal. An eye, ear and nose consultant found no pathologic changes. Roentgen examination of the sella was not made. Before treatment was started the patient had frequent headaches which apparently were not connected with menstruation. These have been overcome by the removal of worry and by suggestive therapy. The first month that an anterior pituitary like substance (followed by theelin) was given there was no headache at all. The three successive months the headache was markedly improved, the fourth and fifth months of this treatment the headache became severe again, always occurring from five to seven days before the onset of the menstrual period. Following administration of the anterior pituitary like substance and theelin the scanty menstruation became normal in amount. I have been unable to unearth any cause of revolt against menstruation. Elimination diets had no influence on the headache there is no other manifestation of allergy. I shall appreciate any suggestion concerning diagnosis and treatment. Please do not publish my name.

M D, Texas

ANSWER—In most of the cases in which endocrine products have relieved the type of headaches described in the query, the results have been about the same as those noted in this case. Other glandular products will hardly prove more successful. The headaches in this case may be related to the migraine headaches, which are extremely difficult to relieve. A drug that has proved to be helpful in many cases of migraine is ergotamine tartrate, though care should be exercised that ergotism is not produced. There is some difference of opinion as to whether ergotamine tartrate will relieve headaches that are not of migraine origin, but the drug has definitely proved to be helpful in cases of headache not classed as migraine. Gynergen is the proprietary name for ergotamine tartrate, it is used mainly in obstetrics and gynecology. The drug is best given intramuscularly, subcutaneously or intravenously, but it may also be taken by mouth. The drug does not cure or prevent the migraine type of headaches but it frequently brings about quick relief from attacks.

REMOVAL OF LIME FROM ALUMINUM KETTLE

To the Editor—I should like to know if there is anything that will remove the lime from the inside of an aluminum teakettle.

M D, Indiana

ANSWER—An inquiry was made of the Aluminum Company of America. The firm replied:

There are two general methods of removing lime deposits from the inside of an aluminum teakettle. The simplest method is to gently heat the empty kettle over an open flame. Care must be taken, of course, that the aluminum is not overheated and melted. This treatment will frequently be adequate to cause the deposited lime to crack loose from the aluminum, so that it can be emptied out. Tapping the kettle while hot or pouring cold water into it while hot also aids in this mechanical method of removal.

In case the lime cannot be satisfactorily removed by the above method, the kettle should be partially filled with vinegar, which should be held at the boiling point until the lime has been completely dissolved, or at least softened so that it can be easily slushed out.

ANIMAL SUSCEPTIBILITY TO GONORRHEAL INFECTION

To the Editor—Would it be possible to implant the discharge that is suspected of gonorrhea into the eye, penis or vagina of a rabbit, dog or kitten? All the tests that I have ever read about are not simple enough and I do not remember that I ever read anything about this test.

A C MULLER, M D, Sacramento, Calif

ANSWER—The animals mentioned are not susceptible to the gonococcus and consequently implantation of a suspected discharge cannot yield information of diagnostic value.

EFFECTS OF MERCURY IMPREGNATION ON HAIR

To the Editor—One of my patients used hair tonic containing corrosive mercuric chloride and resorcinol in alcohol. The last application was about six months ago. Now when she has a test curl before a permanent wave it is found that the hair dyes intensely black. Repeated rinsing has not altered this. It seems to me probable that it is due to persistence of some of the mercury, which is oxidized by the heat. Do you know of any way to correct this?

RICHARD F. HERNDON, M D, Springfield, Ill

ANSWER—Gray human hair was tested by soaking it for five days in a 20 per cent solution of resorcinol in 50 per cent alcohol. The hair was then rinsed in water, partly dried and heated with a curling iron heated to sizzling temperature as tested by the time honored saliva method. The hair showed no change in color after heating. A second specimen of hair was soaked for the same length of time in 2 per cent solution of corrosive mercuric chloride in 50 per cent alcohol, rinsed in water, partly dried and subjected to about the same degree of heat. It turned yellow at the point heated. This rough test corroborates the correspondent's theory, but to stand criticism the test would have to be repeated at a scientifically measured temperature.

As nothing is known of the chemical combination of the mercury with the hair, no advice can be given for its removal. If a sulphur combination has taken place, as might be assumed from the fact that the sulphur content of the hair is large, then removal will be difficult. It seems probable that the patient will have to avoid any hairdressing operation that necessitates the use of heat until the hair impregnated with mercury has fallen out or has grown long enough so that the impregnated ends may be cut off. This may take another six months or more.

TREATMENT OF WARTS

To the Editor—In THE JOURNAL, September 8, page 775, is a query regarding the treatment of warts on the face. I should like to mention the results of treatments of verrucae vulgares by intramuscular injections of bismuth salicylate (Lurie Sophie A. Verrucae Vulgares, *Arch Dermat & Syph* 26:95 [July] 1932) and discussions on the same subject at the state medical convention, Delmonte, Calif., April 24-27, 1933 (*California & West Med* 39:386 [Dec.] 1933). My further observations gave an opportunity to see the disappearance of various varieties of warts (vulgaris, filiformis, plana) multiple and various in size on the face, forehead, front of the neck and on the left arm pit.

A beauty parlor operator, whose face was almost entirely covered by verrucae planae for years, received elsewhere roentgen treatments and "pills" of yellow mercurous iodide, I presume without any visible results. Two bismuth salicylate intramuscular injections cleared her face absolutely.

A school teacher had on her forehead numerous verrucae planae for five years. She also had received roentgen treatments elsewhere without success. Three intramuscular injections of bismuth salicylate gave a spectacular result.

A motion picture technician had tumor like formations of verrucae vulgares on the forehead for many years. They responded beautifully after three treatments.

A business man had a filiform like verruca the size of a large pea on the front of the neck for many years, it responded after one treatment.

A high school girl was disfigured by numerous hanging filiform like warts on her face, three treatments gave the desired result.

A school boy 12 years of age was afflicted suddenly with fifty cornified, hypertrophic, filiform warts on the left arm pit, two treatments gave a spectacular success.

SOPHIE A. LURIE, M D,
Los Angeles

FUNCTION OF THE EPIGLOTTIS

To the Editor—In the reply to a question on the function of the epiglottis in Queries and Minor Notes in THE JOURNAL, September 22, no mention was made of the conclusions of Negus.

"The original function of the epiglottis was that of shutting off the mouth from the pulmonary air tract in order that all air should pass through the nose and keep up the keenness of the olfactory sense. In Man . . . the epiglottis has ceased to have any important olfactory function."

"As regards respiration the organ has almost no function . . ."

"Its influence on deglutition is slight."

"The epiglottis, as a whole, is pressed against the base of the tongue during swallowing and does not fall back as a lid to the laryngeal aperture, as was at one time supposed. The greater part of the organ can be removed without any noticeable effect on the individual" (Negus, V E. The Mechanism of the Larynx, St. Louis, C V Mosby Company, 1929, p. 449.)

This is a reiteration of conclusions reached by the same author earlier, in his article "The Function of the Epiglottis" in the *Journal of Anatomy* (62:1 [Oct., part 1] 1927). It seems to me that the monograph by Negus (although I dislike its anthropomorphic style) would be invaluable to any one giving speech courses.

OSCAR V. BATSON, Philadelphia
Professor of Anatomy, University of Pennsylvania
Graduate School of Medicine

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country, April 29 *Oral (Group A and Group B candidates)* New York, June 10 Sec, Dr C Guy Lane, 416 Marlborough St, Boston

AMERICAN BOARD OF OPHTHALMOLOGY San Antonio, Texas, Nov 12, Philadelphia, June 10 Sec, Dr William H Wilder, 122 S Michigan Blvd, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY San Antonio, Texas, Nov 13 Sec, Dr W P Wherry, 1500 Medical Arts Bldg, Omaha

ARIZONA Basic Science Tucson, Dec 18 Sec, Dr Robert L Nugent, Science Hall University of Arizona, Tucson

ARKANSAS Basic Science Little Rock, Nov 5 Sec Mr Louis E Gebauer, 701 Main St Little Rock *Regular* Little Rock, Nov 12 Sec, Dr A S Buchanan, Prescott *Eclectic* Little Rock, Nov 13 Sec, Dr I L Marshall, 820 W 14th St, Little Rock *Homoeopathic* Fayetteville Nov 13 Sec, Dr Allison A Pringle, Eureka Springs

CALIFORNIA Reciprocity Los Angeles, Dec 5 Sec, Dr Charles B Pinkham, 420 State Office Bldg, Sacramento

CONNECTICUT Regular Hartford Nov 13 14 *Endorsement* Hartford, Nov 27 Sec, Dr Thomas P Murdock, 147 W Main St, Meriden *Homoeopathic* New Haven, Nov 13 Sec, Dr Edwin C M Hall, 82 Grand Ave New Haven

DELAWARE Wilmington, Dec 11 13 Sec, Dr Harold L Springer, 1013 Washington St, Wilmington

FLORIDA Tampa, Nov 12 13 Sec, Dr William M Rowlett, Box 786, Tampa

KANSAS Topeka, Dec 11 12 Sec, Dr C H Fwing, I rned

KENTUCKY Louisville Dec 4 6 Sec, State Board of Health, Dr A T McCormick, 532 W Main St, Louisville

MAINE Portland Nov 13 14 Sec, Board of Registration of Medicine Dr Adam P Leighton Jr, 192 State St, Portland

MARYLAND Regular Baltimore Dec 11 14 Sec, Dr Henry M Fitzhugh, 1211 Cathedral St Baltimore *Homoeopathic* Baltimore, Dec 11 12 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MASSACHUSETTS Boston, Nov 13 15 Sec Board of Registration in Medicine, Dr Stephen Rushmore, 144 State House, Boston

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* The examinations will be held in medical centers where there are five or more candidates Feb 13 15 Ex Sec, Mr Everett S Flwood, 225 S 15th St, Philadelphia

NEBRASKA Lincoln Nov 22 23 Dir, Bureau of Examining Boards Mrs Clark Perkins, State House, Lincoln

NEVADA Carson City Nov 5 Sec, Dr Edward E Hamer Carson City

NORTH CAROLINA Endorsement Raleigh Dec 3 Sec, Dr Benj J Lawrence, 503 Professional Bldg Raleigh

OHIO Columbus, Dec 3 6 Sec Dr H M Platter, 21 W Broad St, Columbus

OKLAHOMA Reciprocity Oklahoma City, Dec 11 Sec, Dr J M Byrum, Mammoth Bldg, Shawnee

OREGON Basic Science Portland, Nov 17 Sec, Mr Charles D Byrne, University of Oregon Eugene

SOUTH CAROLINA Columbia, Nov 13 Sec, Dr A Earle Boozer, 505 Saluda Ave, Columbia

TEXAS Galveston, Nov 20 22 Sec, Dr T J Crowe, 918 Mercantile Bank Bldg, Dallas

VIRGINIA Richmond, Dec 12 14 Sec, Dr J W Preston 803 Medical Arts Bldg, Roynoke

WISCONSIN Basic Science Milwaukee Dec 15 Sec, Prof Robert N Bauer, 3414 W Wisconsin Ave Milwaukee

Missouri June Examination

Dr E G McGaugh, State Health Commissioner, reports the written examination held in St Louis, June 14-16, 1934 The examination covered 14 subjects An average of 75 per cent was required to pass One hundred and seventy-four candidates were examined, all of whom passed The following schools were represented

School	PASSED	Year Grad	Per Cent
University of California Medical School	(1934)	83 3	
George Washington University School of Medicine	(1934)	88	
Howard University College of Medicine	(1933)	81.4	
82, 82.5, 83.8, 85.1, 88.1			
Loyola University School of Medicine	(1934)	82.5	
Northwestern University Medical School	(1934)	87.7	
University of Illinois College of Medicine	(1933)	85.4	
(1934) 80.5, 83, 85.4			
University of Kansas School of Medicine	(1933)	83.8	
(1934) 84, 87.8			
University of Louisville School of Medicine	(1934)	84.2, 86	
Harvard University Medical School	(1932)	85	
St. Louis University School of Medicine	(1932)	83.3	
(1933) 81.7, (1934) 79.3, 79.3, 79.5, 80.6, 80.7, 80.9, 81.3, 81.3, 81.6, 81.7, 81.8, 82, 82.1, 82.4, 82.6, 82.7, 82.7, 82.7, 83.1, 83.2, 83.4, 83.4, 83.4, 84, 84.4, 84.1, 84.1, 84.2, 84.2, 84.3, 84.3, 84.3, 84.4, 84.5, 84.5, 84.7, 84.8, 84.9, 85, 85.3, 85.3, 85.4, 85.4, 85.5, 85.6, 85.7, 85.7, 85.7, 85.7, 85.8, 86, 86.1, 86.3, 86.8, 87, 87.6, 87.7, 87.7, 88, 88.1, 88.2, 88.5, 88.9, 89.8, 90.3, 90.6, 91			

Washington University School of Medicine	(1934)	79.6
81, 81, 81.9, 82, 82.1, 82.1, 82.4, 82.5, 82.5, 82.6, 83, 83, 83, 83.1, 83.2, 83.2, 83.6, 83.7, 83.8, 83.9, 84, 84.1, 84.1, 84.3, 84.5, 84.5, 84.6, 84.8, 85, 85.1, 85.2, 85.2, 85.2, 85.3, 85.5, 85.7, 85.8, 85.9, 86, 86, 86, 86.5, 86.5, 86.5, 86.5, 86.6, 86.7, 86.7, 86.9, 87, 87, 87.1, 87.2, 87.4, 87.7, 87.9, 87.9, 88, 88, 88.1, 90.2, 90.9		
University of Nebraska College of Medicine	(1933)	84.2
86.7 (1934) 84.7, 88		
Cornell University Medical College	(1933)	82
University of Oklahoma School of Medicine	(1932)	84.1
Medical College of the State of South Carolina	(1932)	86.4
McHerry Medical College	(1933)	83.6, 86.2
University of Tennessee College of Medicine	(1933)	86
University of Wisconsin Medical School	(1933)	79.83.5
University of Toronto Faculty of Medicine	(1931)	88.2
Johann Wolfgang Goethe Universität Medizinische Fakultät, Frankfurt am Main, Germany	(1933)*	82
Ludwig Maximilians Universität Medizinische Fakultät München	(1933)*	87.2
Universität Heidelberg Medizinische Fakultät	(1929)	83
Université de Genève Faculté de Médecine	(1933)*	83.2

* Verification of graduation in process

Iowa Reciprocity and Endorsement Report

Mr H W Grife, director, Division of Licensure and Registration, reports 9 physicians licensed by reciprocity and 1 physician licensed by endorsement from May 15 to July 12, 1934 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Physicians and Surgeons of Chicago	(1911)		Illinois
Northwestern University Medical School	(1934)		Illinois
Rush Medical College	(1926),		Illinois
Washington University School of Medicine	(1930)		Missouri
Crochton University School of Medicine	(1933)		Nebraska
University of Nebraska College of Medicine	(1925)		Nebraska
(1932) New York			
Marquette University School of Medicine	(1932)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Johns Hopkins University School of Medicine	(1927)		A M Ex

Texas June Report

Dr T J Crowe, secretary, Texas State Board of Medical Examiners, reports the written examination held in Fort Worth, June 21-23, 1934 The examination covered 12 subjects and included 120 questions An average of 75 per cent was required to pass One hundred and fifty-five candidates were examined 153 of whom passed and 2 failed Sixty-seven applicants were licensed by endorsement The following schools were represented

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine	(1934)		84.6
Rush Medical College	(1933)*		86.8
Tulane University of Louisiana School of Medicine	(1934)		81,
82.6, 83, 85.2, 87.4, 87.9, 90.3			
Harvard University Medical School	(1930)		88.3
Washington University School of Medicine	(1926) 92,		83.2
University of Nebraska College of Medicine	(1933)		86.6
Jefferson Medical College of Philadelphia	(1934)		85.3
University of Pennsylvania School of Medicine	(1934)		87.6
University of Tennessee College of Medicine	(1934)		82.6
Baylor University College of Medicine	(1933)		86.3

(1934) 78.5, 79.1, 80, 80.5, 80.9, 80.9, 80.9, 81, 81.3, 81.5, 82.1, 82.3, 82.3, 82.4, 82.5, 82.6, 82.8, 82.8, 82.9, 83, 83.1, 83.2, 83.5, 83.5, 83.7, 83.8, 84.1, 84.1, 84.2, 84.2, 84.3, 84.6, 84.6, 84.6, 84.7, 84.7, 84.9, 84.9, 85, 85, 85.1, 85.3, 85.6, 85.8, 86.1, 86.3, 86.3, 86.5, 86.5, 87.3, 88.2, 88.3, 88.4, 88.5, 88.5, 88.6, 88.8, 90, 90.6, 91.4			
University of Texas School of Medicine	(1933)		85,
(1934) 78.8, 79, 79.4, 79.9, 80.5, 80.9, 81, 81.4, 81.4, 81.9, 82, 82.3, 82.4, 83, 83.1, 83.3, 83.6, 83.6, 83.8, 83.8, 83.8, 83.9, 84, 84.2, 84.4, 84.5, 84.6, 84.6, 84.8, 85, 85.1, 85.1, 85.2, 85.3, 85.4, 85.5, 85.5, 85.6, 85.7, 85.8, 85.8, 85.9, 86, 86.4, 86.4, 86.4, 86.5, 86.6, 86.6, 87, 87.2, 87.6, 87.7, 88, 88, 88.1, 88.1, 88.2, 88.2, 88.1, 88.4, 88.7, 89.3, 89.5, 89.5, 90.5, 90.5, 90.5, 90.5, 82, 84.2, 84.5, 86, 86, 90.3			
Osteopathy			

School	FAILED	Per Cent
Osteopathy	71.6	72.9

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine	(1933) 2		Arkansas
Denver and Gross College of Medicine	(1904)		Idaho
University of Colorado School of Medicine	(1927)		Colorado,
(1932) Washington			
George Washington University School of Medicine	(1929)		Washington
Bennett Medical College, Chicago	(1901)		Nebraska
College of Physicians and Surgeons of Chicago	(1928)		Michigan
Loyola University School of Medicine	(1927)		Illinois
Northwestern University Medical School	(1911),		Illinois
Rush Medical College	(1907)		
School of Medicine of the Division of the Biological Sciences	(1932)		Illinois
Drafe University College of Medicine, Iowa	(1904)		Iowa
State University of Iowa College of Medicine	(1931)		Iowa

University of Louisville School of Medicine.....(1925)	Kentucky,
(1932) West Virginia	
Tulane University of Louisiana Medical Department..(1897)	Louisiana
Tulane University of Louisiana School of Medicine..(1914)	California,
(1925) Mississippi, (1918), (1925), (1927), (1928),	
(1932, 3), (1933, 4) Louisiana	
Johns Hopkins University School of Medicine.....(1927)	Oklahoma,
(1928) Maryland	
Harvard University Medical School.....(1929)	Maine
Detroit College of Medicine.....(1911)	Michigan
University of Michigan Medical School.....(1921), (1924)	Michigan
University of Minnesota Medical School.....(1930)	Minnesota
University Medical College of Kansas City, Missouri.(1907)	Missouri
Washington University School of Medicine.....(1903)	Illinois,
(1929) Minnesota	
Creighton University School of Medicine.....(1932)	Kansas
Bellevue Hospital Medical College.....(1896)	Illinois
University of Cincinnati College of Medicine.....(1931)	Ohio
University of Oklahoma School of Medicine.....(1929),	
(1930, 2), (1933, 2) Oklahoma	
University of Pennsylvania School of Medicine.....(1927),	
(1930) Pennsylvania, (1932) North Carolina	
Meharry Medical College.....(1933)	Kansas,
Tennessee	
University of Tennessee College of Medicine.....(1932)	Tennessee
University of Texas School of Medicine.....(1932)	Louisiana
University of Virginia Department of Medicine.....(1929)	W. Virginia
Friedrich-Wilhelms-Universität Medizinische Fakultät,	
Berlin.....(1932)	Maryland
Rheinische Friedrich-Wilhelms-Universität Medizin-	
ische Fakultät, Bonn.....(1920)† New York	
Osteopaths.....California, 2, Illinois, 2, Michigan, Missouri, 3	
* This applicant has completed his medical course and will receive his M.D. degree on completion of internship.	
† No average grade reported.	
‡ Verification of graduation in process.	

Book Notices

The Treatment of Injuries of the Head and Spine. By Jewett V. Reed, M.D. Paper. Pp. 96, with 39 illustrations by the Department of Illustration, Indiana University School of Medicine. Indianapolis: C. E. Pauley & Company, Inc., 1934.

In this monograph Reed's object is to "set forth in the shortest and simplest manner the method and procedure of treatment of injuries to the brain and spinal cord." He accomplishes his purpose. The work is divided into two parts, part one dealing with head injuries and part two with injuries to the spine. Under head injuries the author briefly reviews the pathology and probable mechanism of production of skull fractures and discusses more extensively the symptomatology and treatment. The operative treatment of compound skull fractures and of middle meningeal hemorrhage is presented in detail and well illustrated. In conclusion Reed states that the "treatment of 90 per cent or more of all head injuries is entirely a medical rather than a surgical problem." Injuries to the spine are divided into two groups, fracture and dislocations of the vertebrae that result in injury of the spinal cord and, second, injuries of the vertebral processes and bodies without cord involvement. On account of the inability to differentiate clinically between laceration and simple pressure on the spinal cord, the author advises laminectomy "as soon as the patient has recovered from shock" in all cases of spinal injury with paralysis. The treatment of fractures of the vertebrae, such as of the transverse and spinous processes, and of the bodies of the vertebrae, not complicated by paralysis, is briefly reviewed and accompanied by illustrations of a "method of obtaining hyperextension and manipulation of compression fractures of the vertebral bodies" and of a method of reduction of cervical dislocations without paralysis. This monograph is of value as a quick reference work for medical students and the physicians and surgeons who administer the immediate treatment to patients with injuries to the head and spine.

Nuevas prácticas de farmacia: Farmacotecnia. Por J. F. de Casadevante, farmacéutico. Prólogo del Dr. M. M. Maestre Ibáñez, farmacéutico de la Beneficencia Provincial. Paper. Price, 25 pesetas. Pp. 411, with 54 illustrations. Madrid: Javier Morata, 1934.

This book, written at the request of the author's numerous colleagues, aims to present accurate, reliable and rapid methods for the scientific preparation of pharmaceutical products. It does not pretend to be comprehensive but includes all that is necessary for the daily problems of the practicing pharmacist, especially methods for the preparation and conservation of medicaments. Because it is designed for the practical pharmacist, the author does not include biologic testing; but he tells

where such methods of testing may be found. The book gives the impression of having completely and satisfactorily fulfilled the aims of the author. He does not discuss therapeutics but writes purely for the pharmacist and those interested in pharmacy. A good index is included. If one may judge the condition of Spanish medicine from this treatise on pharmacy, it is modern and progressive.

Laboratory Manual of Biological Chemistry with Supplement. By Otto Folin, Hamilton Kuhn Professor of Biological Chemistry in Harvard Medical School. Fifth edition. Cloth. Price, \$3. Pp. 368, with 9 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1934.

This well known laboratory guide, beginning as a manual for medical students in Harvard Medical School, has now grown into a standard book of procedure for clinical laboratories the world over. The present edition has been rewritten in many sections and one finds many answers where questions existed in former editions. The most important additions to the book are three micro methods for the determination of sugar, non-protein nitrogen and uric acid in the blood, and a revised method for the determination of creatinine in the blood. A number of new methods have been substituted for old ones; for example, the method of Fiske and Logan for calcium and magnesium in the urine is substituted for that of McCrudden. One finds added a new method for the determination of potassium in the urine, total fixed base, ammonia and potassium in the blood, and for treatment of unclotted blood. There are numerous slight modifications in various methods and several new illustrations. One finds a few omissions, which for completeness should be included; for example, tests for sulphates, sodium and carbon dioxide combining power in the blood. The manual is so familiar as to need no general comments as to its excellence or to call attention to the fact that the methods for the most part are those which have been developed by Folin and his students. The book is interleaved with blank pages for notes.

Les syndromes ménériques. Par S. H. Mygind et Edda Dederding. No. 26, Monographies oto-rhino-laryngologiques internationales. Publiées par M. Vernet, L. Ledoux, G. Portmann, H. Aloin et M. Sourdille. Analyses en Allemand et Anglais. Paper. Price, 40 francs. Pp. 273. Paris: Les Presses Universitaires de France, 1934.

This monograph considers in detail the Ménière syndrome, covering practically every phase, both anatomic and clinical. Among the subjects discussed are the anomalies of the vestibular function, the cerebral nervous phenomena, tinnitus aurium, and the diagnosis and the treatment of Ménière's disease. The authors, especially Dederding, have done an enormous amount of experimental work. The question of the influence of water intake and its effects on various functions of the ear forms an important phase of the consideration of Ménière's disease in the present publication. There are appended summaries of the book in German and in English, and these are of great value to those who are unable to read French. A rather comprehensive bibliography is also given. The monograph is printed in large type, illustrated with a number of tables and audiometric charts, and is written in a clear, easily understood style. While some of the conclusions of the authors may not in the last analysis prove to be entirely correct, the book as a whole is a valuable contribution to the subject and should prove of definite value to the many clinicians who are confronted with the various phases of Ménière's disease.

Nursing Procedures. School of Nursing, Philadelphia General Hospital. Fifth edition. Cloth. Price, \$3. Pp. 256, with illustrations. Philadelphia, 1934.

The original edition of this book was the work of those concerned with the teaching of student nurses in the Philadelphia General Hospital. It was originally intended for the use of those connected with school, but because of its excellent organization and valuable data the book proved useful in other training schools. The present revised edition has been organized to meet requirements of increased ward instruction. The drawings of the various trays to be set up help the student to visualize her work. The material is clearly and concisely presented and, while it is specifically adapted for students of the Philadelphia General Hospital School of Nursing, it should prove a valuable book in any nurses' training school library.

Die Zuckerkrankheit: Leitfaden für Studierende und Ärzte. Von Ferdinand Bertram, leitender Arzt der II. medizinischen Abteilung des allgemeinen Krankenhauses Barmbeck, Hamburg. Boards. Price, 5.80 marks. Pp. 94, with 15 illustrations. Leipzig: Georg Thieme, 1934.

This is written in the best traditional German style, concise, readable, suggestive. Keen observation and an intimate knowledge of the German literature are apparent throughout, although no mention is made of Magnus Levy's epoch-making work on diabetic coma and his demonstration of the low excretion of sodium chloride, or to Umber's (Grote's?) patients who showed over 50 per cent heredity. References to non-Germans are scanty, and German references alone are included in the monographs cited at the end of the volume.

Diabetes is defined as a chronic disease of the entire neuro-endocrine apparatus in which a lowered function of the pancreas stands in the foreground. Lack of insulin leads to inability to burn carbohydrate sufficiently and build it up anew into reserve material. Liver glycogen stands in the center of the problem of diabetes; when exhaustion of the glycogen reserve occurs, the combustion of fat suffers, leading to acidosis, which, according to Bertram's conception, is decisive for the fate of the diabetic patient. A glycogen-free liver can result from untreated diabetes or hypoglycemia and therefore is present during an insulin reaction, at which time acidosis is said to appear, although the latter statement is not supported with sufficient data. He ascribes the complications of diabetes to acidosis rather than to hyperglycemia and explains these first by impairment of the action of insulin due to lowering of the alkalinity of the blood, and secondly, because acidosis exerts a harmful action on cell function, as shown by a diminished formation of antibodies. Although fully realizing the usefulness of glycogen in the liver, the author overlooks its undoubted usefulness in the skin and the probability that its replacement there by dextrose has much to do with the dermatologic complications of the disease.

Bertram's conception of traumatic diabetes is sound and he requires as a *sine qua non* an injury to the pancreas in a proved nondiabetic patient; but he demands also a nondiabetic heredity, which seems hardly justifiable, because, just as obesity and occasionally an infection can arouse a dormant diabetic state, so too might an injury to the pancreas.

Treatment likewise is orthodox, based on an accurate diet to be scrupulously followed even though insulin is added. The carbohydrate in his diet follows a middle course. No sympathy is shown for Stolte's free feeding, particularly with adults. Bertram seldom gives more than the equivalent of 8 bread units each weighing 20 Gm. (12 Gm. of carbohydrate) with 5 per cent vegetables, making a total of from 90 to 120 Gm. of carbohydrate. Fruits are favored because of their content of vitamins, alkalis and levulose. Protein is prescribed in moderate quantities. At the beginning of treatment the fat and also calories in the diet are low and the carbohydrate relatively high not only to guard against acidosis but also because a diabetic patient should never be overfed, since it is not a matter of indifference to the pancreas whether it lives with a body of 60 or of 90 Kg.—a neat adoption of Allen's teaching, although no appreciation is evident of Du Bois and Richardson's demonstration that a low diet may be a high fat diet and that it is the total calories burned, not fed, which count.

Success in treatment is best measured by the patient's subjective feeling of good health and in second degree by the permanent retention of an adequate glycogen reserve rather than by the state of the blood and urine. A sugar free urine and a normal blood sugar are not considered necessary, or perhaps desirable, on the basis that a high blood sugar in diabetes may act as a compensatory offset to the loss of power of utilization of sugar by the tissues, thus enabling the cells of the body to store and utilize glycogen more easily. Shades of Naunyn! Somehow he does not quite catch the point that the diabetic patient who feels better on a free diet, like the man who takes a drink, may be helped only temporarily and that it is really possible for the diabetic patient whose blood sugar is normal, just like the man who does not drink, to maintain perfect health.

Pathology is dismissed with four short paragraphs in fine print, and diabetes in childhood occupies one page. Diabetic

retinitis is an entity and with prolonged treatment may improve. Operations for gallstones are advisable as prophylaxis against diabetes.

Classification is based on the relation of carbohydrate tolerance to ketone bodies. The person with mild diabetes is continuously free from ketone bodies on an adequate caloric diet containing at least 100 Gm. of carbohydrate; the patient with moderately severe diabetes is likewise ketone free on such a diet with the use of insulin; but the patient with severe diabetes is not ketone free on such a diet even with insulin. Obviously Americans would not subscribe to that classification. In a brief paragraph the author beautifully summarizes the somewhat complicated and confused types of sthenic and asthenic diabetes.

According to Bertram, insulin should be given only when prolonged dietetic treatment fails, in contradistinction to the American idea that not until the disease is arrested should one attempt to do without it. Another fundamental difference between Bertram's treatment and American treatment is that he forbids the examination of the urine by the patient under all circumstances. As the number of his diabetic children increases, it is probable that he will revise his attitude in both cases. What would our thousands of diabetic children do, wandering all over the United States for school and work, if they did not know how to examine their urine and guide their own treatment? Rightly the author counsels against making neurasthenics of diabetic patients. He centers his treatment on acidosis, but in America it is a *sine qua non* at the outset of treatment to teach patients that acidosis and diphtheria are similar and that it is a disgrace for a person with diabetes to have either one or the other. Had American doctors only the problem of preventing acidosis, the treatment of diabetes would be simple. Today treatment should strive for the preservation of the health of the patient after he has had the disease ten, fifteen and twenty years or more, because the latter period is the probable duration of diabetes for the average patient who contracts it in the year 1934.

Valuable is Bertram's pointing out that, if too great doses of insulin are given, serious harm can result either by a rapid fall of the blood sugar or by the inducement of too strong a counter regulation, especially manifested by an increased discharge of epinephrine with the consequent rise in blood sugar, impoverishment of glycogen and increase of acidosis. This increased discharge of epinephrine is measurable clinically by a rise in blood pressure and the appearance of a lymphocytosis reaching 60 per cent. The experiments of von Holm are cited in which a continuous weak infusion of insulin was injected into an animal and shown to be far more efficacious than when given in a single dose. Thus, reckoned in terms of a diabetic patient of 60 Kg. body weight with assumed complete loss of endogenous insulin, 7.8 units would keep the urine sugar free fasting, and 48 units if the total caloric needs are wholly replaced by dextrose. He favors doing without insulin if in any way possible and then proves that exactly the opposite course should be followed, by reporting wonderful results with insulin in two patients who obviously needed it months and even years before.

The treatment of coma is sound and he has treated more than 200 cases. He employs intravenous injections of dextrose freely, from 1 to 3 Gm. per unit. In America there is a difference of opinion on this point, but all schools agree that dextrose should be given to a patient with diabetes if he has been without food twelve hours, just as surgeons administer dextrose to persons who do not have diabetes. Insulin is recommended in half hourly doses, from 20 to 50 units, seldom more, and in severe cases intravenously as well as subcutaneously; the early doses should be the larger. Highly concentrated 50 per cent solutions of dextrose are employed in preference to weaker strength, as he wishes to guard against cardiac collapse. Subcutaneously 4.6 per cent dextrose solution is employed and also salt solution. He fully appreciates the advantage of 10 per cent salt solution when uremia threatens through deficiency in salt. As for alkali therapy, the maximum dose is 20 Gm. of sodium bicarbonate and this only when the carbon dioxide is extremely low; even then it should be cautiously and slowly injected because of the oft appearing necrosis that it may entail.

For the circulation he utilizes drugs many of which will sound bizarre to American readers, sympatol, cardiazol, coramin, caffeine, strychnine and hexaton. Because of the disturbed circulation following coma he prescribes from eight to ten days' absolute rest in bed, advice rarely necessary with American methods of treatment. The frequency of urobilinogen in coma is recorded.

Infection is the complication most to be feared, because of the injury to the pancreas through toxins, through reduction of insulin activity due to the accompanying acidosis, and, third, by tryptic ferments found in the leukocytes. The seriousness of an infection in the patient with diabetes he explains by the lowered vitality of the body and its diminished power for antibody formation, made evident by hyperglycemia and acidosis.

The danger of tuberculosis in diabetic patients is fully appreciated, particularly as a sequel to coma, but contrary to American experience he has seldom encountered severe acidosis in tuberculosis.

Coma is classified into three types, the typical Kussmaul dyspneic coma, cardiovascular coma and renal coma, although he recognizes that the types intermingle. Many will disagree with Bertram that coma sometimes develops without recognizable causes or that it develops in the course of one or two hours or even a shorter period. The unreliability of dependence on laboratory tests for the prognosis in coma is rightly emphasized, as also the importance of the blood pressure and its treatment. Despite his use of dextrose, Bertram records five cases in which hypoglycemic collapse following coma led to sudden failure of the circulation. This is what surgeons fear when dextrose is given to patients with diabetes. These facts show that the more frequent use of micro blood sugar tests should be made, because they would avert such catastrophes. To give dextrose to offset the danger of insulin and then to rely only on tests of the urine is almost like jumping from the frying pan into the fire.

Bertram holds that, even if of moderate degree, diabetes is an absolute indication for interrupting pregnancy and at the same time for sterilization to protect the mother and to stop hereditary transmission. Diabetic patients desiring marriage should be registered at the heredity bureau. Would our 400,000 living diabetic patients and their 800,000 brothers and sisters who also carry the disease take kindly to registration, leaving to officials to decide whether they should marry? An experiment on a national scale to interrupt all diabetic pregnancies and sterilize all diabetic patients is unique, and the rest of the world will watch it with interest; but it is a question whether France will care to adopt it and thus run the risk of losing another Clemenceau and another Joffre, whose diabetes even without insulin did not appear to be a great handicap to their careers, or whether we would wish to miss the chance of losing another Edison or the discoverer of the cure of one of the three diseases for which this century is famed.

The book is instructive and stimulating and it is delightful to have an author leave the beaten path and force the reader to reconsider his own "principles of action and to give the reasons for the same in each case."

A Compend of Diseases of the Skin. By Jay Frank Schamberg, A.B., M.D., Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania, and Carroll S. Wright, B.S., M.D., Professor of Dermatology and Syphilology, Temple University School of Medicine. Ninth edition. Cloth. Price, \$2. Pp. 331, with 129 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1934.

The ninth edition of this compend has been revised and enlarged, and it "is designed for the use of practitioners and students, as a rapid reference work and key to the study of dermatology." The common skin conditions are succinctly described, and there are excellent tables detailing the differential diagnosis of the more important skin conditions that are easily confused clinically. The treatment of the more important conditions is briefly but clearly discussed. The article on syphilis is excellent, and the concise discussion on treatment is unusually complete when one considers its brevity. The work serves a useful function as an outline of study for the student but must be supplemented by the larger dermatologic textbooks for more detailed discussion of the subject. Figure 67 (p. 181), labeled chloasma, is more probably one of vitiligo. Figure 101 (p. 237) should more properly be labeled maculopapular syphilis. In

the article dealing with x-rays, on page 311, the old MacKee formula is given instead of that given in his latest textbook. In the preface to this edition, comment is made that "material on lymphogranulomatosis cutis, a relatively new disease, has been introduced," when lymphogranuloma inguinale is meant.

Œuvre scientifique de J. Babinski. Recueil des principaux travaux publiés par les soins de J. A. Barré et al. Paper. Price, 180 francs. Pp. 638, with 69 illustrations. Paris: Masson & Cie, 1934.

During the fifty years from 1882 to 1932 Babinski alone and in collaboration with his pupils published 288 articles, which are listed at the end of this volume. Seventy-nine articles, arranged in eleven groups, have been selected for reproduction. Among them are those dealing with the discovery of the Babinski sign and Babinski's conception of hysteria and hypnotism. Almost every aspect of clinical neurology is covered, and the volume gives in convenient form not only the chief works of this master but a clear view of the progress of neurology in the most eventful fifty years of this department of medicine.

The Spastic Child: A Record of Successfully Achieved Muscle Control in Little's Disease. By Marguerite K. Fischel. Cloth. Price, \$1.50. Pp. 97, with illustrations. St. Louis: C. V. Mosby Company, 1934.

This monograph is a unique and valuable contribution to medical literature. While the book is a written record of a mother's attempt to teach muscle control to her child with Little's disease, it is replete with medical as well as human interest. The methods and accessory aspects of treatment are described in simple and accurate language. Valuable points are intimately discussed which should serve a most useful purpose to those faced with similar problems. The presentation is concise, and yet the medical reader will be impressed with a wealth of valuable data that this record contains. The book will serve as a valuable document of what can be accomplished with a handicapped child by an ingenious and persevering mother.

Manual de medicina clinico y de laboratorio. Por el Dr. C. M. Desvergne y Galdos, de las Facultades de New York, Paris y Madrid. Paper. Pp. 568. Habana: Cultural, S. A., 1933.

This large volume is a glossary of medical terms and differs from the usual dictionary in that the definitions are more lengthy and descriptive. The medical words are classified into groups comprising medical diseases, medical phenomena, signs, reflexes, syndromes, and laboratory and surgical procedures. The authors use the proper names of the various terms in the great majority of instances and list these in alphabetical order in their respective groups. The book is divided into ten parts. The first part, which constitutes almost half of the volume, is a glossary of medical diseases. The remaining nine parts list the various phenomena, syndromes, signs, and so on, in a fashion similar to the first portion.

The Care and Feeding of Children: A Catechism for the Use of Mothers and Children's Nurses. By L. Emmett Holt, Jr., M.D., Associate Pediatrician to the Johns Hopkins Hospital, Baltimore, Md. Fifteenth edition. Cloth. Price, \$1.25. Pp. 259. New York & London: D. Appleton-Century Company, Incorporated, 1934.

This little volume has been a standard guide in the care and feeding of children for more than thirty years. Its popularity is well merited, for it is carefully organized to meet the little daily problems that arise with the inexperienced mother. The present revision brings the book down to date with enlightened medical opinion. For a concise textbook considering the care and needs of the well child, this volume has no equal.

A Suggestive Budget for Families of Low Income. Prepared by the Budget Committee of the Family Welfare Committee and the Housing Committee of the Washington Council of Social Agencies. Paper. Price, 35 cents. Pp. 46. Washington, D. C., 1934.

This is issued to offer a guide for relief workers in estimating individual or family needs. It is detailed as to items of diet for persons under various circumstances. Housing and clothing needs are also itemized. In the summary, the total estimated amount needed for "the basic needs of families of low income permitting a limited choice as to quality" is \$1,921.14. A second budget "provides only for the basic needs of families of low income" and is estimated at \$1,291.40.

Fuss und Bein: Ihre Erkrankungen und deren Behandlung. Ein Lehrbuch. Von Prof. Dr. med. Georg Holmann, Direktor der Orthopädischen Universitäts-Klinik, Frankfurt a. M. Second edition. Paper. Price, 24 marks. Pp. 380, with 326 illustrations. Munich: J. F. Bergmann, 1934.

This combines the well known works of the author on the foot and the leg. The monograph is complete, including deformities and disabilities of the foot and the leg, all of which are described and illustrated by line drawings, roentgenograms and operative technic. The book that can be recommended to all surgeons who read German.

Medicolegal

Dental Practice Acts: Filing of Charges Condition Precedent to Revocation Proceedings.—The Illinois Department of Registration and Education, without any formal charges having been first filed with it, instituted revocation proceedings against Kalman, Niedermeyer and another, all licensed dentists employed by the Chicago Dentists. The department served notice on each of the dentists that on a stated day it would investigate his actions to determine whether or not he had obtained money by false or fraudulent representations or had been guilty of dishonorable conduct or of certain other unprofessional acts. The three dentists then filed a bill in the superior court, Cook County, to enjoin the department and its dental committee from proceeding further in the matter. The court sustained a demurrer interposed by the defendants and dismissed the bill, whereupon Niedermeyer appealed to the Supreme Court of Illinois.

The Illinois Civil Administrative Code, as amended, defines the procedure to be followed in revoking a license to practice dentistry, as also does the Illinois dental practice act. The Civil Administrative Code provides that the department "may upon its own motion and shall upon the verified complaint in writing of any person" initiate revocation proceedings. On the other hand, the dental practice act, prior to February 1933, provided, in part, as follows:

The board [meaning the Department of Registration], when written charges have been filed with its secretary, and seem sustained by proof, shall fix a time and place for the examination of a person so charged and shall give written notice to the said person of the time and place and furnish him with a copy of the charges. . . .

For the reasons stated in *Schireson v. Walsh*, 187 N. E. 921 (THE JOURNAL, Aug. 4, 1934, p. 367) the Supreme Court held sections 60(a)—60(1) of the Civil Administrative Code unconstitutional as applied to dental practitioners. The department, the court held, in proceedings to revoke a license to practice dentistry, must follow the procedure laid down in the dental practice act as it existed at the time of the alleged professional misconduct on the part of Niedermeyer, namely, prior to February 1933.

The right to practice dentistry, said the Supreme Court, is a valuable right, a property right within the due process of law clause of the constitution. Revocation of a license to practice dentistry not only carries with it disgrace and humiliation but deprives the licensee of his means of earning his livelihood. In a proceeding of this nature due process of law requires a definite charge, adequate notice and a full, fair and impartial hearing. While it is not necessary that charges of professional misconduct should be drawn with the same accuracy and certainty as an indictment or information in a criminal case or with the refinements of pleadings in courts of record, yet such charges should be so drawn as to bring the alleged act of misconduct clearly within the purview of the statute and should specify the time and place when and where such prohibited act was committed. The right to proper notice and a sufficient and explicit charge is not procedural but substantive. The supposed charge in this record shows that the contemplated hearing was a hearing in the nature of an inquisition similar to an investigation by a grand jury. This is not the hearing that is provided by the statute. Neither the dental committee nor the department has the power, under the statute, to originate or prefer charges against a dental practitioner. The charges against Niedermeyer, in order to confer

jurisdiction on the dental committee or the department, should have been in writing, filed with the secretary of the committee, and should have contained direct, positive and specific allegations based on the alleged commission by Niedermeyer of some of the acts prohibited by the dental practice act. Under the notice purporting to contain the charges against Niedermeyer and served on him by the department, concluded the court, neither the department nor its dental committee had jurisdiction to conduct the alleged investigation against him or to enter any order revoking or suspending his license.

The Supreme Court, therefore, directed the superior court to overrule the demurrer to the bill.—*Kalman v. Walsh* (Ill.), 189 N. E. 315.

Charitable Hospitals: Liability for Neglect in Selecting Employees.—The appellee, a pay patient in the appellant hospital, a charitable institution, was injured by reason of the negligence of a hospital nurse in giving the patient a vaginal douche. The trial court gave judgment for the appellee and the hospital appealed to the Supreme Court of Appeals of Virginia.

The liability of a charitable hospital for negligent acts of its servants, said the Supreme Court of Appeals, was settled in Virginia in the case of *Weston's Adm'x v. Hospital of St. Vincent, etc.*, 131 Va. 587, 107 S. E. 785, 23 A. L. R. 907. In that case, the court held that the only duty which a charitable hospital owed to its patients was the exercise of due care in the selection and retention of its servants. In the present case, continued the court, there was no question that the jury was justified in concluding that the negligence of the nurse was the proximate cause of the patient's injuries. The superintendent of nurses testified that, in selecting a nurse, one of the requirements was that the applicant should have had three years of high school work. The evidence showed that the nurse responsible for the patient's injuries had never attended high school and that she had attained only the tenth grade in a graded school situated in a small town. During the three years that she had been in the hospital, she had been repeatedly reprimanded for infractions of the rules of the hospital, had been threatened with dismissal and had been retained only because the superintendent felt sorry for her. It is not sufficient to say, said the Supreme Court of Appeals, that a nurse is competent simply because she is capable of discharging the manual duties incumbent on her as a nurse. It is a matter of common knowledge that the welfare of a patient is as much the responsibility of the nurse as it is of the physician. If the nurse is lacking in educational preparation, if she is guilty of indiscretions that impair her physical or mental status, if she is lacking in that moral character which imbues the patient with confidence, then it cannot be said that she is a competent person to be placed in charge of a helpless patient.

The finding of the trial court that the hospital was negligent in the selection and retention of the nurse was amply justified by the evidence, concluded the court, and the judgment against the hospital was affirmed.—*Norfolk Protestant Hospital v. Plunkett* (Va.), 173 S. E. 363.

Society Proceedings

COMING MEETINGS

- American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.
- Inter-State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Fuy, 230 Grand Avenue, Oakland, Secretary.
- Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
- Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
- Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

4: 97-128 (Sept.) 1934

- Etiology and Symptomatology of Peptic Ulcer. E. S. Sledge, Mobile.—p. 97.
X-Ray Diagnosis of Peptic Ulcer. I. M. Gravlee, Mobile.—p. 99.
Dietary and Medical Management of Peptic Ulcer. S. Harris, Birmingham.—p. 101.
Surgical Treatment of Peptic Ulcer. L. Noland, Fairfield.—p. 111.
Reminiscences. J. M. Whiteside, Anniston.—p. 113.
Volkman's Ischemic Contracture. S. R. Terhune, Birmingham.—p. 116.

American Journal of Clinical Pathology, Baltimore

4: 381-452 (Sept.) 1934

- *One Hour Two-Dose Dextrose Tolerance Test. W. G. Exton and A. R. Rose, Newark, N. J.—p. 381.
Some Medicolegal Aspects of Iso-Agglutinins. H. A. Heise, Milwaukee.—p. 400.
Preparation of Neurologic Material for Histologic Study. J. W. Kernohan, Rochester, Minn.—p. 410.
Further Studies in Antigen Emulsion Preparation for Ball Test for Syphilis. B. S. Kline, Cleveland.—p. 426.
Cyanide Poisoning. A. O. Gettler and A. V. St. George, New York.—p. 429.
Treatment of Malignant Neutropenia by Injection of Liver Extract. W. B. Martin, Norfolk, Va.—p. 438.

One Hour Two-Dose Dextrose Tolerance Test.—Exton and Rose perform the one hour two-dose dextrose tolerance test by dissolving 100 Gm. of dextrose in about 650 cc. of water. This solution is flavored with lemon and divided into two equal doses, which are served cold. Three containers with preservative against glycolysis are kept at hand for the blood specimens and three containers for the urine specimens. When collecting the specimens the subjects should empty the bladder as completely as possible. The following steps are taken after a fast, preferably over night: 1. The samples of blood and urine are collected and the first dose of dextrose is given, from one to two minutes being allowed for its ingestion. 2. Thirty minutes after the ingestion of the dextrose the blood sample is collected and the second dose of dextrose is given, from one to two minutes being allowed for its ingestion. Thirty minutes later, samples of blood and urine are collected. The third urine container is given the subject for a sample of the urine next voided whenever a (post) sample is desired. When the results of the foregoing procedure are plotted, the interpretation of the first part of the curve, that is, the part that includes the original and the thirty minute samples, is exactly the same as the interpretation of the same part of the curve of the older procedure, and the same deductions are drawn accordingly from the blood and urine sugar values. Interpreting results of the second part of the one hour two-dose tests indicates that normal subjects respond to the second dose of dextrose with a greater fall in blood sugar than that occurring during the same period after only a single dose and there is no sugar in the urine. The criteria for determining diabetes in the one hour two-dose test are a more or less steep rise of not less than 10 mg. of blood sugar in the sixty minute sample following the second dose of dextrose and the relation of blood and urine sugar values to the severity of the disease. The criteria of the test for renal glycosuria are: blood sugars that follow the normal course, or in any event never reach the diabetic level, and sugar in both urine specimens. The criteria of alimentary glycosuria are: a sugar-free urine after fasting with sugar in the final urine and blood sugars that follow the normal curve even when the level is higher than normal. Up to the present time the authors have not encountered a single instance in

which the new test disagreed with the older when the results of the older test were satisfactory. On the other hand, many cases gave doubtful or misleading responses to the older test when results of the new test were consistent and specific.

American Journal of Surgery, New York

25: 381-564 (Sept.) 1934

- Role of Chemistry in Obstetrics and Gynecology. H. J. Stander, New York.—p. 383.
Plea for Conscientious Prenatal Care. H. C. Clark, Wichita, Kan.—p. 390.
Postpartum Pyelitis of Pregnancy. Treatment of Certain Cases Without Use of Ureteral Catheter. Explanation Based on Physiology of Bladder. D. K. Rose, St. Louis.—p. 394.
Some Practical Considerations in Treatment of Leukorrhea. A. Reich, New York.—p. 398.
Familial Fibroblastoma of Peripheral Nerves. Report of Two Cases. C. J. Miangolarra and S. M. Copland, New Orleans.—p. 399.
*Acute Fractures of Os Calcis. Their Treatment from Industrial Standpoint. C. R. G. Forrester, Chicago.—p. 404.
Gunshot Wounds of Head in Civil Practice. Note on Management. E. S. Gurdjian and H. Buchstein, Detroit.—p. 414.
*Compression Fractures of Vertebral Bodies. New Method of Attempt at Reduction and Immobilization. V. Farmley, Little Rock, Ark.—p. 419.
*Pneumographic Injection of Perirenal Lymphatics. Report of Two Cases and Review of Literature, Consideration of Relation of Pseudolymphatic Backflow to Chyluria, Anatomy of Lymphatics of Kidney and Mechanism of Backflow from Renal Parenchyma and Pelvis. B. S. Abeshouse, Baltimore.—p. 427.
Nephrostomy in Pyelonephritis. I. R. Sisk, J. B. Wear and E. F. Cummings, Madison, Wis.—p. 431.
Oral Dye Therapy in Urogenital Infections. H. W. E. Walther and R. M. Willoughby, New Orleans.—p. 460.
Associated Renal Tuberculosis and Malignancy. M. R. Keen, Huntington, N. Y.—p. 467.
Avertin Rectal Anesthesia. V. E. Johnson, Pauline Sheppa and Mary Haffey, Atlantic City, N. J.—p. 476.
Splanchnic Anesthesia. Its Importance in Operations of Upper Abdomen. H. Finsterer, Vienna, Austria, and P. Thorek, Chicago.—p. 481.
Pleurolysis: Addition to Thoracoplasty. S. A. Thompson, New York.—p. 487.
Rhino-plasty. G. A. Pagenstecher, San Antonio, Texas.—p. 491.
*Modified Torek Operation. W. L. Wolfson and S. M. Turkeltaub, Brooklyn.—p. 494.
Hypertrophic Pyloric Stenosis in Adult. Discussion and Case Report. R. F. Elmer and C. E. Boylan, Chicago.—p. 499.
Cytologic Response to Peritoneal Irritation in Man. Protective Mechanism. C. F. Dixon, Rochester, Minn., and E. L. Rixford, San Francisco.—p. 504.
Tragedies of Abdominal Incision. J. W. Kennedy, Philadelphia.—p. 512.
*Autogenous Milk Vaccine Therapy in Surgical Treatment of Peritonitis. J. G. Anderson, Westerly, R. I.—p. 521.
Suggestions to Facilitate Use of Surgical Maggots in Suppurative Infections. W. Robinson, Washington, D. C.—p. 525.
Detection of Occult Blood in Feces. E. D. Kiefer, Boston.—p. 530.

Acute Fractures of Os Calcis.—In fractures of the os calcis following the reduction of the swelling, Forrester performs a subcutaneous tenotomy of the achilles tendon, using the zigzag method and taking all pull of the muscle off the distal displaced fragment. Direct traction is used to pull this posteriorly displaced fragment down as near normal as possible, restoring the original longitudinal arch. The lateral deformities below the malleoli are corrected by utilizing the method devised by Bohler, to which the author has added his knee pressure splint, using the buttons devised by Bohler, and, using them on the same splint, he is enabled to reduce forcibly the bony deformity below the malleoli. After the reduction is made, it is maintained by manual pressure pulling the heel down at the same time. At this point the plantar position of the foot is also maintained by keeping the ball of the great toe in plantar flexion instead of inversion. A stockinet is then applied from the toes up to the knee. A posterior plaster mold is then applied followed by a circular skin-fitting plaster cast in which a walking iron is incorporated. No weight bearing is allowed for the first twenty-four hours or until the plaster has hardened. After that the patients are instructed to walk on the cast without any other assistance and to move the toes frequently each day to prevent any edema. This type of cast is maintained for at least two months. At the end of that time an elastic stocking or an Unna boot is employed for about sixty days, and in the meantime the patient is given education of all leg muscles, together with foot exercises and the ultimate use of the shoe worn previous to the accident. A review of his results in 150 cases indicates that a combination of the author's type of treatment with Böhrer's ambulatory cast and walking iron results in a material reduction not only

in temporary disability, which usually runs from a year to a year and a half, but also in the specific loss, which runs from 60 to at least 80 per cent.

Reduction of Compression Fractures of Vertebral Bodies.—Parnley presents a method for the reduction of compression fractures of the thoracic and lumbar vertebrae, together with an improved method of constructing a plaster shell to maintain the corrected position. The patient is anesthetized, and if the fracture is located in the twelfth dorsal or in the first, second, third or fourth lumbar vertebra hyperextension can be obtained best by swinging the patient between two tables, face down, one table beneath his chest and the other beneath the upper third part of his thighs. If the fracture is above the twelfth dorsal vertebra the position is the same except that the table or elevation under the chest is moved upward, toward the shoulders, the neck also being hyperextended by means of elevation or suspension of the head, and that the second table is placed under the hips or pelvis. The elevation of the hips or pelvis should be considerably higher than that of the shoulders. Then a piece of felt is cut to fit the patient's back. This felt should extend from well over the shoulders to about the level of the greater trochanters and to the anterior axillary line on each side. If palpation over the injured vertebra reveals a slight "hump" or prominence, a sand bag about 2 inches thick and about 4 inches broad is placed directly over the injured vertebra and the bag is struck several times with quick sharp blows from the flat surface of a hammer weighing from 2 to 4 pounds. This should be kept up until the "hump" disappears or until it is obvious that there is an impaction of such a degree that it is deemed impossible to break it up. When the reduction is completed, the posterior felt jacket is fitted to the patient and held in position by adhesive plaster. Then, with 6 inch widths, beginning well over the shoulders, plaster bandage is laid transversely. It should be laid smoothly and each fold should go well beyond the margin of the felt. Then the plaster must be rubbed and smoothed to fit every depression and every prominence of the patient's back as perceived through the felt. After this first layer begins to set, others are added longitudinally and obliquely in both directions and again transversely to the number of from twelve to fifteen. When the shell is made, it is allowed to remain on the patient for a few minutes until it hardens. Before the shell becomes hard, it is trimmed to conform to the size of the felt. When the shell has dried thoroughly, a piece of stockinet is stretched over the inner side and held with adhesive plaster, and the patient is placed in the cast. During the time required for the plaster to dry, the patient is kept in bed in the hyperflexed position with Buck's extension in force. He is given one-fourth grain (0.016 Gm.) of morphine sulphate or one-third grain (0.022 Gm.) of pantopon hypodermically every four to six hours to control intestinal peristalsis and muscular contractions. The patient is kept in the shell for a week, not being allowed to turn over or move about. When placed in the shell, he is allowed to flex his knees as he desires. The patient may return home any time after he has been placed in the cast.

Pyelographic Injection of Perirenal Lymphatics.—Abeshouse believes that the phenomenon of pyelolymphatic backflow can be graphically demonstrated by injection of the renal and perirenal lymphatic canals during pyelography. Injection of the renal and perirenal lymphatic canals during pyelography occurs not only in patients with parasitic or non-parasitic chyluria but also in patients with an absence of chyluria or a nondemonstrable chyluria. The author is of the opinion that injection of these lymphatic canals is the result of the easy penetration of the pyelographic medium into anomalous renal lymphatic canals, which may be congenital or acquired. The acquired type of anomalous renal lymphatics, which is usually associated with a chyluria, is exemplified by the dilatation and tortuosity of the renal lymph vessels following an obstruction of the thoracic duct resulting from an inflammatory, suppurative or neoplastic disease in the thoracic, mediastinal, peritoneal or retroperitoneal region. The chyluria is the result of the rupture of one or more of these dilated, tortuous lymph vessels, thus establishing a communication between the renal lymphatics and the pelvis. It is through

the same points of rupture that the contrast fluid penetrates and injects the renal and perirenal lymphatics. The congenital type of anomalous renal lymphatics in all probability is present in the cases of injected perirenal lymphatics unassociated with a demonstrable chyluria and in some of the cases of nonparasitic chyluria. In this type, anatomic variations in the course and structure of renal lymphatics may be present and produce a direct communication between the renal lymphatics and the pelvis which will permit the easy penetration of the pyelographic fluid. Overdistention of the renal pelvis and excessive pressure at the time of pyelography play no part in the production of injected renal or perirenal lymphatics. The author bases the foregoing remarks on a study of eleven cases of injected perirenal lymphatics from the literature and two personally observed cases unassociated with a demonstrable chyluria.

Operation for Maldescended Testicle.—To overcome the disadvantages and provide greater postoperative comfort and a shorter period of disability from the Torek operation, Wolfson and Turkeltaub have modified the technic as follows: Over the inguinal canal, hockey-stick shaped incisions, beginning at the pubic area, are made through the skin and the aponeurosis of the external oblique muscle. The broken lines are directed outward and upward. The external abdominal ring is split through at the middle of the intercolumnar fibers. The blades of the aponeurosis are separated widely to permit more mobility and better relaxation of the arched fibers of the internal oblique and transversalis muscle. The gubernaculum testis should be identified and traced to the lower attachment, which is then doubly clamped low down, cut and tied at both ends. The testicle is palpated, viewed, appraised and its relationship studied, and it is lifted if it is covered with a veil of cremasteric muscle. The testicle and the spermatic cord are withdrawn gradually from the inguinal canal. A finger dissection will mobilize this structure from its bindings of cremasteric muscle, adhesions and transversalis fascia, performed by starting posteriorly and working deeply and high up into the retroperitoneal space. Anteriorly and laterally, a similar performance liberates the spermatic cord and the vaginal process from the anterior and lateral walls. The vaginal process or peritoneal tube is freed from the vas deferens and spermatic vessels of the cord. The cord may be lengthened by separating all peritoneal remnants and adventitious tissue between the vas deferens and the spermatic vessels as far down as the testicle and epididymis. If additional length is required, a complete and high dissection of the posterior parietal peritoneum from the spermatic vessels up to the renal area will accomplish the purpose. The new bed for the testicle is prepared by forcing a finger to the bottom of the scrotum. The base of the scrotum is next grasped with two Allis forceps 2 cm. apart. A transverse slit is made through the skin and dartos between the clamps. Another incision, equal in length, parallel but lower, is made on the inner and upper part of the thigh, facing the scrotum. The cord structures are aligned correctly. If the length and the position of the testicle in the scrotum are satisfactory, a clamp is passed through the scrotal incision to grasp and withdraw the free end of the gubernaculum testis through the scrotal slit. The testicle is carried to the bottom of the scrotum. A union of the upper skin flap in the thigh to the posterior skin flap of the scrotum is then established with interrupted sutures. The gubernaculum is stitched to the newly formed posterior skin suture line with interrupted fine silk sutures. The skin wound is closed with silk sutures, which also incorporate the gubernaculum to this union. The inguinal canal and structure are reformed and reunited with number 1 catgut sutures. The spermatic cord should not be displaced. Two weeks after the orchiopexy the patient is to resume his physical activities. Two months later the scrotum is detached from the thigh, by incision round the circumference of the scar and through the gubernaculum. A few interrupted sutures close the wounds of the two surfaces. The authors performed this operation with satisfactory results in forty-five cases of maldescended testicle.

Autogenous Milk Vaccine Therapy in Treatment of Peritonitis.—Anderson has been using autogenous milk vaccines in the treatment of peritonitis since 1929. Immediately preceding any abdominal operation, five numbered Erlenmeyer

flasks, each containing 30 cc. of milk, are boiled and sterilized for thirty minutes in an electrical sterilizer and then allowed to cool. A thin skin forming on the surface of the milk is removed with a sterile platinum loop. The sterile flasks are then set aside. If, when the abdomen is opened, a local or general peritonitis is present, cultures are obtained with a sterile spoon or platinum loop. If there is much peritoneal fluid present, about 4 drachms (15 cc.) of the fluid is used to inoculate the milk in each flask. Cultures can also be obtained by dipping the blind end of the appendix after removal into the sterile milk. These flasks are then corked and placed in an incubator at 37.5 C. At the end of twelve hours, flask 1 is removed from the incubator and sterilized by boiling over a direct gas flame for five minutes. If a curd forms either before or after boiling, it is removed by filtering through sterile cotton and the filtrate is used for injection. Flasks 2, 3, 4 and 5 with milk cultures are removed in twenty-four, thirty-six, forty-eight and sixty hours, respectively, treated and injected if deemed necessary as described for flask 1. All milk cultures are killed by heat at the end of an incubation period of four days, as it is the author's opinion that maximal growth has been obtained by that time. Chemical changes occur which retard the growth of the bacteria, and undesirable products of fermentation may result. The filtrates of these four-day cultures are kept in sterile sealed bottles on ice for future use if necessary. Injections are given intramuscularly in the gluteal region. The vaccine material should not be injected directly into the blood stream. If any anaphylactic signs or symptoms appear, 0.6 cc. of epinephrine hydrochloride should be given. The amount of vaccine injected should be determined by the condition of the patient; from 10 to 25 cc. has been employed, usually 15 cc. or more. Two or three injections have been given as a rule. In the author's eighteen cases of appendicitis with localized or generalized peritonitis treated by this method there was only one death. In the seventeen patients who recovered, drainage was observed to be much less than usual in such cases, and recovery was more rapid. The patient who died had had acute pain in the lower right quadrant for five days before coming to the hospital, and at operation an extensive peritonitis with a great deal of free pus was found.

Annals of Medical History, New York

6: 381-474 (Sept.) 1934

- I. Dominic John Corrigan: His Place in the Development of Our Knowledge of Cardiac Disease: II. Water-Hammer Pulse. G. Dock, Pasadena, Calif.—p. 381.
L'Hotel-Dieu de Quebec. W. B. Howell, Montreal.—p. 396.
First Cholera Epidemic in Columbus, Ohio (1833). J. Forman, Columbus, Ohio.—p. 410.
History of Medical Education in New Orleans from Its Birth to the Civil War. A. E. Fossier, New Orleans.—p. 427.
European Anatomy Before Vesalius. W. T. Dempster, Ann Arbor, Mich.—p. 448.

Annals of Surgery, Philadelphia

100: 401-560 (Sept.) 1934

- Sarcoma of Breast: Report of Sixty Cases. S. L. Fox, Baltimore.—p. 401.
Treatment of Acute Traumatic Hemothorax. J. M. Foster Jr. and D. Frey, Denver.—p. 422.
Cancer of Kidney: Squamous Cell Carcinoma of Renal Pelvis, with Especial Reference to Etiology. J. B. Gilbert and S. F. Macmillan, Schenectady, N. Y.—p. 429.
*Congenital Urinary Anomalies: Evaluation of Associated Obstructive Syndrome: Report of Six Cases. J. L. Wiseman, Winnipeg, Man.—p. 445.
*Advantages of Preoperative X-Ray in Kidney Tumor in Children. A. Randall, Philadelphia.—p. 462.
Tumors of Lung, Secondary to Kidney Tumors. G. P. Muller, Philadelphia.—p. 476.
Carcinoma of Penis: Report of Thirty-Seven Cases. K. W. Horn and R. M. Nesbit, Ann Arbor, Mich.—p. 480.
Inflammatory Strictures of Rectum and Their Relation to Lymphogranuloma Inguinale. H. Lee and R. W. Staley, Cincinnati.—p. 486.
Carcinoma of Rectum: Question of Operability. A. A. Salvin, New York.—p. 496.
Procedures in Cleft Palate Surgery: Experiences with Veau and Dorrance Technic. R. H. Ivy and L. Curtis, Philadelphia.—p. 502.
Osteopetrosis. T. A. Shallow, W. B. Davis and J. T. Farrell Jr., Philadelphia.—p. 512.
Splenectomy in Mother and Daughter for Familial Hemolytic Jaundice. F. A. Loop, Cleveland.—p. 518.
Malignant Tumors of Greater Omentum. H. K. Ransom and P. C. Samson, Ann Arbor, Mich.—p. 523.

Congenital Syphilitic Osteomyelitis of Mandible: Report of Two Analogous Cases in Sisters. R. H. Ivy and L. Curtis, Philadelphia.—p. 535.

Anterior Dislocation of Shoulder Joint by Abduction and Internal Rotation. L. E. Snodgrass, Philadelphia.—p. 539.

Carotid-Jugular Anastomosis: Its Effect on Systemic Blood Pressure of Dog. N. Winslow and W. W. Walker, Baltimore.—p. 544.

Congenital Urinary Anomalies.—Wiseman states that before surgery for the obstructive effects of a congenital anomalous formation of the urinary tract is undertaken it is important to determine beforehand (1) the presence or absence and the degree of infection in the kidney on which it is proposed to carry out a plastic procedure, (2) the functional status of the involved organ and (3) the possibility of bilateral involvement. If the hydronephrotic kidney is a functionless mass and its mate can be demonstrated to have been spared a similar fate and to possess adequate functional capacity, nephrectomy should be performed. The existence of demonstrable bilateral hydronephrosis or pyelectasis of a solitary kidney are indications for conservative surgical procedures. The existence of a congenital urinary anomaly, by itself, is a potential source of obstruction and subsequent urinary stasis and infection. Anomalous blood vessels in close proximity to the upper third of the ureter, although not actually responsible for the collapse of the ureter, may by their pulsations interfere with the normal flow of the peristaltic wave down the ureter and thereby promote stasis and pyelectasis. Heminephrectomy of an infected hydronephrotic pelvis may be required when a solitary kidney is supplied with a double pelvis and corresponding ureteral reduplication, one of which becomes affected. This procedure may be employed for the resection of a unilateral fused kidney. Nephropexy, preferably by the Kelly method, may facilitate pelvic drainage and obviate further ureteral angulation, whenever the hydronephrotic kidney displays a tendency toward undue or excessive mobility. A ureterocele or ureterovesical cyst is usually associated with pronounced narrowing of the ureteral orifice which contributes to urinary stagnation and the development of pyelectasis of varying degree on the involved side. The accepted surgical procedure for their correction may be by the suprapubic approach with resection of the prolapsed cystic sac or transurethral electrodesiccation, the latter being preferred. Surgery in unilateral fused kidney is contraindicated unless complications such as calculus, pyonephrosis or hydronephrosis develop, in which case pyelotomy or heminephrectomy may be required. The measure of success or failure for the correction of hydronephrosis and the contributory ureteral obstruction may be gaged by the alleviation of symptoms, the pyelographic evidence of decreasing capacity of the sac and the return of its functional capacity estimated by differential functional renal tests, and less accurately by the density of dye excreted following intravenous excretion urography.

Preoperative Roentgen Treatment in Renal Tumors.—Randall believes that the embryonic character of renal tumor in childhood permits one to expect a marked diminution in the size of the mass from adequate roentgen therapy. Such irradiation cannot be expected to be completely curative, i. e., to destroy completely all neoplastic cells. Recurrences after irradiation exhibit increased resistance to this form of therapy and ultimately the new growth exceeds irradiative destruction, i. e., becomes "fast" to any type of irradiation. The late arrival of these cases to the consultant surgeon, owing to their latent symptoms, renders their operative removal both hazardous and at times impossible. Preoperative irradiation not only decreases this operative hazard but by the decrease in size minimizes the additional danger of manipulative and traumatic spread of malignant cells. The choice of time for operation, after the completion of thorough irradiation, appears to be between the fourth and the sixth week. There has been no detrimental effect to prompt healing when operating at this interval after irradiation. The leukocyte count during the course of treatment should be watched as some patients develop a leukopenia, which is evidence of lowered resistance and, if marked, would contraindicate further irradiation at that time. The preoperative irradiation should include the chest and the abdomen, producing an infertile field for metastatic transplants that may be dislodged by the handling of the tumor at extirpation. Three cases following this method are reported.

Canadian Medical Association Journal, Montreal

31: 237-346 (Sept.) 1934

- Experimental Silicosis: Quartz, Sericite and Irritating Gases. W. D. Robson, Schumacher, Ont.; D. A. Irwin and E. J. King, Toronto.—p. 237.
- Silica Dust. W. R. Franks, Toronto.—p. 245.
- Cystinuria and Cystine Lithiasis. F. S. Patch, Montreal.—p. 250.
- Xanthomatosis and Schüller-Christian Syndrome: Roentgenologic and Clinical Study. S. Reich, Vienna, Austria.—p. 256.
- *Common Duct Obstruction with Lipiodol Studies of Cholangiectasis and Effects of Prolonged Drainage. P. H. T. Thorlakson and J. C. McMillan, Winnipeg, Manit.—p. 265.
- Gonococcal Endocarditis. W. W. Eakin, Montreal.—p. 269.
- *Benign Epithelial Invasion. W. Boyd, Winnipeg, Manit.—p. 273.
- One Thousand Avertin Anesthetics. W. Bourne and P. E. O'Shaughnessy, Montreal.—p. 276.
- Corrective Measures for Progressive Deafness. G. Berry, Worcester, Mass.—p. 284.
- Fundamentals in Rectal Diagnosis. E. A. Daniels, London, England.—p. 289.
- Treatment of Dietary Anemia. C. E. Suelling, Toronto.—p. 294.
- Spinelli Operation Followed by Pregnancy and Labor. W. P. Tew, London, Ont.—p. 297.
- Role of Pathologist in Diagnosis of Cancer. W. L. Robinson, Toronto.—p. 298.

Use of Iodized Oil in Common Duct Obstruction.—Thorlakson and McMillan used iodized poppy-seed oil in visualizing roentgenologically the biliary passages in five cases of obstruction of the common duct after drainage had been established. The roentgenograms illustrate the changes that occur in severe cases during the course of treatment, especially showing the marked improvement in the intrahepatic biliary system which results from prolonged drainage. In the authors' cases the poppy-seed oil passed into the duodenum without delay, but it also ran up into the duct system and outlined the intrahepatic biliary tree, in spite of the fact that there was obviously no distal obstruction. They feel that failure to visualize the intrahepatic system depends on a widespread cholangitis and that this cholangitis subsides following prolonged drainage or drainage and irrigation. The intrahepatic system will be visualized well as soon as the ducts are cleared of the viscid stagnant contents, and thus visualization indicates improvement following drainage and not necessarily obstruction, as Ginsburg and Benjamin point out. The authors' interpretation of the cases showing incomplete visualization of the biliary tract is that the finer radicles are filled with tenacious infected mucus which prevents the oil from spreading freely throughout the smaller bile passages. In such cases irrigation of the ducts with warm physiologic solution of sodium chloride is indicated and if this procedure is carried out with ordinary aseptic precautions it is not attended by any ill effects.

Benign Epithelial Invasion.—Boyd states that the columnar cells lining a tubular gland or covering a glandular surface may proliferate and form new glandular structures, not only on the surface but also in the depths of the tissue, to such an extent that the new formation may be separated widely from the original surface, although connected with it by a narrow tract. Should the latter be tortuous, the original connection with the surface can no longer be recognized in a single section and a mistaken diagnosis of carcinoma may be made. Such a condition may be called benign epithelial invasion. Stratified epithelium is also liable to this change, as may be seen at the edge of a chronic ulcer of the skin or in the lining of the ureter. The columnar epithelium lining the gallbladder, fallopian tubes, uterus and stomach offers excellent examples of the process, which the author discusses.

Journal of Immunology, Baltimore

27: 235-354 (Sept.) 1934

- Duration of Immunity Produced in Rats by Feeding *Pneumococcus* Type I. V. Ross, New York.—p. 235.
- Protective Antibodies Following Oral Administration of *Pneumococcus* Type I to Rats. V. Ross, New York.—p. 249.
- Protective Antibodies Following Oral Administration of *Pneumococcus* Types II and III to Rats, with Some Data for Types IV, V and VI. V. Ross, New York.—p. 273.
- *Oral Immunization of Humans Against *Pneumococcus*. V. Ross, New York.—p. 307.

Human Immunization Against *Pneumococcus*.—Ross states that following ingestion of *pneumococcus* vaccines about 75 per cent of the persons tested formed protective antibodies against type I and about 60 per cent against type II. The results for type III are approximately as for type II. Anti-

bodies for type I have been found in most of the serums examined from seven to fourteen months after the oral administration of the vaccine. The indications are that the duration is the same for the three types. The protective substances appear promptly, being present within from two to three days following six feedings. The number of feedings employed has varied from two to ten. In one instance when two doses were given antibodies were formed. In some cases ten doses elicited no response. A new set of feedings was followed by the appearance of protective substances in the blood of about 50 per cent of such cases. It is estimated that a practical procedure would employ the pneumococci from 1,200 cc. of growth per type on each of six to ten successive days, the bacterial content being estimated at 10^8 per cubic centimeter. The use of completely autolyzed cultures, which contain several times as much antigenic material as the bacteria present in a growth of eighteen hours, would reduce proportionately the volume of broth to be handled. None of the several forms in which the vaccine has been prepared have proved superior to the others. The concentration of antibodies formed is generally such that 1 cc. of serum will protect a mouse against 5,000 fatal doses of pneumococci (types I and II). It is believed that these protective substances indicate a generalized resistance to the pneumococcus. Agglutinins have not been detected in serums in which protective antibodies have been found. Natural protective antibody against type I has been found in fairly large amounts in 10 per cent of the serums examined and in smaller amounts in 20 per cent more; in the case of type II the figures were 41 and 18 per cent; for type III, 31 and 50 per cent.

Journal of Industrial Hygiene, Baltimore

16: 255-326 (Sept.) 1934

- Cancer of Urinary Bladder in Workers of Chemical Dye Factories and Dyeing Establishments: Review. W. C. Hueper, Philadelphia.—p. 255.
- Cellular Response of Lymph Nodes to Various Dust Suspensions Introduced into Lymphatics. Katharina Stüber, Boston.—p. 282.
- Cellular Response of Lymph Nodes to Suspensions of Crystalline Silica and Two Varieties of Sericite Introduced Through Lymphatics. C. K. Drinker, Madeleine E. Field and P. Drinker, Boston.—p. 296.
- Clinical Study of Silicosis and Silicotuberculosis, Diagnosis Based on Roentgen Classification. W. C. Hall, Philadelphia.—p. 300.
- Alcohol Studies: I. Experiments on Drivers of Motor Vehicles. P. Balhusen and K. Vedel-Petersen, Copenhagen, Denmark.—p. 304.

Journal of Nutrition, Philadelphia

8: 253-376 (Sept. 10) 1934

- Exogenous Melituria in Man. Beatrice G. Edwards and M. R. Everett, Oklahoma City.—p. 253.
- Vitamin Studies: XIX. Assimilation of Carotene and Vitamin A in Presence of Mineral Oil. R. A. Dutcher, P. L. Harris, Eva R. Hartzler and N. B. Guerrant, State College, Pa.—p. 269.
- *Appetite Stimulating and Growth Promoting Property of Liver. D. W. Johnson and L. S. Palmer, St. Paul.—p. 285.
- Utilization of Energy Producing Nutrient and Protein as Affected by Individual Nutrient Deficiencies: II. Effects of Vitamin B Deficiency. F. J. McClure, L. Voris and E. B. Forbes, State College, Pa.—p. 295.
- Fat-Soluble Vitamins and Dental Caries in Children. C. D. M. Day and H. J. Sedwick, Rochester, N. Y.—p. 309.
- Use of Method of Partial Regression in Analysis of Comparative Feeding Trial Data: Part II. E. W. Crampton and J. W. Hopkins, Montreal.—p. 329.
- Results of Ingestion of Cod Liver Oil and Yeast on Calcium and Phosphorus Metabolism of Women. Helen A. Hunscher, Eva Donaldson, Betty Nims Erickson and Icie G. Macy, Detroit.—p. 341.
- Determination of Vitamin A Values by Method of Single Feedings. H. C. Sherman and E. N. Toddhunter, New York.—p. 347.
- Vitamin B Deficient Ration. R. C. Bender, G. E. Flanigan and G. C. Supplee, Bainbridge, N. Y.—p. 357.
- Vitamin B Supplementation of Milk. G. C. Supplee, R. C. Bender and G. E. Flanigan, Bainbridge, N. Y.—p. 365.

Effect of Liver on Appetite and Growth.—Johnson and Palmer studied the effect of several meat supplements on the growth and appetite of rats. In the first experiment fresh pork liver, when fed as a 0.5 Gm. daily supplement to a purified diet, increased growth and food consumption as compared to the controls receiving only the basal diet. When food consumption was controlled by use of the paired-feeding method, the rats receiving the liver supplement did not grow significantly faster than the controls. Liver meal, when fed in amounts equivalent to the fresh liver, increased the growth rates of the rats receiving it to a lesser degree than the fresh liver. Beef muscle meal when fed as a supplement to the basal diet did not increase food consumption. This result is

evidence that the palatability of a food itself is not a measure of its ability to stimulate the appetite for other foods with which it is not mixed. In the second experiment the appetizing properties of fresh pork liver, beef liver and calf liver and the effect on growth of fresh beef liver when food intake was controlled were studied. The three kinds of liver were found to increase food consumption and growth to a similar extent. The increased growth, however, is entirely the result of appetite stimulation, as shown by the equal growth of controls and those receiving the beef liver when food intake was equalized. Male rats showed a decidedly greater growth response to fresh liver supplements than did female rats. This was due in part to a greater consumption of food by the male rats and also to the fact that they utilized the greater food intake much more efficiently than the female rats. The experiments confirm the conclusion of Palmer and Kennedy and suggest a different interpretation of the growth resulting than from a so-called growth factor. The factor should be referred to solely as an appetite factor.

Journal of Urology, Baltimore

32: 231-320 (Sept.) 1934

- Bilateral Pelvic Kidneys. W. M. Coppridge, Durham, N. C.—p. 231.
Crossed Renal Dystopia Without Fusion: Case Report. J. B. Sigal, Newington, Conn.—p. 236.
Nephrolithiasis in Case of Nephrobronchial Fistula: Case Report. R. F. Jones and A. R. Hughes, Washington, D. C.—p. 242.
Ectopic Ureter in Female. R. E. Alt, Boston.—p. 249.
Transplantation of Lower End of Dog's Ureter: Experimental Study: I. Reimplantation into Bladder. V. Vermooten, J. W. Spies and C. H. Neuwanger, New Haven, Conn.—p. 261.
Id.: II. Pathologic Changes in Ureter and Kidney Before End of Second Postoperative Month. V. Vermooten, New Haven, Conn.—p. 266.
Id.: III. Function of Ureterorectal Valve. V. Vermooten, New Haven, Conn.—p. 273.
Cystitis Emphysematosa: (1) In an Elderly Diabetic Woman; (2) in a Three-Months-Old Female Infant. S. Sanes and G. D. Doroshov, Buffalo.—p. 278.
Modification of McCarthy Visible Prostatic Punch for Transurethral Prostatic Resections. P. E. Wedgewood, San Diego, Calif.—p. 287.
Coexistent Cancer and Tuberculosis of Testicle: Case Report and Complete Review of Literature. J. P. Robertson, Birmingham, Ala., and J. B. Gilbert, Schenectady, N. Y.—p. 291.
Polyorchidism. H. E. Jordan, Charlottesville, Va., and A. I. Dodson, Richmond, Va.—p. 311.

New England Journal of Medicine, Boston

211: 479-520 (Sept. 13) 1934

- Autopsy Findings in One Hundred Cases of Prostatic Cancer. E. R. Mintz and G. G. Smith, Boston.—p. 479.
Value of Icteric Indexes and Plasma Lipids in Diagnosis of Jaundice. E. R. Lehnberg, Boston.—p. 487.
Unusual Case of Traumatic Hernia. D. P. Penhallow, Washington, D. C.—p. 492.
Torsion of Spermatic Cord in Baby Ten Months Old: Report of Case. F. F. Henderson and P. S. Foiese, Boston.—p. 493.
Pulmonary Tuberculosis: Medical Aspect. R. M. Deming, Glendiff, N. H.—p. 509.

New Orleans Medical and Surgical Journal

87: 145-204 (Sept.) 1934

- Some Practical Points Relating to Cancer of Female Breast: Review of Two Hundred and Eighty-Nine Cases. G. W. Wright, Monroe, La.—p. 145.
Cancer of Colon. J. A. Hendrick, Shreveport, La.—p. 150.
Importance of Biopsy in Diagnosis of Cancer. E. von Haam, New Orleans.—p. 153.
Skin Grafting: Its Indications, Limitations and Uses of Various Types of Grafts. N. Owens, New Orleans.—p. 158.
Principles Underlying Rational Treatment of Malaria. W. Krauss, Meridian, Miss.—p. 165.
Bronchoscopic Aspiration in Treatment of Lung Suppuration. H. L. Kearney, New Orleans.—p. 169.
Allergic Phenomena. G. W. F. Rembert, Jackson, Miss.—p. 173.

New York State Journal of Medicine, New York

34: 789-830 (Sept. 15) 1934

- Pathologic Study of "Strawberry" Gallbladder. H. H. Cooke, Boston.—p. 789.
Treatment of Obesity. J. McCabe and J. F. Hart, New York.—p. 795.
When Should Senile Cataract Be Removed? A. J. Bedell, Albany.—p. 801.
What Progress Has Been Made in Perfecting Cataract Operation? B. W. Key, New York.—p. 803.
The Problem of the Premature Infant. R. M. Tyson, Philadelphia.—p. 811.
Diagnostic Value of Aspirin Test in Rheumatic Conditions. H. F. Wolf, New York.—p. 818.

Oklahoma State Medical Assn. Journal, McAlester

27: 397-348 (Sept.) 1934

- Vaginal Hysterectomy. W. Long, Oklahoma City.—p. 307.
Septicemia. L. J. Starry, Oklahoma City.—p. 311.
Fascial Space and Bursal Infections of Hand. F. L. Flack, Tulsa.—p. 314.
Indications and Contraindications for Splenectomy. W. Langston, Oklahoma City.—p. 319.
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Public Health Reports, Washington, D. C.

49: 1051-1074 (Sept. 7) 1934

- Dermatitis in Nut and Bolt Plant Due to Use of Friction Tape. L. Schwartz and R. P. Albaugh.—p. 1051.
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Some Findings of the National Organization for Public Health Nursing Survey of Public Health Nursing of Significance to State Health Administrators. Pearl McIver.—p. 1081.

Surgery, Gynecology and Obstetrics, Chicago

59: 277-568 (Sept.) 1934

- Acute Rapidly Spreading Infections Following Trivial Injuries of Hand. S. L. Koch, Chicago.—p. 277.
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Surgical Treatment of Exophthalmic Goiter: Late End Results. E. H. Pool and J. H. Garlock, New York.—p. 330.
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Tumors of Tendon Sheaths. D. Lewis, Baltimore.—p. 344.
Present Status of Surgical Treatment of Peptic Ulcer. E. S. Judd and G. W. Waldron, Rochester, Minn.—p. 350.
Problems Involved in Treatment of Compound Fractures. F. A. Besley, Waukegan, Ill.—p. 354.
Adequate Bacteriologic Service for Surgical Department. F. L. Meleny, New York.—p. 358.
Tuberculous Tenosynovitis of Hand: Study of Thirty-Three Cases of Chronic Tenosynovitis of Hand. M. L. Mason, Chicago.—p. 363.
Type and Grade of Gastric Carcinoma in Relation to Operability and Prognosis. A. O. Whipple and T. S. Ratford, New York.—p. 397.
Cancer of Colon: Notes on Its Surgical Treatment. F. W. Rankin, Lexington, Ky.—p. 410.
Fractures of Neck of Femur, Dislocations of Hip and Obscure Vascular Disturbances Producing Aseptic Necrosis of Head of Femur. D. B. Phemister, Chicago.—p. 415.
Tumors of Tendon Sheaths: Their Close Biologic Relationship to Tumors of Joints and Bursae. J. J. Morton, Rochester, N. Y.—p. 441.
Indications for Surgical Treatment of Carcinoma of Stomach. D. C. Balfour, Rochester, Minn.—p. 453.
Fractures of Lateral Condyle of Tibia, Classification, Pathology and Treatment. W. R. Cubbins, A. H. Conley, J. J. Callahan and C. S. Scuderi, Chicago.—p. 461.
Argentaffine Tumors of Terminal Ileum: Cause of Intestinal Obstruction. W. E. Lee and J. S. Taylor, Philadelphia.—p. 469.
Subtotal Resection of Pancreas for Hypoglycemia. E. A. Graham and A. F. Hartmann, St. Louis.—p. 474.
Passive Vascular Exercise in Treatment of Peripheral Circulatory Disease. A. M. Shipley and G. H. Yeager, Baltimore.—p. 480.
*Surgical Limitations in Treatment of Acute Suppurative Peritonitis. J. R. Buchbinder, Chicago.—p. 485.
Treatment of Carcinoma at Rectosigmoid Junction by Obstruction Resection. V. C. David, Chicago.—p. 491.
I. Simultaneous Vein Ligation: Experimental Study of Effect of Ligation of Concomitant Vein on Incidence of Gangrene Following Arterial Obstruction. B. Brooks, G. S. Johnson and J. A. Kirtley Jr., Nashville, Tenn.—p. 496.
*Studies on Endobronchial Occlusion. E. C. Cutler and C. B. Wood, Boston.—p. 501.
Mechanism of Death in Massive Pulmonary Embolism: Comments on Trendelenburg Operation. E. D. Churchill, Boston.—p. 513.
Unattached Retroperitoneal Fibroma: Report of Case. J. A. Wolfer, Chicago.—p. 518.
Some Remarks on Operative Procedures for Appendicitis. M. R. Reid, Cincinnati.—p. 529.
Return of Sensation to Transplanted Skin. L. Davis, Chicago.—p. 533.

Hydatid Disease of the Brain.—Dew discusses hydatid disease of the brain and states that, as in the case of all organs, infestation of the brain with echinococcal disease may be either primary or secondary. In the former the cysts are derived from hexacant embryos which, after passage through the liver and lungs, have been carried by the carotid arterial stream to the brain. Secondary cysts are metastatic and result from the sowing by the blood stream of scolices, derived from a fertile primary simple cyst that has ruptured into the left side of the heart. It is obvious, although the fact has not been universally recognized, that the pathologic and clinical

aspects of the two types are different and, until this is appreciated, much confusion must occur in their interpretation. Primary cysts occur almost exclusively in young children, are simple, and give rise to clinical syndromes similar to any other benign, noninfiltrating tumor and are amenable to surgical operation. Secondary cysts occur almost exclusively in adults or adolescents, produce protean nervous manifestations owing to their multiplicity, and invariably produce fatal results, not being amenable to surgery.

Surgical Limitations in Treatment of Peritonitis.—Buchbinder states that the operative therapy of spreading peritonitis is limited to removal or closure of a septic focus, aspiration of the exudate and closure of the peritoneum without drainage, and that the abdominal wound above the serosa should be drained. The author's experimental and clinical observations are opposed to the opinion that operation during a spreading peritonitis increases the rate of spread and the area of contamination. Postoperative spreading peritonitis, particularly when the source is the intestinal tract, is nearly always a catastrophe, yet there is both justification and indication to invade the operative field early in the event of serious soiling. When a mounting temperature and particularly a rapidly mounting and persistently high pulse are present it is preferable to reopen the abdomen promptly, rather than to wait. It does not require a general peritonitis, or even a widespread lesion, to cause death. Therefore, prompt differentiation between serious soiling with infection and ileus without gross soiling must be made. All methods of direct surgical attack on suppurative spreading peritonitis, based on alteration of or interference with the functions of absorption and exudation, tend to increase the mortality. Drains function in localized peritoneal abscesses, but in spreading processes they not only encapsulate, regardless of the consistence of the exudate, but also provoke residual abscess and increase the diffusion of the infection.

Experimental Endobronchial Occlusion.—In searching for a substance to produce bronchial occlusion, Cutler and Wood recalled that painless strictures of the urethra were not uncommon following irrigations with acriflavine hydrochloride solution, which led them to believe that this drug in greater concentrations might have the desired action on the bronchus. Dogs weighing from 8 to 20 Kg. were used. They were anesthetized by the intraperitoneal injection of sodium pentobarbital. The bronchoscope was pushed down to the position where cicatrization was desired. Acriflavine was applied to the desired bronchus by moistening a cotton swab, wrapped tightly on the end of a long stiff wire, with the solution. The excess solution was expressed and the applicator was placed just within the bronchial orifice for from six to ten minutes, the duration of the application depending on the size of the bronchus. The swab should fit snugly into the orifice of the bronchus. When the swab was removed, if any excess secretion was present, this was wiped dry with a sponge. The treated area was usually a deep scarlet and its mucosa seemed withered. In the case of the lower right lobe, each of the numerous openings were treated in the same manner. If the entire right or left main primary bronchus was to be treated, a cotton wick 0.5 cm. by 5 to 8 cm., from which all excess of acriflavine had been pressed out with a sponge, was passed through the bronchoscope and packed tightly into the main primary bronchus and left in place for from fifteen to twenty minutes. Any excess solution was wiped dry when the wick was removed. By this method the primary bronchus can be occluded completely, two applications usually being necessary. The solution of acriflavine should be made up fresh every day. A fresh cotton applicator should be used for each bronchus. At first the authors used a 10 per cent solution but soon found that the caustic effect was inadequate. One bronchial occlusion (accessory lobe) resulted from a single application and one occlusion resulted from three applications to the accessory or subcardiac lobe. The rest of the experiments were made with 25 per cent acriflavine. In this group occlusion resulted with great regularity. No abscess formation occurred and, microscopically, damage to blood vessels was not observed. All the different bronchi have been completely stenosed. In several cases the entire lung has been made to collapse completely as the result of occlusion of all its bronchi.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

7: 449-512 (Aug.) 1934

- Concretion or Congenital Stenosis of the Aorta. Elizabeth Foley Taylor.—p. 452.
Radiography of Calcification in Cardiac Valves During Life. J. V. Sparks and C. Evans.—p. 463.
Demonstration of Fluorescent and Phosphorescent Effects of Zinc Sulphide. L. Levy and D. W. West.—p. 467.
Radioactivity of Radium Bromide Solutions for Internal Medication. W. E. Boyd.—p. 471.
Oscillographic Study of the Electrical Characteristics of X-Ray Generators. G. W. C. Kaye and G. E. Bell.—p. 476.

British Journal of Tuberculosis, London

28: 1-48 (Jan.) 1934

- Charles Albert Calmette and Pierre Paul Émile Roux. C. Lillingston.—p. 1.
The Brontës: Study in Epidemiology of Tuberculosis. A. S. MacNalty.—p. 4.
*Tuberculosis and Allergic Diseases. G. W. Bray.—p. 7.
Artificial Light Treatment at Tuberculosis Dispensaries. G. L. Cox.—p. 13.
Cavity Treatment in Pulmonary Tuberculosis. Evelyn M. Holmes.—p. 17.
Tuberculosis in General Practice. E. Ward.—p. 21.

28: 49-104 (April) 1934

- "G. P.'s and T. B.: Indictment": The Answer. H. B. Shaw.—p. 49.
Lipiodol Radiography in Tuberculosis Dispensary Practice. J. E. Wallace.—p. 63.
Housing and Tuberculosis. J. M. Mackintosh.—p. 67.
Review of Treatment of Peritoneal and Laryngeal Tuberculosis by Ultraviolet Radiations. A. Furniss.—p. 71.

Tuberculosis and Allergic Diseases.—Bray summarizes the association between tuberculosis and asthma as follows: 1. Only one asthmatic patient in a hundred gives any positive evidence of active tuberculosis. 2. Only one patient with active tuberculosis in two hundred suffers from true asthma. 3. When asthma does develop in a tuberculous subject, the sensitizing agent is generally of an inhalant nature and the asthma is relieved by its removal or by a course of specific desensitizing injections. In the rare cases in which the sensitizing agent is bacterial in nature, it is more often a secondary invader than the tubercle bacillus.

British Medical Journal, London

2: 339-380 (Aug. 25) 1934

- Closed Anesthesia. W. B. Primrose.—p. 339.
X-Ray Treatment of Diseases of Genito-Urinary System. G. H. Orton.—p. 343.
*Diagnosis of Intracranial Tumor. H. G. Garland.—p. 346.
Headache Following Lumbar Puncture. H. W. Allen.—p. 349.
Defective Hearing as National Problem. G. P. Crowden.—p. 350.

Diagnosis of Intracranial Tumor.—Garland points out that any condition producing a rise of intracranial pressure or any localized lesion of the brain may in certain circumstances simulate cerebral tumor. One of the first conditions to consider is renal disease, in which there may be headache, vomiting and papilledema, sometimes associated with transient hemiplegia or monoplegia. The diagnosis depends on examination of the urine, the blood pressure (which is always raised in such a case) and the blood urea. Cerebral abscess does not often give rise to difficulty, as there is usually a history of recent disease of the ear. Papilledema is often absent in cases of cerebral abscess. Hydrocephalus following meningitis should not give rise to difficulty, but sometimes hydrocephalus complicates disease of the middle ear. This condition, which is called otitic hydrocephalus, is associated with high grade papilledema and is of doubtful origin. Cerebral aneurysm rarely simulates tumor, for the reason that aneurysms are usually small and give rise to symptoms only when they rupture. Neurosyphilis may simulate tumor in several ways: the early mental symptoms of a tumor sometimes resemble those of dementia paralytica of the insane, and in both epilepsy may occur. Gumma is a rare condition. Careful examination of the pupils, combined with serologic tests of the blood and cerebrospinal fluid, should prevent an error in diagnosis. Cerebral arteriosclerosis unassociated with renal changes produces an infinite variety of clinical signs which may resemble cerebral

tumor, and it is probably the frequency of vascular disease that makes the diagnosis of cerebral tumor much more difficult in middle-aged and older people.

Irish Journal of Medical Science, Dublin

No. 104: 331-494 (Aug.) 1934

Ectopic Pregnancy at Term. J. F. Cunningham.—p. 480

Journal of Physiology, London

S2: 1-128 (Aug. 24) 1934

- Pilocarpine and Gastric Acidity in Monkeys. J. H. Ferguson, Jovee McGavran and Elizabeth R. B. Smith.—p. 1.
Studies on Physiology of Thyrotropic Hormone of Anterior Pituitary. Evelyn M. Anderson and J. B. Collip.—p. 11.
Magnetic Blood Oxygenator. E. W. H. Cruickshank.—p. 26.
Spectroscopic Comparison of Fetal and Maternal Blood of Rabbit and Goat. F. G. Hall.—p. 33.
Acetylcholine in Ox and Dog Blood. G. H. Ettinger and G. E. Hall.—p. 38.
Utilization of Blood Sugar and Formation of Lactic Acid by Lungs. C. L. Evans, F. Y. Hsu and T. Kosaka.—p. 41.
Effect of Water Drinking, Mineral Starvation and Salt Administration on Total Osmotic Pressure of Blood in Man, Chiefly in Relation to Problems of Water Absorption and Water Diuresis. E. J. Baldes and F. H. Smirk.—p. 62.
Fate of Carotene Introduced in Circulation. J. C. Drummond, H. P. Gidding and R. J. Macwalter.—p. 75.
Physiologic Study of Phosphagen in Plain Muscle. M. Grace Eggleston.—p. 79.
After Effects of Sudden Changes in Stimulation Rate Under Different Conditions of Anesthesia. Grace Briscoe.—p. 88.
Uterine Reactivity and Activity in the Mouse at Various Stages of Sex Cycle. J. M. Robson.—p. 105.
Changes in Clotting Time During and After Exercise in Dogs. J. Herasymowycz.—p. 113.
Alleged Occurrence of Acetylcholine in Normal Ox Blood. J. V. Loach.—p. 118.
Chemical Transmission of Secretory Impulses to Sweat Glands of the Cat. H. H. Dale and W. Feldberg.—p. 121.

Journal of Tropical Medicine and Hygiene, London

37: 241-256 (Aug. 15) 1934

- Intravenous Transmission of Malaria in Drug Addicts. J. A. Bradley.—p. 241.
Pellagra in the Sudan. N. L. Corkill.—p. 245.

Lancet, London

2: 467-522 (Sept. 1) 1934

- Disturbances of Body Temperature. C. E. Lakin.—p. 467.
Test Meal in Diagnosis of Gastric Disease. N. F. MacLagan.—p. 471.
*Tetanus Treated with Curare. L. Cole.—p. 475.
Spinal Manipulation, with Especial Reference to Lumbosacral Strain and Brachial Neuritis. T. Marlin.—p. 477.
Regional Dissociations in Blood Pressure (Circulatory Anisergy). M. Villaret, L. Justin-Besançon and R. Cachera.—p. 479.
Treatment of Deafness. D. F. Fraser Harris.—p. 481.

Tetanus Treated with Curare.—Among nineteen cases of tetanus, Cole presents two treated with curare. Eleven of these patients recovered. All of them, including the two who received curare, were treated on the same general lines, each being given a large dose of antitoxin by the intravenous route as early as possible and before the wound had been touched. The first case treated with curare was the most severe of those in which recovery occurred. Curare seemed to reduce the continuous rigidity of the limbs, abdomen and jaw, to lessen reflex excitability and to lessen the frequency and duration of the spasms in both cases. In the second case the severe spasms, induced by attempting to suck fluid and even by the sight of fluid, were stopped and swallowing was made possible. In the first case, in which the dose was relatively small, the action of the drug was apparent about two hours after the first injection. The effect appeared to last about forty-eight hours. In the second case the effect appeared five minutes after the injection. It is possible that in the first case the action was sufficient to tide the patient over the critical period of the illness by preventing exhaustion and by allowing more food to be given. No unpleasant symptoms were observed while the drug was being given and respiration did not appear to be affected in any way. No serious after-effects were noted, though it is possible that the rather prolonged weakness and wasting of the muscles of the arms and legs may have been due to the curare. The second case was of such rapid onset (incubation period forty-eight hours) and so severe that there was no chance of recovery. Treatment might have been more effective

in prolonging life if it had been begun a few hours earlier. Given, however, when rigidity was continuous and when the reflex spasms were most severe and occurred every thirty seconds, curare checked the spasms, stopped the reflex excitability and lessened the rigidity. Respiratory failure occurred seven hours later when the heart had begun to fail. The results confirm the suggestion that curare or its alkaloids will be useful in the treatment of tetanus. Dosage, however, is at present a difficult problem and will remain so until standardized preparations are available and more is known of the particular actions of its various alkaloids.

Practitioner, London

133: 225-344 (Sept.) 1934

- Headaches and Facial Neuralgia. W. Harris.—p. 225.
Earache and Its Treatment. J. F. O'Malley.—p. 234.
Dental Pain. G. Jack.—p. 251.
Treatment of Cardiac Pain. A. W. Stott.—p. 263.
Treatment of Pain in Lumbago and Sciatica. F. G. Thomson.—p. 274.
Abdominal Pain: Its Significance and Treatment. Z. Cope.—p. 281.
Caustion and Treatment of Pelvic Pain in Women. N. White.—p. 294.
Foot Pain. J. Fraser.—p. 304.
Phobia. E. Snowden.—p. 315.
Medicolegal Problems in General Practice. IX. Criminal Abortion. F. J. McCann.—p. 321.

South African Medical Journal, Cape Town

S: 509-548 (July 28) 1934

- Mineral Deficiency Diseases of Livestock in South Africa. J. H. R. Bisschop.—p. 511.
Mineral Metabolism in Relation to Production in Livestock. A. I. Malan.—p. 514.
Minerals in Diet and Teeth. F. W. Fox.—p. 517.
Cardiac Abnormalities of Abdominal Origin. J. Drummond.—p. 520.
Surgical Importance of Ketosis and Cyclic Vomiting. G. F. Fisher.—p. 524.

S: 549-588 (Aug. 11) 1934

- Tick Bite Fever. Clinical Lecture. A. Pijper.—p. 551.
Workmen's Compensation Act. C. E. Nixon.—p. 557.
Outbreak of Acute Anterior Poliomyelitis. C. D. Brink.—p. 560.
Reminiscences of Old Fossil. H. Cagier.—p. 564.
Somnifant Treatment in Psychiatry. F. H. Kooy.—p. 567.
Vesicovaginal and Kindred Fistulas. A. B. Taylor.—p. 570.

Tubercle, London

15: 481-528 (Aug.) 1934

- Problem of Bronchial Spirochetosis. E. Zimmerli.—p. 481.
Study of the Occurrence of Virulent Tubercle Bacilli in the Excreta of Tuberculous Indian Children. A. B. Simes and L. E. Paynter.—p. 498.

Chinese Medical Journal, Peiping

48: 607-700 (July) 1934

- Lymphogranuloma Inguinale Among Chinese. J. Gray and J. Y. C. Yieh.—p. 607.
Lymphogranuloma Inguinale: Fourth Venereal Disease. Report of Five Cases. L. K. Wang and J. K. Shen.—p. 615.
*Calcium and Phosphorus Metabolism in Osteomalacia. I. Effect of Vitamin D and Its Apparent Duration. R. R. Hannon, S. H. Liu, H. I. Chu, S. H. Wang, K. C. Chen and S. K. Chou.—p. 623.
Incidence of Osteomyelitis of Jaw Bones Among the Chinese. A. F. Baranoff.—p. 637.
Menstrual Cycle in Chinese of East Central China. S. H. Yang and H. S. Gear.—p. 642.
Pregnancy Polyneuritis. Food Deficiency Disorder? T. S. Sze.—p. 651.
Some Public Health Measures Applied to Kala Azar. R. B. McClure.—p. 659.
Scientific Medicine in Kwangtung. F. Oldt.—p. 663.
Two Large Ovarian Cysts. F. W. Goddard.—p. 672.

Calcium and Phosphorus Metabolism in Osteomalacia.—Hannon and his associates present data on calcium, phosphorus and nitrogen metabolism for thirty-four periods of four days each from a case of relatively early osteomalacia in which no vitamin D therapy had been given prior to the studies. The essential metabolic abnormality in the patient is a lack of absorption of calcium through the intestinal tract, there being no increase in endogenous calcium excretion. The absence of calcium in the urine in the presence of an approximately normal serum calcium level is taken as evidence of conservation of endogenous calcium elimination. Vitamin D administered in relatively small dosage and for a limited period increased remarkably the absorption of calcium and decreased endogenous calcium elimination, thus resulting in a striking calcium and phosphorus retention and deposition in the bone. The beneficial action of vitamin D was sustained for at least four months after its administration was discontinued.

Archives de Médecine des Enfants, Paris

37: 513-576 (Sept.) 1934

- Lung Abscess in the Child: Roentgenologic Study. G. Paiseau, R. Jame and E. Friedmann.—p. 513.
 Blood Cholesterol in Diabetes of Children. P. Nobécourt and P. Dueas.—p. 522.
 *Treatment of Cerebrospinal Meningitis: Systematic Use by Suboccipital Route. Facatselli and Facatselli Jr.—p. 527.
 Contribution to Study of Initial Period of Infantile Kala-Azar. R. Guerschénowitsch.—p. 531.
 Biologic Treatment of Injuries of Brain in Course of Infectious Diseases. K. Rachid.—p. 535.

Treatment of Cerebrospinal Meningitis.—The Facatsellis believe that the greatest obstacle to the reduction of mortality from epidemic meningitis lies in the fact that areas of involved meninges become separated by adhesions, thus preventing the free circulation of the serum. The probable solution of this mechanical difficulty consists in the use of multiple routes for bringing the serum in contact with all the diseased parts. The suboccipital route always and the intraventricular, when possible, in addition to the lumbar offer the best hope of fulfilling this purpose. This procedure was applied to fifteen patients, with good results in eleven. Of the remaining four, only two recovered, but the delay in starting treatment in these four was from three to four days. Technically, the suboccipital injection is easy and requires only a little practice. The systematic use of the suboccipital route is possible at all ages. For nurslings the intraventricular route is added to the other two.

Presse Médicale, Paris

42: 1369-1384 (Sept. 1) 1934

- Melioidosis: Septicemic Form of Slow Evolution. F. Tonllee and P. Huard.—p. 1369.
 *Therapeutic Action of Certain Renal Extracts in Treatment of Arterial Hypertension. D.-M. Gomez.—p. 1371.

Treatment of Hypertension with Renal Extracts.—Forty patients presenting different forms of arterial hypertension were treated by Gomez with an extract from the cortical region of the kidney. Before treatment was begun the patients were observed almost every day for a control period of about two weeks. The treatment consisted in the hypodermic injection of 5 cc. of the extract daily for from six to eight days. The effect on the minimal and maximal arterial tension, on the blood urea and on the symptomatology were noted. In patients with some signs of renal insufficiency, such as uremia, nocturnal pollakiuria or uremic lesions in the ocular fundi, improvement was the rule. Most of the subjective symptoms disappeared or improved and there was a parallel and lasting decrease in the arterial tension and blood urea. This was true in sixteen of the seventeen more or less uremic patients treated. In the eleven cases of sclerotic hypertension, the results were not quite so good. The results were still less favorable in the four cases of menopausal hypertension treated, although three of four were favorably influenced. In so-called essential hypertension, good results were obtained in only two of eight patients. The author states that advanced cardiac insufficiency is no contraindication for this method of treatment.

Giornale di Clinica Medica, Parma

15: 1083-1208 (Sept. 20) 1934

- Clinical Value of New Method of Exploration of Hepatic Function. F. Vannucci and G. Ferrari.—p. 1083.
 *Indirect Pain Localizations in Gastric and Duodenal Ulcer: Diagnostic Value and Pathogenesis of Costal Points of Pain. G. Ferretti.—p. 1093.
 Splenostic Correlations. S. Principalli.—p. 1115.
 Addisonian Syndrome and Amyloidosis of Suprarenals. S. De Renzi.—p. 1133.
 Action of Prehypophyseal Extract on Development and Differentiation of Skin and of Hair. A. Gennari.—p. 1143.
 Undulant Fever Cured with Single Injection of Vaccine: Case. M. Sella and G. Drei.—p. 1147.
 Cancer of Stomach and Practical Importance of Its Repercussion on Cardiovascular Apparatus. F. Nalli.—p. 1151.

Indirect Pain Localizations in Gastric Ulcer.—Ferretti refers to a number of patients presenting gastric and duodenal ulcers with points of pain on costal pressure. He explains these painful points in the following manner: The disease state of the wall of the stomach functions as a primary stimulus, which, conducted by the sympathetic fibers to the cerebrospinal system, arrives at the cortex, where it produces a painful sen-

sation erroneously projected to the corresponding dermatome. This he calls sympathetic intercostal neuralgia. If the stimulus is not sufficiently powerful, and therefore below the threshold, an added stimulus is necessary. In order for this painful stimulus to be perceived in the cortex, a secondary stimulus must be produced. The author believes that this occurs by the pressure of the involved dermatomes and is carried to the cerebral centers by way of the cerebrospinal system. This will also sometimes be referred to the cutaneous terminations (point of pain production). The author concludes that these points of pain are of great value in the diagnosis of gastric and duodenal ulcers.

Archiv für Kinderheilkunde, Stuttgart

103: 1-128 (Sept. 4) 1934. Partial Index

- Old and New Methods in Treatment of Toxicosis. H. Wilke.—p. 1.
 *Cerebral Disturbances During Childhood and Their Encephalographic Diagnosis. K. Rupilius.—p. 32.
 *Pathology and Therapy of Cardiac Disturbances of Nurslings with Dysentery. P. von Kiss.—p. 50.
 Cutaneous Exanthem in Aphthous Stomatitis. R. Mayer.—p. 78.
 Rare Tracheostenoses During Childhood. P. Widowitz.—p. 80.
 Agnesia of Left Lung. F. Hepper.—p. 92.
 Menstruation Praecox in Child, Aged 1, with Advanced Development of Secondary Sex Characters. H. Stiasny.—p. 97.

Encephalography in Cerebral Disturbances During Childhood.—Rupilius discusses the anatomic structure of the cerebrospinal fluid spaces. Exact knowledge of these spaces is an absolute requirement for the interpretation of the roentgenograms. For encephalography the child should be fasting, and sedatives or hypnotics should be given. Of the three possible modes of introduction of air—ventricular, cisternal or lumbar—the author prefers the latter. He never resorts to the cisternal puncture, because it makes movements of the head impossible, which are often necessary for the filling process; moreover, it is difficult in restless children. He resorted to ventricular puncture only in those instances in which air filling of the ventricles from below proved impossible. There were no undesirable complications; on the contrary, this measure often had a therapeutic effect by reducing the pressure. This method is especially simple in nurslings and small children with open fontanel. Lumbar puncture was always done in the sitting position. Kyphotic curvature of the back and a slight forward bending of the head were found advantageous. Immediately following the puncture, the head may be bent back and forth several times. The author used a fine needle and introduced less air than the amount of fluid withdrawn. The quantity of air varied between 10 and 100 cc., but in most instances it was less than 50 cc. The author performed roentgenoscopy immediately following the introduction of air, contrary to the practice of other diagnosticians, who wait several hours. The resorption of the air was controlled by repeated roentgenoscopies. There was no relation between the quantity of air injected and the rapidity of resorption. The author emphasizes that the mere taking of a roentgenogram is insufficient but that roentgenoscopy should be done first in different directions, because if only a portion of the cerebrospinal fluid has been removed roentgenoscopy alone will give a clear picture of the ventricles. Roentgenoscopy and roentgenography must complement each other and each alone is of little value. In encephalographies of nurslings there frequently was an air accumulation on the surface of the brain, while the filling of the ventricles met with difficulties. Encephalography has a much wider application in children than in adults, for, while in adults it is employed mostly for the diagnosis of tumors, in children it is resorted to generally in chronic inflammations of the brain or its meninges. In acute processes some investigators have seen exacerbations result after encephalography, but the author never made such an observation. In epidemic encephalitis the evacuation of the cerebrospinal fluid by air inflation has been known to produce therapeutic effects. Moreover, encephalography reveals the further changes in the brain, such as the development of hydrocephalus. In congenital or obstetric cerebral defects, encephalography often gives clear pictures of the changes. In convulsions of an epileptic or an obscure nature, encephalography may permit a differentiation between genuine and residual epilepsy. The author assumes a genuine epilepsy only if the picture reveals no gross defects.

Pathologic pictures may indicate former inflammatory or traumatic changes. In cases of hemiplegia, contralateral changes were frequently detected. This made possible an exact localization and was thus an important factor in the successful operative removal of the focus. Interesting and typical pictures were obtained also in cases of cerebral paralysis, idiocy and imbecility.

Cardiac Disturbances of Nurslings with Dysentery.—Von Kiss points out that, from the standpoint of cardiac disturbances, dysentery of nurslings can be divided into two stages. During the early stage of dysentery, the cardiac changes are primarily functional. There is a severe tachycardia and a pathologic dilatation of the coronary vessels. Anatomic changes, if present at all during this time, are limited to certain elements in the sino-auricular node and to the muscles immediately surrounding it. In the later course of the disease, the heart shows symptoms of wear. The cardiac changes are produced by the pathogenic organisms of dysentery or by the toxins of these organisms. Other factors are the secondarily developed acidosis, azotemia, exsiccosis, changes in the osmotic condition, damage to the vasomotor system, the peculiar function of the kidney of nurslings, and in addition to this probably the *B. coli* infection and the resorption of the pathologic products of disintegration. During the early stage it is important that the nursling be kept absolutely quiet. The nursing should be treated like a patient with heart disease in the severest stage of decompensation. Transfusion of large amounts of blood or injection of great quantities of dextrose solution of high concentration, as well as epinephrine and medicaments with a similar action, are contraindicated during the early stage. Instead the author recommends a large dose of digitalis and the intravenous administration of from 10 to 12 cc. of physiologic solution of sodium chloride with 5 or 8 per cent of dextrose for each kilogram of body weight. If necessary, this measure may be repeated within twenty-four hours. In the later stages of the disease it is advisable to give digitalis in small doses and small quantities of a 20 per cent solution of dextrose alternately with small blood transfusions.

Beiträge zur Klinik der Tuberkulose, Berlin

85:73-138 (July 23) 1934

- *Sympathetic Nervous System and Menstruation in Pulmonary Tuberculosis. N. Smilovits.—p. 73.
"Third" Optic in Thoracoscopy. K. Eisenstaedt.—p. 101.
Treatment of Pleurisy with Sanoecrysin. Edith Høst and K. Secher.—p. 107.
*Connection Between Sedimentation Speed of Erythrocytes and Calcium Content of Serum in Tuberculous Persons. G. Kurakane.—p. 113.
Clinical Aspects and Pathology of Isolated Round Foci of Lungs. W. Klein and K. Wolff.—p. 116.

Sympathetic Nervous System and Menstruation in Pulmonary Tuberculosis.—Smilovits shows that in tuberculosis the sympathetic nervous system undergoes alterations which result in changes in single and in synergistic organ functions. They become manifest in alterations of the metabolism and in allergic processes and thus influence the course of the tuberculosis. The extragenital functional waves of the female organism are only distant actions of the ovarian activity and develop through the mediation of the sympathetic correlation. Within the state of equilibrium there exists a sympathetic instability, to which the author ascribes the premenstrual hyperthermia of the healthy woman. The menstrual disturbances that occur in tuberculosis, such as changes in the duration, the intensity and the interval, and amenorrhea or dysmenorrhea, are caused by processes of degeneration in the ovarian parenchyma, which are the result of the action of tuberculous toxins. The premenstrual hyperthermia indicates an active process in the woman with pulmonary tuberculosis only if the decrease of the hyperthermia is retarded. The menstrual and postmenstrual hyperthermias, however, indicate a toxic condition. The more prolonged the menstrual and postmenstrual hyperthermias and the shorter the nonfebrile interval, the greater is the progressiveness of the pulmonary process. The menstrual manifestations indicate only the condition existing at the time. The pulmonary process is not necessarily unfavorably influenced by the menstruation. The manifestations are the result of a sympathetic hyperirritability, which sensitizes the temperature center for toxins eliminated in increased quan-

ties during menstruation. The temporary decrease in immunity that occurs during menstruation is insignificant. The author thinks that at the change of the seasons, particularly in the spring, the concurrence of an increased sympathetic irritability and of an increased allergic state may eventually result in a menstrual reactivation of the tuberculous process. He shows that the general conservative measures and some of the local treatments (collapse therapy) exert their influence by way of the sympathetic nervous system. Substitutional organotherapy has failed in tuberculosis; however, all menstrual disturbances in tuberculosis can be influenced favorably by medicaments that have a central and a peripheral action, by a belladonna preparation, ergotamine and phenylethylbarbituric acid.

Calcium Content of Serum in Tuberculous Persons.—In studies on the serum of patients with tuberculosis, Kurakane observed that the calcium content of the blood influences the sedimentation speed of the erythrocytes. The lower the calcium content the greater is the sedimentation speed. The author shows, however, that this rule applies only to female patients.

Deutsche medizinische Wochenschrift, Leipzig

60:1227-1262 (Aug. 17) 1934

- Prophylactic Inoculation Against Diphtheria and Evaluation of Vaccines. W. Kolle and R. Prigge.—p. 1227.
*Infection with *Bacillus Botulinus*. R. Hürthle and H. Gross.—p. 1232.
*Forms of Arthritis Caused by Paratyphoid Bacilli. J. Ruiz Gijón.—p. 1234.
What Therapeutic Possibilities are Furnished by Electrocardiogram? A. Hinrichs.—p. 1235.
Requirements for Resorption of Bismuth from Gastro-Intestinal Canal. S. Serefis.—p. 1237.
Early Diagnosis of Malignant Tumors of Kidney. Nonnenbruch.—p. 1240.
Calcium and Phosphoric Acid in Physiology of Nutrition. O. Loew.—p. 1242.
Crossed Dystopy of Kidney and Intravenous Pyelography. Hachez.—p. 1243.

Infection with *Bacillus Botulinus*.—Hürthle and Gross report the histories of two patients who, after eating blood sausage and canned beans, suddenly developed bulbar symptoms: impairments of the muscles of the eye with disturbances of movement and accommodation, of the facial nerve (cessation of salivation), of the glossopharyngeal nerve (disturbances in swallowing) and of the vagus nerve (gastro-intestinal symptoms). In one of the patients a paralysis of the left phrenic nerve existed for some time, and in the other one gastro-enteritis accompanied the botulism. The author considers the two cases noteworthy because they demonstrate the favorable influence of large doses of serum; one patient received twice 100 cc. of serum and the other 150 and 100 cc.

Arthritis Caused by Paratyphoid Bacilli.—Ruiz Gijón relates the history of a youth, aged 18, who had a severe inflammation of the right hip joint. The roentgenologic aspects indicated an osteomyelitic process. The incision of the joint yielded a thick, yellow-gray, creamy pus, the bacteriologic culture of which showed paratyphoid B in pure culture. The agglutination in the blood was positive in a dilution of 1:800 and the blood culture was likewise positive. The urine and feces were free from bacilli. The first intervention on the joint led to no improvement, and a second one was done. The second operation revealed extensive necroses of the cartilages but no impairment of the bone. The necroses were removed. The joint was left open and was irrigated daily. Under this treatment, improvement was comparatively rapid. The author states that paratyphoid infections of the joints have been known almost as long as the paratyphoid bacilli. The majority of cases thus far reported, however, either accompanied or immediately followed a paratyphoid infection. Moreover, in the majority of cases it was paratyphoid N that caused the articular disturbance. In this case the previous history showed no record of paratyphoid. Repeated tests on stools and feces yielded no paratyphoid bacilli, and tests on the excreta of mother and sister likewise remained negative. At the age of 1 year the patient had had a coxitis, and the author assumes that the impairment of the joint at that time may be a factor in the development of the present process, as a previous trauma plays a part in the articular localization of paratyphoid infection.

60:1263-1298 (Aug. 24) 1934. Partial Index

- Chronic Poisoning with Carbon Monoxide. K. Sippfle.—p. 1263.
Atony of Small Intestine, a Symptom Valuable in the Diagnosis of Disorders of Hepatobiliary System. L. Bayer.—p. 1270.
Radon-Ointment Therapy. P. Happel.—p. 1274.
Erroneous Diagnoses in Headaches. G. Voss.—p. 1278.

Atony of Small Intestine in Disorders of Hepatobiliary System.—In the course of roentgenologic studies on the small intestine, Bayer noted that in cholecystopathies the roentgenograms of the small intestine show certain characteristics in the time of passage as well as in the shape of the intestinal loops. The passage is retarded and the intestinal loops are dilated, which indicates that the hepatobiliary diseases influence the peristalsis and the tonus of the small intestine. In an attempt to explain this behavior of the small intestine during hepatobiliary disorders, he points out that the bile has an inhibiting influence on the smooth muscles and that, if bile enters the blood, the tonus and the peristalsis are reduced.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

134:121-216 (July 24) 1934

- Chronic Articular Diseases During Age of Growth in Their Dependence on Central Nervous System. V. Schaefer.—p. 121.
Syringomyelia or Occupational Disease in Workers with Compressed Air (Dysraphia as Predisposing Factor). E. Guttmann.—p. 148.
Syphilitic Spinal Paralysis. N. A. Popow.—p. 155.
Early Infantile Progressive Spinal Muscular Atrophy (Werdnig-Hoffmann) and Its Relation to Congenital Myotonia (Oppenheim). O. Schildknecht.—p. 163.
Diabetes Insipidus After Epidemic Encephalitis with Histologic Changes. B. Hechst.—p. 182.
Clinical Aspects of Postencephalitic Visual Spasm. G. Engerth.—p. 191.
Traumatic Development of Syringomyelia on Basis of Primary Hematomyelia. F. Krause and R. Glatt.—p. 199.

Early Infantile Progressive Spinal Muscular Atrophy.—Schildknecht shows that early infantile progressive spinal muscular atrophy is characterized by a continuous progress of the disorder, which seems to be the only symptom that permits a sure differentiation from myotonia. Familial occurrence and the time of development of the first symptoms may be characteristic in some cases but are not of decisive significance. The pathologic-anatomic examination reveals degeneration of the pyramidal cells in the anterior central convolution with predominance of a process leading to atrophy, severe degeneration of the motor cells of the anterior horn of the spinal cord with considerable reduction in their number, degenerative processes in the peripheral nerves, degenerative changes in the terminal motor plates and atrophy of the paralyzed muscles. A comparison with myotonia (on the basis of the studies of Bickel-schowsky) leads the author to the conclusion that early infantile progressive spinal muscular atrophy (Werdnig-Hoffmann's disease) is essentially a progressive degeneration of nerve cells, which leads to retrogressive processes in the muscles and the terminal motor plates and which differs essentially from myotonia. The definite pathologic-anatomic diagnosis necessitates still other investigations, particularly the examination of the terminal motor organs. This point gives the best prospects for a better insight into the nature of early infantile progressive spinal muscular atrophy.

Postencephalitic Visual Spasms.—Engerth describes a case of postencephalitic visual spasm with peculiar symptoms. Immediately before and during the attacks of visual spasm, states of anxiety and thoughts of compulsion exist. The patient, aged 17, becomes obsessed with the idea that he will have to leave home in order to recover, but at the same time he fears that he cannot move during the spasm. At the severest stage of the visual spasm, he has thoughts of suicide. A somnolent state terminates the visual spasm. After awakening, the patient is in a euphoric state, but at this time he occasionally carries out this compulsion idea. He runs away from home and cannot be held back by anything. His memory for happenings and acts during this time is deficient. The author attempts to show the relations between compulsion ideas, destructive bent, somnolence as the neutralization of the destructive inclination, and the carrying out of the compulsion idea. The case illustrates that the visual spasm, the subsequent sleep and the compulsory action after awakening must be considered as a coherent disease process. Because of the criminal action committed in the course of a compulsory flight, the case is of importance for forensic medicine.

Medizinische Klinik, Berlin

30:1081-1112 (Aug. 17) 1934. Partial Index

- Castration from Standpoint of Psychiatrist. J. Lange.—p. 1081.
Hygienic Problems in Labor and Sport Camps. B. Kemkes.—p. 1084.
Sexual Hormone Therapy in Gynecology. J. Novak.—p. 1089.
Bakers' Asthma and Allergic Disease. W. Anton.—p. 1092.
Autocerebrospinal Fluid Treatment Combined with Passive Immunotherapy in Acute Stage of Anterior Poliomyelitis. G. Török.—p. 1093.
Urinary Infection and Demonstration of Nitrites in Urine. K. Machold.—p. 1097.

Autocerebrospinal Fluid Treatment in Poliomyelitis.—Török describes the method he employed in the treatment of forty-nine cases. Immunization was done by means of intramuscular injection of equal parts of blood from convalescents and from adults. Small children were given from 30 to 40 cc., older ones from 40 to 50. At the same time from 15 to 20 cc. of the spinal punctate was injected intramuscularly. Cerebrospinal fluid was withdrawn every second day. The usual amount was from 30 to 40 cc. Half of this quantity was injected on the day of withdrawal and the other half on the following day. In patients in whom the treatment was begun during the preparalytic stage, the injections were continued until the fibrinogen reaction became negative, which as a rule was after about eight injections. The patients with acute paralytic symptoms were given twelve injections. In some cases the injection of the blood from convalescents and adults was repeated after several days. The author points out that in acute anterior poliomyelitis it is difficult to estimate the results of a therapeutic method, but the statistical comparison of his material with that of others shows that the combination therapy produced more favorable results. Among the factors that led to a trial with the autocerebrospinal fluid therapy was the observation that in pleuritic processes, for instance, the parenteral administration of several cubic centimeters of the exudate may exert a favorable effect on the resorption of the exudate.

Wiener klinische Wochenschrift, Vienna

47:1009-1032 (Aug. 17) 1934. Partial Index

- Action Mechanism of Venesection. K. Hitzengerber.—p. 1009.
Simple Method for Determination of Velocity of Blood Circulation in Human Veins. H. Homma.—p. 1011.
Local Anesthesia with Nupercaine. G. Kraucher.—p. 1018.
Therapeutic Results of Combined Arsenic-Gold Therapy in Lupus Erythematoses. K. Steiner.—p. 1019.
Simultaneous Application of Diathermy and Histamine in Subacute and Chronic Polyarthritides. A. Dzinich.—p. 1021.
General Metabolism of Substances Containing Nitrogen in Tuberculosis. I. Balanescu, D. Zamfir, S. Oeriu and I. Stancescu.—p. 1025.
Significance of Various Vaginal Hemorrhages. L. Kraul.—p. 1024.

Effects of Venesection.—Hitzengerber shows that in patients with arterial hypoxemia venesection improves the oxygen saturation of the arterial blood. The oxyhemoglobin content of the arterial blood becomes absolutely or relatively improved in these patients. The pathologically increased carbon dioxide content of the arterial blood is reduced by venesection. In patients with pneumonia, who have an abnormally low carbon dioxide content of the arterial blood, venesection brings the values near to normal. However, venesection produces no appreciable changes in patients in whom the oxygen and carbon dioxide contents are normal. The author gained the impression that the described results of venesection persist for about fourteen days. He thinks that venesection is indicated in hypoxemia of pulmonary origin and that approximately 500 cc. must be withdrawn to effect an improvement in hypoxemia.

Determination of Velocity of Blood.—Homma describes a method that permits the measurement of the velocity of blood in the vein of the arm. The method consists in the intravenous administration of a small drop of iodized poppy-seed oil or of iodized sesame oil before the roentgen screen, and in determining with a stop watch the time that is required for this drop to travel between two points that have been marked on the arm by means of two strips of sheet lead. The strips are usually placed about 10 cm. apart, the distal one about 3 cm. proximal from the bend of the elbow. The syringe as well as the oil is brought to approximate body temperature. The injecting needle is placed into the vein either without stasis or after a short stasis. After the examiner has made sure that the needle is in the vein, the light is turned off and the position before the screen is taken so that the needle as well

as the two lead marks on the arm are visible on the screen. Then the injection is made with the right hand while the left one holds a stop watch. If the oil has the correct temperature (between 30 and 40 C.), one or several little drops are formed and are carried along by the blood stream; the stop watch determines how much time is required to cover the distance between the two marks. The injection should not be made immediately after the stasis, because a change in the velocity is caused by the stasis; but it is also inadvisable to leave the needle in the vein too long. The author thinks that it will generally be possible to inject before the lapse of thirty seconds. In describing his experiences with this method, he points out that double determinations reveal either a greater velocity in the basilic vein than in the cephalic vein or the same velocity in the two vessels; rarely is the blood stream slower in the basilic vein. The velocity of the blood stream varies considerably in different persons. The author differentiates three types. He considers the circulation slow in the persons in whom the velocity is less than 1.5 cm. a second, average when it is between 1.5 and 4 cm., and fast when it is more than 4 cm. He shows that the method involves no danger, is simple and exact, and has clinical value.

Combined Arsenic-Gold Therapy in Lupus Erythematoses.—The method recommended by Steiner consists in the prolonged oral administration of arsenic in the form of solution of potassium arsenite mixed in equal parts with tincture of ferrated extract of apples and in a series of injections of an oily emulsion of gold. At first three drops of the mixed solution are given three times daily. This dose is increased daily or every second day by one drop until signs of arsenic irritation commence to appear (local inflammation and dissemination of small, new erythemas, eventually also cutaneous itching, dryness of the pharynx and burning of the eyes). The maximal dose should be from fifteen to twenty drops three times daily. As soon as signs of irritation appear the dose of the arsenic medication is rapidly decreased, but the arsenic medication should never be stopped suddenly, even if severe signs of irritation are present, for this would intensify the symptoms. At the time when the arsenic dose is rather high, at any rate when the patient is under a sufficient arsenic action, the intragluteal injection of the gold emulsion is begun. At first a 2 per cent oil suspension of aurothiodextrose is given in gradually increasing doses, and later increasing doses of a 20 per cent emulsion are administered. The highest single dose of the 20 per cent suspension of aurothiodextrose is 0.06 Gm., and it is reached after from twelve to fifteen injections. The highest doses (0.04, 0.05, 0.06 Gm.) are repeated from three to four times. The intervals between injections are from five to seven days. The total amount of gold suspension administered during the entire treatment is approximately 0.5 Gm. The result of this procedure was that fourteen of nineteen patients with lupus erythematoses were cured in from two to three months. Nearly all of these patients had previously been unsuccessfully treated with other remedies. The cases with considerable dissemination seem to be especially suitable for this treatment. A complete explanation of the mode of action of the combined arsenic-gold therapy cannot be given as yet. However, the author assumes that arsenic changes the capillary walls to such an extent that the penetration of the gold salt into the tissues is promoted and the gold action thereby increased.

Diathermy and Histamine in Polyarthritides.—In cases in which, after a previous acute polyarthritides, relapses developed so that the disorder was in the subacute or the chronic stage, Dzinich resorted to the injection of histamine and to diathermy. The subcutaneous injections were begun with 0.5 mg. of histamine, and, when there was no noticeable reaction, the dose was increased to 1 mg. The injections were usually made near the involved joints. In the beginning of the histamine reaction, diathermy was applied to the diseased joint for twenty minutes. These treatments had to be given from ten to twenty times and in a few cases more often. Of thirteen patients treated in this manner, five were cured, five greatly improved, two slightly improved and one remained uninfluenced. The author thinks that further trials with the method are justified. He ascribes the efficacy of the treatment to three factors: (1) the desensitizing action of histamine, (2) the general physical

action, and (3) the deep hyperemia produced by the diathermy in addition to the more superficial vasodilatory action of histamine.

Zentralblatt für Chirurgie, Leipzig

61: 1969-2016 (Aug. 25) 1934

- *Anaphylactic Shock and Serum Disease and Their Treatment. A. Buzello.—p. 1970.
- Serum Treatment in Peritonitis. J. Vorschütz.—p. 1976.
- Value of Thorough Blood Study in Surgery: Contribution to Symptomatology of Agranulocytosis. E. Melchior.—p. 1979.
- Treatment of Fractures of Humerus Below the Head: New Extension Apparatus. H. Schupp.—p. 1981.
- Cystoid Pneumatosis of the Intestine in Man. B. Nimet.—p. 1986.
- Concealed Mesenteric Phlegmon with Prevertebral Abscess: Resection, Cure; Case. W. Voigt.—p. 1988.
- Question of Traumatic Appendicitis. K. Bartels.—p. 1991.
- New Electrical Dry Shaving Apparatus. S. König.—p. 1994.

Treatment of Anaphylactic Shock and Serum Disease.—Buzello states that foreign proteins when injected into the human body circulate in the blood for some time in the original state. These substances are rendered harmless by the formation of antibodies, which become bound down to certain cells and are demonstrable in the blood. This process is referred to as hypersensitivity or anaphylaxis. During this period the introduced proteins referred to now as antigens become converted from freely soluble albumins and globulins into more or less insoluble ones. Anaphylaxis develops from seven to ten days after the injection of the serum. Once established, it persists for a long time, even a lifetime. Serum shock and serum sickness are due to the reaction between the bound down antibodies and the still undissolved protein substances. The human body can react to serum injection in one of two ways: with an immediate reaction or anaphylactic shock, or with a late reaction or serum sickness. Anaphylactic shock may take place in a previously injected person, as well as after the first injection. Its occurrence is favored by a congenital or hereditary susceptibility or allergy. On the whole, its occurrence is rare. It develops most frequently following an intravenous injection in a person previously treated with the same serum. It is manifested by pallor, chills, vomiting, cold sweat, small fast pulse, fall in the blood pressure and ensuing circulatory failure. This may lead to collapse, widely dilated pupils, dyspnea and convulsions. The author suggests immediate cessation of further injection and exhibition of a cardiac stimulant (2 cc. of pentamethylene tetrazol). Next, 1 cc. of 1:1,000 epinephrine is administered, either alone or in physiologic solution of sodium chloride. Starck recently showed that symptoms of anaphylactic shock are improved by induction of a mild degree of ether narcosis. The slower the serum is injected, the less likelihood there is of a shock. The author therefore insists that serums should preferably be injected hypodermically, possibly intramuscularly, but never intravenously. One should inquire beforehand into the possible sensitivity of the patient as revealed by a history of hay fever or asthma. A positive history suggests that the patient is allergic and that other than horse serum should be used in his case. Serum disease is much more frequent than anaphylactic shock. It may likewise occur after a repeated injection or after the first injection. Its symptoms develop from the fourth to the seventh day in a previously injected person, and from the seventh to the ninth day after the first injection. At the seat of injection there develop redness, edema and burning pain. There are headache, fatigue, fever, generalized urticaria, chills, sweats, and bone and joint pains. Diarrhea and circulatory failure may develop. Symptoms persist for four or five days and disappear without leaving ill effects. In children under the age of 10 years, cardiac failure and edema of the glottis may give concern. Treatment consists in support of the circulation and exhibition of some calcium salt. It occurred to the author that, since the serum disease represents the reaction between the antibodies and the still undissolved antigens, a repetition of the injection at the right moment could abolish or at least diminish that reaction by furnishing the body new antigens, so that a surplus of antigens is present. He was surprised at the good results following this treatment both in patients with severe symptoms of serum disease and in patients with beginning manifestations of it. A number of patients thus treated were followed up for some time and there was not another case of serum disease observed.

Zentralblatt für Gynäkologie, Leipzig

58: 1921-1984 (Aug. 18) 1934

- *Radium Treatment in Benign Genital Hemorrhage. H. Naujoks and H. Hoffmann.—p. 1922.
 Baumm's Metreurynter Employing Animal Bladder. G. Peter.—p. 1935.
 *Tonsils and Mammary Glands During Puberty. S. Peller and Ilse Zimmermann.—p. 1950.
 Nonpregnant Uterus Presenting an Obstacle to Delivery in Case of Double Uterus. Margarethe Oing.—p. 1954.
 Solitary Cutaneous Metastasis in Carcinoma of Uterine Cervix. F. Friedl.—p. 1956.
 *Site of Formation of Gonadotropic Substance of Pregnancy Urine. T. Remzi.—p. 1962.
 New Automatic Ligature Instrument for Abdominal Amputation of Uterus. H. Hillebrand.—p. 1966.

Radium Treatment in Benign Genital Hemorrhages.—Naujoks and Hoffmann relate their experiences with radium therapy in benign genital disorders. Metrorrhagias and abnormally profuse menstrual hemorrhages in women more than 40 years of age were the most frequent indication for radium treatment. Rarer indications were diseases of blood, such as leukemia and essential thrombopenia, also tuberculosis of the endometrium, juvenile menorrhagias and sterilization. The authors made their observations on 285 women, 252 of these having premenopausal or menopausal hemorrhages. In describing the technic, they point out that they always precede the introduction of the radium tube by an abrasion. Following this, a radium preparation, 50 mg. in weight, enclosed in a brass filter of 1 mm. wall thickness, 6 mm. in length and covered by a thin rubber membrane, is introduced. The lower portion of the cervical canal and the vaginal vault are filled with gauze, so as to prevent the tube from sliding down into the vagina. In order to facilitate the discharge from the uterus during the one or two days the radium preparation is retained, a strip of gauze is placed alongside the radium container and led outward past the external uterine os. The tamponade of the vagina and particularly of the posterior vaginal vault not only aims at fixing the container but also exerts an upward and forward pressing of the uterus so as to remove it as far as possible from the ovaries. The authors emphasize the necessity of complete asepsis in the application of the radium. In discussing the dosage, they point out that some radiologists have recommended small doses, while others advised rather large ones. They themselves are in favor of the larger doses, from 2,000 to 2,400 mg. element hours. After-examinations of 213 cases revealed that radium treatment had failed in only two of these cases and both of these women had myoma. In the so-called menopausal hemorrhages, radium treatment was almost 100 per cent effective. The authors think that the symptoms of abolished function that may develop after radium treatment are not sufficiently severe to be considered a contraindication to it. They conclude that intra-uterine radium therapy deserves a prominent place in the treatment of benign gynecologic disorders.

Tonsils and Mammary Glands During Puberty.—Peller and Zimmermann continued Peller's studies, in which were demonstrated the inhibiting influence of the tonsils on the growth in height and in weight, on the development of the thorax and on the menarche, and the promoting influence of the tonsils on the photochemical defense reaction of the skin. In this paper they report their observations on the relations between tonsils and the mammary glands. They gained the impression that the tonsils inhibit the puberal development of the mammary glands, for girls who had undergone tonsillectomy showed an earlier development. It is assumed that the tonsils influence the maturation of the mammary glands not directly but indirectly by way of the general development.

Site of Formation of Gonadotropic Substances.—Remzi relates the histories of two women. One died shortly after operation for cystic mole and the other one after an operation for chorionepithelioma. The urines of both patients contained large amounts of gonadotropic hormones and the implantation of parts of the operative specimens gave positive reactions I, II and III in the Aschheim-Zondek test. Implantation of parts of the anterior lobe of the hypophysis that had been removed in both patients during necropsy, however, gave negative Aschheim-Zondek reactions, which proves that the hypophysis contained no gonadotropic substances. The author points out that other investigators of the gonadotropic sub-

stances found in the urine during pregnancy, cystic mole and chorionepithelioma have suggested other, extrahypophyseal, origins, such as placental or chorionic sources. The fact that the hormone production is especially profuse in cystic mole and in chorionepithelioma, that is, in conditions with chorionic proliferation, seems to speak for a chorionic origin. However, nothing definite can be said about the site of origin of the gonadotropic substances. The author mentions several experiments that according to Aschheim's suggestion should be carried out in order to determine the hypophyseal origin of these substances.

Finska Läkaresällskapets Handlingar, Helsingfors

76: 687-768 (Aug.) 1934

- Chronic Ulcer of Penis Following Lymphogranuloma. A. Cedercrentz.—p. 687.
 Experimental Investigations on Tension in Retinal Veins of Rabbit in Increased Brain Pressure. J. G. Lindberg.—p. 694.
 *Cases of Ovarian Carcinoma Treated at Gynecologic Clinic in Helsingfors from 1919 to 1933. C. von Numers.—p. 720.

Ovarian Carcinoma.—Von Numers says that of the 151 cases of ovarian carcinoma in which treatment was given at the gynecologic clinic in Helsingfors from 1919 to 1933 only seventeen, or 11.3 per cent, were surely secondary. The average age of the patients was 49.1 years; marked increase in the frequency of ovarian carcinoma appeared between 35 and 40, and the greatest number of cases occurred between 45 and 50. Of the entire number of cases 46.6 per cent, and of the secondary carcinomas 88.2 per cent, were bilateral. There was no definite deviation from the normal in the average age of the menarche and the frequency of sterility, but the average fertility was somewhat lower than usual in Finland. There was no evidence of greater disposition to ovarian carcinoma among unmarried women. Ascites was present in 39.1 per cent of all cases. Eighty-two, or 55.8 per cent, were in an operable condition. The primary operative mortality was 7.3 per cent. Observation for at least five years showed an absolute percentage of recovery of 17.8 and a relative percentage of 38.1, exclusive of the secondary cases. No notable effect of post-operative roentgen treatment could be determined.

Norsk Magasin for Lægevidenskapen, Oslo

95: 1001-1112 (Sept.) 1934

- Factors in Prognosis. S. Laache.—p. 1001.
 *Cancer of Stomach in Surgical Division of Rikshospital from 1913 to 1928. P. Bull.—p. 1035.
 Sedimentation Rate of Red Blood Corpuscles During Pregnancy, Parturition and Puerperium. H. Rasmussen.—p. 1048.
 *Rheumatic Arteritis and Rheumatic Nodes. F. Harbitz.—p. 1078.
 Blood Transfusion: Method for Determination of Blood Types. J. Rø.—p. 1085.
 Intermittent Ileus Caused by Fecalith. R. Steinert.—p. 1090.

Cancer of Stomach.—Bull's material comprises 289 cases, 206 in men and 83 in women, the fate of all but five being known. Radical operation was performed in 23.3 per cent of the men and 30 per cent of the women. In 20.2 per cent of the cases in which operation could not be performed, clinical symptoms had been present for only one to five months. The author states that the patients with cancer of the stomach who undergo resection have an average life duration from five to six times longer than the patients in the other groups and he urges that in operation every effort be made to perform resection. The results of the operation depend fully as much on the degree of malignancy of the cancer in each case as on its clinical duration. Tabulated review is given of the eleven patients still living from three and three fourths to thirteen and a half years after resection and of the five cases in which death occurred from recurrence after from three and a third to nine years after resection.

Rheumatic Arteritis and Rheumatic Nodes.—Harbitz asserts that there is a rheumatic arteritis analogous to rheumatic inflammation of the heart musculature and in and around the joints; it is characteristic to a certain degree and extensive enough to be of great importance. He is inclined to believe that there is also a "visceral febrile rheumatism" which does not affect the joints, localized to the heart and blood vessels and possibly other internal organs (including the kidneys), and that this visceral rheumatism is the basis for certain grave and even fatal disorders.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 19

CHICAGO, ILLINOIS

NOVEMBER 10, 1934

STUDIES ON MORPHINE ADDICTION PROBLEM

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In the last few years there has been a great increase in the interest taken in the general subject of drug addiction not only in the United States but also in practically every other country on the globe. This is easily understandable in those countries where drug addicts are numerous, but among those nations where today addiction is not a serious problem hearty cooperation has also been encountered and may be considered possibly as a measure of self protection. Two or three significant features of this interest in the problem may be mentioned. Of first importance is the Geneva Convention of 1931, under the terms of which fifty-five nations have agreed to limit the manufacture of narcotic drugs to a quantity necessary for medical and scientific purposes and have placed the control of such substances under a committee of the League of Nations. Under the terms of this agreement, each nation notifies the committee each year of its legitimate needs of these drugs for medicinal purposes. The nations make a quarterly report of the stocks on hand and of their consumption of these products. Further, the agreement makes it theoretically, and to a large extent practically, possible to control the manufacture of all drugs capable of producing addiction and to trace them through all legitimate channels to their ultimate destination.

A second matter of great interest in this country has been the decision of the government to establish a federal hospital where persons suffering from addiction may go for treatment. This hospital, which is located at Lexington, Ky., is now under construction and will probably be opened in the early months of 1935.

A further step in the solution of the addiction problem as it is being studied in this country is to be found in the cooperative research that is being carried on under the National Research Council in the Universities of Virginia and Michigan in conjunction with various branches of the government service, especially the Bureau of Narcotics and the Public Health Service. The funds for the research were derived in the first instance from the Bureau of Social Hygiene, this agency

being replaced in January 1933 by the Rockefeller Foundation, which organization assumed responsibility for the support of the undertaking for a period of three years. The plan underlying the research as it has been adopted by the committee having direct supervision of the work has been to endeavor to find some drug or drugs that may be used to replace morphine in some of the various ways in which it is used in medicine—drugs that may possess some of its valuable medicinal properties but do not lead to addiction. A somewhat similar plan of work was undertaken for a solution of a like problem in the case of cocaine. This alkaloid, which possesses valuable anesthetic properties, also is highly addicting. A search for a substitute resulted in the finding of procaine, an effective local anesthetic devoid of addicting qualities. It may well be questioned whether the injection of cocaine should not be totally prohibited as it is in Germany, and thus one source of danger of addiction be removed.

The general plan of the present search for a morphine substitute, then, has been to make an accurate study of morphine itself—the chemical constitution in relation to its various actions; the importance of the phenanthrene nucleus, of the side chains attached to the nucleus and of the part each plays in the final picture of the drug's action. The method of attack has been twofold—a breaking down of the morphine molecule and a building up of a compound more or less like morphine, starting with the phenanthrene nucleus as a basis and gradually adding on side chains, the change in activity being observed as each modification is made.

The work on the chemical side of the problem has been carried on in the University of Virginia, where some 190 different compounds have been prepared and sent to Ann Arbor, where they have been studied in the Pharmacological Laboratory, morphine itself being used as a standard of comparison.

The various actions that have been studied aside from the general toxicity of the compounds have been their effects on the general activity of the experimental animals, whether they are depressed or excited; the effects on the respiration and the gastro-intestinal tract; the emetic action, and finally the presence or absence of any analgesic property in the compound. Whether any of the substances possess addicting properties is very difficult to determine on animals, although efforts are being made to study this aspect of the problem on dogs and monkeys. However, the final test will have to be made on the human patient and here the committee has the invaluable assistance of the federal Public Health Service.

An important and interesting aspect of the pharmacologic portion of the work and a subject of fundamental importance has been the comparative study of various

pairs or groups of compounds that differ from each other in only one respect, usually a substitution or change in one side chain attached to the phenanthrene nucleus. Such a comparison may be made, for instance, in the action of morphine and codeine, in which a hydroxyl group in the former is replaced by a methoxyl group in the latter. The chemists of Virginia have furnished many such pairs of compounds, which have made possible comparative studies leading to the formulation of certain rules as to the action of the outlying groups and their importance in the morphine picture, thus furnishing an interesting contribution to the subject of chemotherapy.

In figure 1 are shown the formulas for morphine and codeine. They are seen to consist of the central phenanthrene nucleus, with an oxygen bridge, a nitrogen containing ring, hydroxyl groups and hydrogen atoms attached. The hydrogen of one of the hydroxyls in morphine being replaced by a methyl group in codeine. Thus in codeine the phenolic hydroxyl of morphine is inactivated or muzzled by the methyl group and a comparative study of these two compounds yields information as to the importance of this group in the morphine effect. As is common medical knowledge, codeine differs from morphine in being less depressant and more convulsant, in possessing less analgesic action and less effect on the respiration and the intestine. The relation of the comparative effects of these two alkaloids holds good also for the other similar compounds in the morphine series. Fifteen pairs of derivatives allied to morphine, each member differing from its sister com-

of that portion of the molecule to which it is related. The ring to which the alcoholic hydroxyl is attached is aliphatic in character, while the phenolic hydroxyl is connected to an aromatic ring.

The alcoholic hydroxyl also can be muzzled by methylation, by acetylation or by halogen substitution and in this case too there is a uniform change in activity as a result of the chemical change. A study of twelve pairs of such compounds shows an increase in activity, in every case affecting especially the analgesic and respiratory effects. The alcoholic hydroxyl in the 6-position, therefore, appears to be inhibitory to these actions of morphine, because when its activity is suppressed chemically these effects of the molecule are greatly enhanced.

The differences in the hydroxyls chemically and pharmacologically are well illustrated in figure 1 and the table.

In the comparisons shown in the table it will be noted that while methylation of the phenolic hydroxyl has decreased analgesic, respiratory, depressant and intestinal effects and methylation of the alcoholic hydroxyl has increased the same actions above those exhibited by morphine, muzzling either hydroxyl has increased convulsant action and decreased emetic effect. It has been found generally true that any chemical modification of the hydroxyl

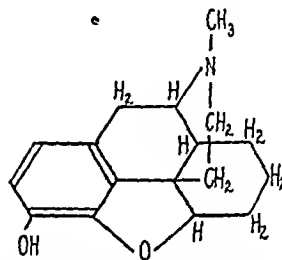
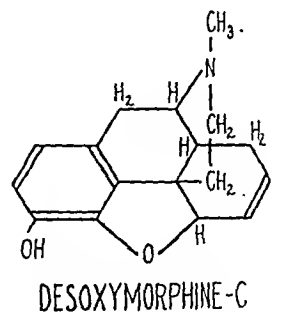


Fig. 2.—The desoxymorphines.

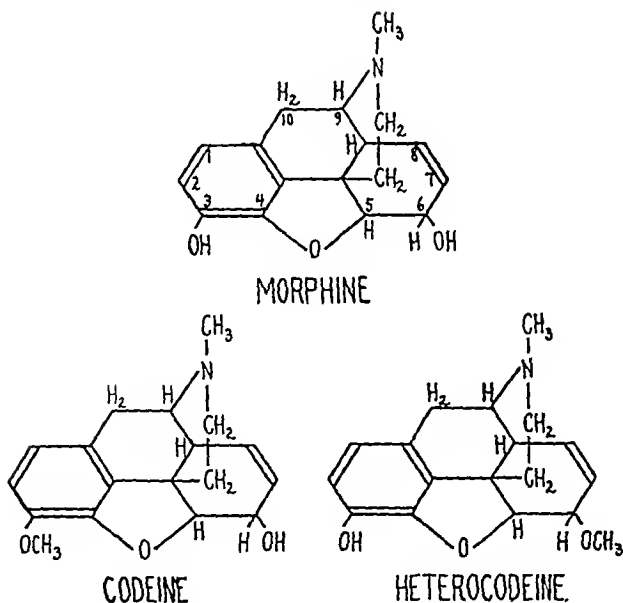


Fig. 1.—Formulas for morphine and codeine. Figures within morphine molecule indicate system of numbering of carbon atoms of the phenanthrene nucleus.

pound only as codeine differs from morphine, have been prepared and studied and in every case the same rule holds good, so that it would seem reasonable to conclude that the presence of the free phenolic hydroxyl is important for the depressant and analgesic action of morphine as well as for its effect on respiration.

Although it is symmetrically placed in relation to the phenanthrene nucleus, the second hydroxyl of morphine differs from the first in its chemical nature, being alcoholic rather than phenolic, and in the chemical properties

Effective Doses in Milligrams per Kilogram of Alkaloidal Base

	Codeine	Morphine	Heterocodeine
Average fatal dose (mice)...	241	531	72
Convulsions.....	150	531	65
Analgesia.....	8.0	0.75	0.56
General depression.....	16.0	4.0	0.75
Respiration.....	1.6	0.37	0.12
Intestine.....	16.0	4.5	2.0
Emesis.....	*	0.3	*

* Both codeine and heterocodeine produced nausea only in amounts well above the analgesic dose, while morphine caused vomiting in less than the analgesic dose.

groups in compounds of the morphine series decreases emetic action, suggesting a causal relationship between free hydroxyls and the production of emesis. This is further emphasized by the increased incidence of vomiting that results if an additional free hydroxyl group is introduced.

The importance of the hydroxyl group in the production of certain of the morphine effects is also shown by a study of the change in the action of phenanthrene itself when hydroxyl groups are attached to the nucleus. Phenanthrene is relatively inactive, displaying only a mild hypnotic effect, but when a hydroxyl group is inserted in the 3-position (as in the case of the phenolic hydroxyl in morphine) an increase in depressant effect

is seen and some degree of analgesic action appears. If a second hydroxyl group is inserted in the phenanthrene nucleus these actions are still further strengthened, especially the analgesic, depressant, emetic and toxic effects.

The rôle of the alcoholic hydroxyl in morphine can be still further elucidated by its total removal and its replacement by hydrogen or oxygen. In the first instance this change results in formation of the type of compounds shown in figure 2, the desoxymorphines. Dihydrodesoxymorphine-D, one of this series, is a very active compound, only about three times as toxic as morphine, but exerting an analgesic action at least ten times greater and a general depressant effect some thirty or forty times as great as morphine. It seems also to be entirely devoid of emetic effect. On account of these properties, which appear to be valuable, this compound is being subjected to clinical trial at the present time. In the second group of changes mentioned, namely, the replacement of the alcoholic hydroxyl by oxygen, compounds of the type of dilaudid and dicodid are produced, both of which have been used in clinical practice.

A second feature of the morphine molecule that is certainly of vital importance is the nitrogen-containing ring. Although the exact position of this ring in the morphine molecule is not known with absolute certainty, any modification of it (for example, the opening of the ring, transforming it into an open chain, fig. 3) results in a great loss of typical morphine effects. In spite of this interesting and important observation, it has been found that the attachment of a somewhat similar nitrogen-containing open chain to the phenanthrene nucleus (fig. 3)

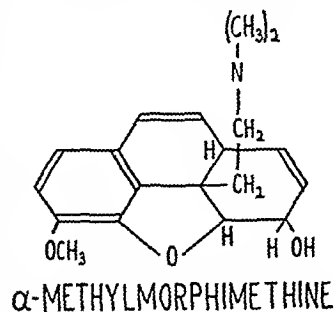
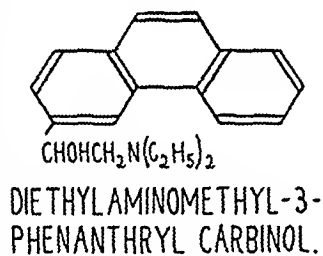


Fig. 3. — Diethylaminomethyl-3-phenanthryl carbinol and alpha-methylmorphimethine.

Mosettig and his co-workers, who are devoting their entire time to this phase of the work. It should be finally pointed out, however, that while the phenanthrene nucleus exhibits very interesting activities, especially in the form of the derivatives which have been synthesized, it has never been proved that it is really the essential or necessary portion of the morphine molecule. On that account it has not seemed wise to confine the synthetic work entirely to phenanthrene. It has been extended to include the next most promising substance worthy of study, which appeared to be diphenylene oxide (fig. 4).

A series of compounds is being synthesized with this grouping as a base. The parent substance is seen to consist of two phenyl groups connected through adjacent carbon atoms and possessing an oxygen bridge as in morphine. Diphenylene oxide exhibits an activity somewhat comparable to phenanthrene, but its derivatives are in some respects more active. In the building

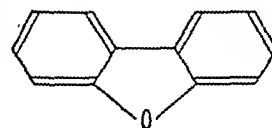


Fig. 4.—Diphenylene oxide.

up of the diphenylene oxide derivatives, many of the same groups have been added as in the phenanthrene series, permitting direct comparisons of pairs of substances having on the one hand a phenanthrene nucleus and on the other a diphenylene oxide base. When such comparisons are made, the latter are more toxic but often possess the greater analgesic action. None of them have exhibited typical morphine-like action.

From this brief survey of the work, it will be seen that notable progress has been made in the correlation of chemical structure to physiologic activity as applied to the morphine series and in the development of morphine-like effects in comparatively simple derivatives of phenanthrene. This progress has been possible only through the cooperation of many agencies—the Rockefeller Foundation, which is furnishing the necessary funds; the Universities of Michigan and Virginia, which are contributing the laboratory facilities; the Bureau of Narcotics and the Public Health Service, which has undertaken the clinical aspects of the problem, and finally the laboratory personnel, whose enthusiastic and indefatigable efforts are pressing toward a solution of the problem.

Case Records and Self Education.—I have a very definite impression that the average interne quite fails to grasp the full significance of case records. He may realize that from a medical point of view they are important as a basis for the study of unusual cases, new procedures, or particular diseases. . . . What he seldom realizes, in my experience, is that they offer one means, and an important means, of self-education. It is, after all, a rather difficult matter to put on paper an adequate and satisfactory history. It is an art in itself, and it is only acquired by experience and practice,—not merely practice in history taking itself, of course, but experience in the physiognomy of disease and in the natural history of the commoner maladies. I have the feeling that in many of our hospitals the interne's attitude of indifference to case records is fostered by the shortcomings of the visiting staff. It is certainly unusual in many hospitals to find in the average case record careful notes dictated by the visiting physicians or surgeon. They, too, do not always realize that the habit of putting down one's observations in writing not only increases descriptive powers but develops capacity for observation and clarifies one's conception of a given case.—Blumer, George: Some Discursive Remarks on Bedside Diagnosis, *Yale J. Biol. & Med.* 6:571 (July) 1934.

THE ADDICTION LIABILITY OF CODEINE

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Discussions have arisen from time to time concerning the addiction liability of codeine and its value as a therapeutic agent for the relief of those withdrawal phenomena seen when morphine is abruptly withheld from persons addicted to its use. Although generally conceded to be nonaddicting, various authors, notably Sollier,¹ Petty,² Lambert,³ White,⁴ Rouges de Fursac and Monestier,⁵ Terry⁶ and Sollmann,⁷ have indicated that codeine possesses this propensity. It was therefore considered advisable to investigate the addiction liability of codeine before employing it in the treatment of abrupt morphine deprivation. The studies with which this article deals, however, attempt to record certain preliminary observations necessary for carrying out a cooperative investigation sponsored by the Committee on Drug Addiction of the Medical Science Division of the National Research Council.

The Committee on Drug Addiction of that council, supported by funds from the Rockefeller Foundation, in connection with its studies of alkaloidal chemistry at the University of Virginia and its pharmacobiologic investigations at the University of Michigan, has endeavored to produce new substances from opium, the addiction liabilities of which are unknown quantities in the human body. The Public Health Service, because of its access to clinical material and its studies of drug addiction incident to the establishment of the U. S. Narcotic Farms, was requested by that committee to determine the addiction liabilities of these new substances when administered to persons afflicted with chronic opium poisoning. Before such studies were undertaken, however, it seemed desirable to develop a technic and method for using these drugs by first-hand observations with morphine and codeine. The two drugs, one of which has pronounced addictive properties and the other questionable potentialities, were prepared by Dr. Lyndon F. Small of the University of Virginia, thus insuring the experimental substances used of being uniform in purity and in chemical composition. This article deals, therefore, with the results of balancing the addiction liability of morphine against that of codeine and is preliminary to further studies dealing with newer substances.

There are two methods pertinent to the study under consideration:

1. Attempt to produce addiction through regular administration of the preparation to be studied over a long period of time.
2. Attempt, through substitution, to maintain a previously established habit by administration of the substance in question.

Employment of the first method would be expensive and time consuming, and it has no particular advantage

over the second method. The rationale for this procedure is found in the following hypothesis: Given valid addiction to morphine, a definite syndrome of abstinence phenomena will set in shortly after its abrupt and complete withdrawal. Hence a substance that can be completely substituted for morphine without permitting the appearance of that syndrome may be addicting in itself even though it is an adequate substitute. If stability can be maintained by the substituted product over a period sufficiently long to rule out abstinence resulting from withdrawal of the morphine, and then can be withdrawn without permitting the appearance of that syndrome, it is probably an adequate non-addicting substitute for morphine; but if abstinence phenomena do set in, that substance is addicting. A substance that cannot be substituted has nothing to offer.

METHODS

Seven white adult males in whom valid addiction to morphine was present on admission were physically and psychically stabilized on four daily hypodermic injections of morphine sulphate over a period of from ten to thirty days. The doses were adjusted to satisfy their respective requirements. Then over a period of

Signs Pertinent to Abstinence

Mild	1. Yawning
	2. Lacrimation
	3. Rhinorrhea
	4. Perspiration
Moderate	5. Muscle tremor
	6. Dilated pupils
	7. Goose-flesh
	8. Anorexia
Marked	9. Air hunger
	10. Restlessness
	11. Insomnia
	12. Elevated blood pressure
Severe	13. Emesis
	14. Diarrhea
	15. Weight loss

three days effective doses of codeine acid tartrate were substituted, one at a time, for each dose of morphine, so that after the third day no further morphine was administered. It was attempted to adjust the doses of codeine so that the subjects would be unaware of the substitution. Stability was maintained by codeine for the subsequent eight to fourteen days and then it was abruptly and completely withdrawn.

Complete and satisfactory isolation from the remainder of the population was maintained throughout the entire period of observation. That absolute uniformity and control of all conditions and temporal relationships might be assured throughout the entire period of study, observation and supervision were maintained twenty-four hours daily.

The subjects were weighed each morning before breakfast and then blood pressure determinations were made after five minutes of rest in bed. Observations for specific signs of abstinence were made and recorded three times daily. These observations included the presence and degree of the signs listed in the accompanying tabulation, which are pertinent to the abstinence syndrome. The method used in evaluating the degree of abstinence is indicated as mild, moderate, marked and severe.

RESULTS

The case results were quite uniform throughout; but, since the data are too comprehensive to be presented in

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Sollier, P.: *Presse méd.* 89: 716, 1905; *Rev. de méd. lég.* 20: 359, 1913.
2. Petty, G. E.: *Narcotic Drug Diseases and Allied Ailments*, 1913.
3. Lambert, Alexander, in Osler and McCrae: *Modern Medicine*, 1914; *M. Rec.* 87: 253, 1915.
4. White, W. A.: *Outlines of Psychiatry*, Washington, D. C., Nervous and Mental Disease Publishing Company, 1918.
5. Rouges de Fursac and Monestier: *Ann. de méd. lég.* 4: 119, 1924.
6. Terry, C. E.: *The Opium Problem*, p. 320, 1928.
7. Sollmann, Torald: *A Manual of Pharmacology*, Philadelphia and London, W. B. Saunders Company 4: 310, 1933.

detail, the results are given in terms of the degree of abstinence exhibited by the group during the periods of morphine stabilization, transition to codeine, stabilization on codeine, and after abrupt and complete withdrawal of codeine.

Stabilization on morphine was effectively maintained by the administration of four daily injections. The individual requirements ranged from 50 to 150 mg. of morphine sulphate four times daily. None exhibited abstinence after satisfactory adjustment of the individual doses.

During the period of transition to codeine all exhibited mild evidence of abstinence at some time, and three of the subjects became moderately abstinent before the doses of codeine were raised to an adequate size. Because of the low solubility (4 per cent) and the necessarily high doses (240 to 600 mg.) of codeine, it was necessary for the volume constants to be readjusted at this time.

During the eight to fourteen day period of stabilization on codeine, five of the subjects exhibited mild abstinence at some time and two were completely stable throughout. All were thoroughly stable for the majority of this period.

After abrupt and complete withdrawal of codeine, mild evidence of abstinence appeared during the first thirty hours and then suddenly became severe in all cases and continued in its severity until the fourth or fifth day, when recovery set in. The subjects were fit for discharge by the fourteenth day after withdrawal. This picture differs from that of abrupt morphine deprivation only in regard to the delayed onset of severe abstinence manifestations.

All the subjects were aware of the substitution but voiced no objections to it and asked for the substituted product during the acute severity of abstinence. Often the first two injections were followed by localized or generalized flushing and itching, at which time no pulse, respiratory or blood pressure changes were found and no dermographism could be elicited. Otherwise no evidence of toxicity or intolerance was found even though as much as 2.4 Gm. was administered in twenty-four hours. The ratio of daily effective substitution doses of codeine for morphine ranged from 3.8:1 to 8:1; the median ratio was 5:1.

SUMMARY

The habits of seven men thoroughly addicted to morphine were completely and satisfactorily maintained over a period of eight to fourteen days by adequate doses of codeine. The abstinence syndrome that set in subsequent to abrupt and complete withdrawal of the codeine did not differ remarkably from that seen after abrupt morphine deprivation. The median substitution dose of codeine was five times that of morphine.

COMMENT

It is felt that the material presented should be interpreted with due regard to the practical aspects that prevent codeine addiction from becoming prevalent. Codeine is relatively much more expensive than morphine, for narcotic doses are larger. It is inconvenient to administer, because its low solubility and high dosage require large volumes. Codeine is not readily available to the purveyors of illegitimate narcotics.

CONCLUSION

Codeine possesses definite addiction liability.

THE USE OF DILAUDID IN THE PAIN OF CANCER

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ST. LOUIS

The introduction of dilaudid (dihydromorphinone hydrochloride) into this country was attended by much and, in certain instances, most undesirable publicity. Some of the early beliefs concerning its safety have been discredited. As a result, there has been a tendency among certain groups to minimize its usefulness and a failure to use it in many cases in which it would have been of benefit to patients in constant pain. Through the courtesy of the manufacturers¹ I was able to obtain a considerable supply as early as June 1932 and have used it both preoperatively and postoperatively as I had used morphine and codeine. My experience has been chiefly with patients suffering from malignant disease at the Barnard Free Skin and Cancer Hospital.

Pain is an almost inevitable complication of cancer that has progressed beyond the stage of curability. Nearly every medicament known to possess analgesic properties has been used in attempts at its control. It is unnecessary to emphasize the need of an adequate substance for the purpose of giving relief to the many

Types of Malignant Tumors

Carcinoma of antrum.....	3
Carcinoma of tongue and buccal mucous membrane....	5
Carcinoma of the stomach and bowel.....	8
Carcinoma of cervix.....	46
Carcinoma of the female breast.....	45
Sarcoma of the testicle with metastases.....	1
Sarcoma of bone.....	2
Carcinoma of the rectum.....	2
Carcinoma of male breast.....	2

people who suffer with cancer and who are constantly reminded of their approaching doom by an ever present distress.

An adequate remedy must, first of all, give relief from pain; secondly, it should produce little or no undesirable effects on the patient. Thus far, no drug has been found to supplant opium or some of its derivatives in the control of severe constant pain. Most of the derivatives of opium possess properties that are undesirable, especially if continued use is necessary. Habit formation, undesirable interference with normal gastro-intestinal function, and depression of the central nervous system may be especially mentioned.

The questions that therefore arose when I began the use of dilaudid were:

1. Is dilaudid a satisfactory anodyne for patients with the pain of cancer?
2. Is it less habit forming than morphine and is tolerance more rapidly established?
3. Does it possess the disagreeable side actions of morphine and to the same degree when given in equivalent doses?

In a series of 114 patients suffering with constant pain, the types of malignant tumor were distributed as shown in the table.

From the Barnard Free Skin and Cancer Hospital and the Department of Internal Medicine, Washington University School of Medicine.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. The Biltuber-Knoll Corporation. A preliminary report of the Council on Pharmacy and Chemistry appeared in *THE JOURNAL*, April 1, 1933, and dilaudid was subsequently accepted for admission to New and Nonofficial Remedies.

Although it was not possible to follow all cases uninterruptedly, the special cases selected for detailed report have been observed carefully to their termination and the patients have possessed sufficient intelligence to cooperate in their management.

EFFECTIVENESS OF DILAUDID AS AN ANALGESIC

In every instance in which dilaudid was used, it proved itself an effective anodyne. This is in accord with the observations of many German and a few American clinicians. In the present series it was poorly tolerated in but four cases.

It should be emphasized that continuous relief is desired and not merely the control of the peaks of intense suffering. Most of these patients were seen only after the beginning of constant pain. In order to obtain continuous effect, the method of administration is important. Dilaudid is rather rapidly absorbed and quickly effective if given either by mouth or by hypodermic injection. Absorption is delayed when it is given by rectal suppository and, consequently, the action is more sustained. This is of distinct advantage in the administration of the bedtime dose. Best effects were obtained by the administration of varying amounts about every three hours. It was noted that a single dose given by hypodermic injection or by mouth, except in very severe pain, would give relief for three and one-half hours. The amount given, as well as the time interval, varied, as the tolerance increased and as the pain became more severe. At bedtime the dose was usually doubled and given by suppository. Although dilaudid possessed no hypnotic properties, except in very large doses, patients would usually sleep well for a few nights after it was first administered. After they became accustomed to a degree of relief, it was frequently necessary to administer a sedative or hypnotic, which was usually given at bedtime. In one case, satisfactory hypnosis was difficult to obtain and morphine was resorted to with the desired results.

The analgesic value of dilaudid is well illustrated by the case of E. M., a man, aged 65, who entered the hospital, Nov. 2, 1932. He had a cancer of the right maxillary antrum. He had been treated by cautery and radium. There was considerable destruction of cartilage and the wall of the antrum, as well as a complete destruction of the right eye by a pyogenic infection. His pain was very marked. There had been only partial relief of the pain with morphine, to which he was becoming addicted. In this case, the use of dilaudid was begun on November 3. He was given $\frac{1}{40}$ grain (0.003 Gm.) hypodermically every three hours with more relief than he had previously obtained by $\frac{1}{4}$ grain (0.016 Gm.) of morphine. Occasionally, this dosage was augmented at night by a suppository containing $\frac{1}{12}$ grain (0.005 Gm.) of dilaudid and sometimes it was necessary to give a barbiturate as a hypnotic. The patient gradually became weaker and died, Jan. 9, 1933. Presumably unconsciousness, which came on January 8, was caused by an extension of the tumor and infectious process to the brain.

In the case of H. B., a woman, aged 34, a troublesome cough, as well as a marked constant pain of terminal carcinoma, was controlled. She was admitted to the clinic, June 24, 1932. There was a history of productive cough, uterine bleeding and a considerable loss of weight. She was found to have a cancer of the cervix, syphilis and pulmonary tuberculosis. She was given roentgen therapy, which resulted in a cessation of the menorrhagia. On account of the increase in cough and lower abdominal pain, dilaudid was started, Sept. 6, 1932. She was given a dosage of $\frac{1}{48}$ grain (0.001 Gm.) every three hours and felt much better, with relief of the cough and pain. She had a total of 4,950 milligram hours of radium, the last treatment being given October 9. She died, October 28.

The value of dilaudid as a cough remedy in cases of proved lung metastases has been noted many times.

This property of the drug played an important part in the comfort of G. G., a man, aged 53, who was first admitted to the clinic, Feb. 18, 1931. A diagnosis of osteogenic sarcoma of the left leg was made and the patient was advised to have his leg amputated but refused. He was treated by the use of high voltage roentgen therapy, with some relief of the pain and a diminution in the size of the tumor mass. In January 1932 he came back to the hospital, complaining of pain and increase in the size of the tumor. At that time, amputation of his left leg was done, after it was noted that there were no obvious metastases.

In April 1933 he appeared in the clinic, complaining of a troublesome cough, productive of a blood streaked sputum, with considerable pain in his chest. He was started May 5, 1933, on dilaudid, $\frac{1}{48}$ grain (0.001 Gm.) by mouth every three hours. He gradually grew weaker but suffered no pain and very little cough. Edema of his leg appeared and he was digitalized and placed on iron, by mouth. He was last seen in our clinic, Sept. 26, 1933. He died, Oct. 9, 1933.

In this case, relief of constant pain definitely prolonged useful activity. Dilaudid when given by mouth was usually given in aromatic elixir.

HABIT FORMATION AND TOLERANCE

It has been stated that dilaudid is less habit forming than morphine. Eddy's report² cited several references in the German literature of cases of addiction. Since it is desirable, even in cancer work, to use a non-habit forming drug, we were interested in observing this property. Euphoria was noted only once with a dose as small as $\frac{1}{32}$ grain (0.002 Gm.) and very rarely with larger doses. Several patients were able to take dilaudid for twelve weeks or more, and when they no longer needed it gave it up without craving. It is apropos to relate the history of a patient with cancer, who, because of treatment, was able to omit dilaudid without symptoms of craving for three months:

H. F., a white man, aged 48, entered the clinic, Oct. 5, 1932, complaining of painful swelling of the neck. Following the opening of an abscess some ten months before, a small round mass had appeared. In about four months, lymph nodes of the neck began to enlarge, followed shortly by blindness of the left eye. Biopsy of one of the enlarged cervical nodes revealed cancer. He entered the hospital, Nov. 9, 1932, complaining of severe pain. He also had a large tumor mass, almost filling the nasopharynx. For the next five weeks his pain was controlled by the administration of $\frac{1}{32}$ grain (0.002 Gm.) of dilaudid by mouth every three hours. At the end of this period his pain had been sufficiently relieved by x-rays so that medication for its control was no longer necessary. The drug was stopped and was not given for three months. In March it was necessary to resume dilaudid, as roentgen therapy no longer relieved the pressure from the tumor mass sufficiently to control the pain. Dilaudid in this case controlled the pain quite well but the patient lived beyond our expectations and it was necessary to increase the dosage to a marked degree. At one time before his death there was a period of a few days when he received 1 grain (0.065 Gm.) of dilaudid orally every three hours. Constipation, which had been pronounced before beginning dilaudid, was not materially increased.

While few of our patients were ever taken off dilaudid after it was once begun, there were many cases in which the symptoms of craving were not notable.

In several cases, dilaudid was given after morphine had been used for varying periods of time. In every case the substitution was welcomed except in two cases

2. Eddy, Nathan B.: Dilaudid (Dihydromorphinone Hydrochloride). J. A. M. A. 100:1032 (April 1) 1933.

in which there had been a history of morphine addiction before the onset of malignancy. One of these patients was a physician who was suffering from carcinoma of the antrum and who had been treated with large amounts of morphine. He was given dilauidid in doses approximately equivalent to the amount of morphine that he had been taking. A ten day trial of dilauidid failed to give him the subjective relief previously afforded by morphine, and his craving for morphine was not satisfied by dilauidid. Psychic disturbances prevented accurate observation of the analgesic property of the drug in this case.

Through the courtesy of Dr. Julius Jensen, I was permitted to see a patient who, after a relatively short use of dilauidid, had developed a decided craving for the drug. He would become nervous and fidgety and would cry unless either morphine or dilauidid was administered promptly at the expected interval. Another patient, an elderly woman with marked arthritis and symptoms of senile dementia, developed a profound liking for the drug after three weeks' use.

While it was difficult to estimate the rapidity at which tolerance was established, on account of the increase in pain, there were a few cases that seemed to require a more rapid increase of dosage than others.

This was especially noted in the case of W. D., a man, aged 56, who came under observation, Jan. 22, 1933. He was operated on and a gastro-enterostomy was done for relief of pyloric obstruction due to cancer, February 15. After operation he gained weight and resumed his work until the early part of May, when he developed severe pains in the stomach. He was then started on $\frac{1}{160}$ grain (0.00065 Gm.) of dilauidid by mouth every three hours. He did not obtain relief of pain until after the dosage was increased to $\frac{1}{48}$ grain (0.001 Gm.). Finally, $\frac{1}{24}$ grain (0.0027 Gm.) gave relief for about two hours, and $\frac{1}{6}$ grain (0.01 Gm.) by suppository at night gave relief for several hours but did not make him sleep. The patient was then given amylal and chloral, which were poorly borne by the stomach. Finally, on August 4, he was placed on morphine sulphate $\frac{1}{4}$ grain (0.016 Gm.) orally every three hours, which caused him to sleep more than formerly. He was practically moribund until his death, Sept. 15, 1933.

In several cases habituation was suspected, but on account of the constant pain the drug was not withheld and therefore its existence was not definitely determined. It was not considered that tolerance and habit formation were coincidental.

UNTOWARD SIDE ACTIONS

Undesirable side effects were not evident in most cases. Nausea, even in malignant conditions of the intestinal tract, was noted but four times in this series. These patients also had nausea from morphine. Two of them were not nauseated by codeine. As a rule, however, many who had gastro-intestinal disturbances from morphine tolerated dilauidid without this undesirable consequence.

An example of the usual response is found in the history of P. L., a woman, aged 27, who first came under our observation in July 1932. A diagnosis of carcinoma of the cervix was made and a hysterectomy was done at the University of Michigan, Feb. 21, 1932. In April 1932 she was given radium to the affected region. Shortly after this she began to have severe pain in the lower abdominal wall. The pain increased and she was admitted to the Barnard Free Skin and Cancer Hospital, June 3, when it was noted that she had considerable tenderness in the right lower part of the abdomen. The abdominal incision was stony hard. The impression was that the patient had a cervical recurrence with implantation into

the abdominal scar. She required morphine for relief of pain from June 3 to June 20. She was receiving $\frac{1}{2}$ grain (0.02 Gm.) of morphine sulphate hypodermically every three hours, and occasionally more frequent administration was necessary. She obtained considerable relief from pain but tolerated morphine very poorly, having almost constant nausea and loss of appetite.

She was given a suppository containing $\frac{1}{10}$ grain (0.006 Gm.) of dilauidid night and morning, with absolute relief from pain, as well as relief from nausea and a consequent improvement in appetite. After roentgen therapy she gained some weight and was discharged from the hospital.

On returning to her family physician she was unable to obtain dilauidid and it was learned that morphine, which she took again, was tolerated poorly as before. She was then given dilauidid, $\frac{1}{8}$ grain (0.008 Gm.) in suppositories every eight hours with considerable relief until her death, Dec. 20, 1932.

One of the patients who could not tolerate dilauidid was F. B., a man, aged 55, observed in the clinic from September 1931 until Dec. 29, 1933. He had a carcinoma of the left buccal mucous membrane, with metastases to the submaxillary nodes. Oct. 5, 1933, he was put on dilauidid. He experienced considerable relief from pain for two days, when it was noted that the medicine caused nausea. In spite of the fact that nausea was noted even when dilauidid was disguised, he obtained relief from pain. In this case dilauidid was administered by mouth only and not hypodermically or by suppository.

Constipation was never a troublesome factor. Many patients, especially those able to eat properly, experienced no costive symptoms. Constipation was present in most patients on soft or semisolid diets before dilauidid was given and was thought to be slightly increased in some instances.

While Krehl,³ Hemmerling,⁴ Trautmann⁵ and Winternitz⁶ reported marked effect on the respiratory center, this was at no time objectionable in the management of our 114 cases. Dreyer,⁷ in a series of patients at Barnes Hospital, observed a marked slowing of respiratory rate in one case following a dose of $\frac{1}{32}$ grain (0.002 Gm.).

Despite the fact that tolerance and habituation to the drug are undoubtedly more common than physicians were formerly led to believe, deterioration of character was much less marked than had been noted with morphine. Most patients approached death with less anxiety and, consequently, with a better morale than had been noted before the use of dilauidid.

CONCLUSIONS

1. Dilauidid is an efficient analgesic in the control of constant pain. It is more helpful in cancer than any other opiate I have used.

2. In order to obtain continuous relief of constant pain, the method of administration is important. The doses should be administered with sufficient frequency to permit continuous effect.

3. Although in the type of case that I observed the detection of habituation was difficult, I believe that dilauidid is less habit forming than morphine. There was less deterioration of character and better morale in patients who were treated with dilauidid than in patients treated with other drugs.

4. The untoward side effects were less troublesome than those of other opiates.

607 North Grand Avenue.

3. Krehl, L.: *München med. Wchnschr.* 73:596 (April 9) 1926.

4. Hemmerling, H.: *München. med. Wchnschr.* 73:597 (April 9) 1926.

5. Trautmann, Edgar: *München med. Wchnschr.* 73:1747 (Oct. 15) 1926.

6. Winternitz, H.: *Deutsche med. Wchnschr.* 55:480 (March 22) 1929.

7. Dreyer: Personal communication to the author.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. EDMUNDS, EDDY AND SMALL,
DR. HIMMELSBACH AND DR. STROUD

DR. TORALD SOLLMANN, Cleveland: The work reported by Drs. Edmunds, Eddy and Small is a notable attempt to develop a new drug. No one can predict whether it will be entirely successful, but already the work has added something material to existing knowledge. Even if it had not done so, it would be worth while as an illustration of how such problems should be approached. The outlook of improving on morphine in one way or another is good. There has long been one useful modification in codeine, and the dilaudid observations as reported by Dr. Stroud are also promising. It must not be forgotten, however, that diacetylmorphine seemed a panacea for a year or two. Dr. Himmelsbach's interesting work in a sense grew out of the collaboration that led to the investigation that was described by Dr. Edmunds and his co-authors. Addiction tendency is difficult to test. Codeine is a noted illustration: The codeine habit is a rarity at the present time and the use of snuff is a rarity, but it does not follow that snuff cannot form a habit. To the contrary, tobacco snuffing was universal a hundred years ago. Similar considerations may very well apply to codeine. There are many factors that enter into the production or the actual employment of a habit-producing drug. Dr. Himmelsbach has sketched these; side effects, costs, fashions, all enter in. A drug might be a very effective addiction drug and never be used because it did not happen to become commonly known. One must therefore attempt to study the habit-producing ability of a drug by objective methods and not merely by statistics, which might change completely almost overnight. The method that Dr. Himmelsbach reports seems to have worked out that problem successfully. It has the important advantages, first, that it doesn't make any victims and, second, that it uses patients who are known to be susceptible to drug habits; theoretically all are, but practically there is a great difference. With this method, I feel convinced that one is able to say certainly whether a drug is capable or incapable of producing a habit, without waiting for a tragic clinical demonstration.

DR. NORMAN A. DAVID, Morgantown, W. Va.: I should like to point out the similarity between dilaudid and the new compounds such as the desoxymorphines, which Dr. Edmunds and his co-workers believe will be most useful practically. These two compounds differ only that in dilaudid the alcoholic hydroxyl (of morphine) has been replaced by oxygen, while hydrogen has been substituted in the desoxymorphines. I should like to ask whether it is possible that the oxygen containing derivatives may prove pharmacologically more effective than the hydrogenated ones. Usually it is thought that oxygenated compounds are more active, at least chemically, than those with hydrogen. Dr. Himmelsbach answers the clinician's query as to whether or not codeine is habit forming. However, a question or two arises. Could it be possible that when codeine is abruptly substituted in the morphine addict this closely related opiate (codeine) in some unknown way delays the excretion of morphine that otherwise would take place? Then, when codeine is acutely withdrawn after the short period of eighteen to twenty days of substitution, could the resultant abstinence symptoms be due in part to the eventual excretion of this residual amount of morphine? For the past year I have been making tests of dilaudid in comparison with morphine in a study of their effects on the basal metabolism, tactile discrimination and other body functions. I found that the usual 2 mg. ($\frac{1}{32}$ grain) dose of dilaudid given subcutaneously produced slightly greater loss of tactile discrimination and lowering of the metabolic rate than 16 mg. ($\frac{1}{4}$ grain) of morphine sulphate. Consequently, I am interested in the statement of Dr. Stroud that dilaudid in small doses has little or no hypnotic effect. Nor have I been as fortunate as Dr. Stroud in obtaining a relative freedom from side actions in patients given dilaudid, although compared with morphine the incidence was appreciably less. There is no doubt in my mind that dilaudid offers definite improvement as an opiate over morphine. However, I await anxiously for the clinical reports on the trial of the new compounds developed by Drs. Edmunds, Eddy and Small.

DR. HAROLD S. DIEHL, Minneapolis: The possibilities of codeine addiction interest me because of the extent to which my associates and I have been using codeine with papaverine in the treatment of acute coryza. We have used $\frac{1}{4}$ grain (16 mg.) of codeine with $\frac{1}{4}$ grain (16 mg.) of papaverine, in an average dosage of five capsules a day over a two-day or occasionally three-day period. I should like to ask Dr. Himmelsbach whether he thinks there is any possibility of addiction to codeine used in this dosage over such a period of time.

DR. NATHAN B. EDDY, Ann Arbor, Mich.: I was especially interested in Dr. Stroud's remarks about the possibility of addiction. The evaluation of addiction experimentally, that is, in animals, is exceedingly difficult. Nevertheless, we have made some attempts in that direction and have administered dilaudid, along with other substances, to different species of animals, with the intent of determining whether or not these substances will produce tolerance, whether or not the presence of any abstinence or withdrawal symptoms can be determined after the substances have been given over a prolonged period. There is no question in our minds that experimentally it can be shown that the animals become tolerant to dilaudid as they become tolerant to morphine, except that perhaps the tolerance develops a little more slowly. Also, there is no question in our minds that in monkeys abstinence symptoms will develop if dilaudid is given over a sufficiently long period of time. That is especially noteworthy in connection with observations previously reported on the administration of different opiates to monkeys. Monkeys develop abstinence symptoms after they have had morphine; they will also develop abstinence symptoms after they have had dilaudid. They do not develop those quite as quickly as they do after morphine. The effective ratios of the different effects of dilaudid to the same effects of morphine vary. On the whole, our impression is that the effective ratios of dilaudid to morphine for therapeutic effects are very close to the ratios of the toxic doses, so that the margin of safety with dilaudid is little different from the margin of safety with morphine. Dr. David raised the question of the relative value of the substitution of the hydroxyl by oxygen or by hydrogen. So far as minimal effective dose is concerned, the substitution by hydrogen is very much more effective than substitution by oxygen. The ratios of effective doses when one substitutes by hydrogen, as in dihydrosesoxymorphine-D, are very much greater than when one substitutes by oxygen, as in dilaudid. The margin of safety when one substitutes by hydrogen is very much greater than when one substitutes by oxygen. The duration of effect, on the other hand, is probably somewhat shorter when hydrogen is the element substituted. Up to the present time, we have not been able to develop abstinence symptoms with dihydrosesoxymorphine-D. The animals do become tolerant to this new substance.

DR. C. K. HIMMELSBACH, Fort Leavenworth, Kan.: In reply to Dr. Diehl's question, Drs. Shibley and Spies pointed out in their paper that the common cold rarely lasts more than ten days and Dr. Diehl followed it with his statement that treatment with codeine and papaverine materially shortened this period. I doubt, except in extremely susceptible cases, that the codeine and papaverine combination as prescribed by Dr. Diehl would result in conference of addiction. However, in individuals particularly susceptible to addiction the euphoric effects of the drug have resulted from a single dose. Codeine possesses minimal euphoric properties compared to morphine. In reply to Dr. David, I may state that it has never been shown that codeine inhibits the excretion of any drug. There is no reason to suppose that it would inhibit the excretion of morphine. It is well known that the excretion of morphine is essentially the same in the nontolerant and the completely tolerant organism. The two weeks period of complete substitution of codeine would undoubtedly rule out retarded excretion of morphine.

DR. C. MALONE STROUD, St. Louis: I should like to emphasize the need of giving continuous relief, if possible, to patients who are in constant pain. Before the advent of dilaudid, an attempt was made to give continuous relief to patients with painful carcinomas by administration of codeine and morphine. The by-effects of these drugs almost invariably became distressful in prolonged cases. Dilaudid gave continuous relief, in most instances, without producing troublesome symptoms.

THE BIOLOGIC EFFECTS OF THYMUS
EXTRACT (HANSON)ACCRUING ACCELERATION IN GROWTH AND DEVELOP-
MENT IN SUCCESSIVE GENERATIONS OF RATS
UNDER CONTINUOUS TREATMENT WITH
THYMUS EXTRACT

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In this investigation we believe that we have learned something suggestive concerning the thymus gland and what is equally important, perhaps, we have evolved a novel procedure for the study of this and possibly other endocrine products. Following the continuous administration of thymus extract to successive generations of parents, marked acceleration in the rate of growth and development has been observed during the early life of the offspring, particularly of the third and later generations. Thus the rate of development encountered in the fifth generation of young rats born of four generations of thymus treated forebears is almost beyond belief.

METHODS OF EXPERIMENTAL PROCEDURE

A colony of twelve white rats was secured from the Wistar Institute, June 16, 1933. These were divided into test and control groups. The test animals have been subjected to date to the intraperitoneal injection of 1 cc. of thymus extract (Hanson) daily, even during the periods of pregnancy and lactation. Litter mates born to these rats have been mated in pairs and these have likewise been subjected prepubertally or after they have reached maturity to intraperitoneal injection of thymus extract. Each succeeding generation has likewise been so treated and the effects on parents and on the offspring noted. Thus, original test animals of the first generation (F_0) have undergone continuous treatment since June 16, 1933, the F_1 generation since Sept. 10, 1933, the F_2 generation since Sept. 25, 1933, the F_3 generation since Jan. 19, 1934, and the F_4 generation since April 15, 1934. In the young, treatment has usually been begun from the sixteenth to the twentieth day after birth in the prepubertal group and from the fortieth to the sixtieth day in the mature group. Numerous controls have been employed. At the present time we have reached the fifth generation of thymus treated rats and have between 300 and 400 rats in our colony.¹

The rats are confined in pairs in circular mesh wire cages the floor of which is covered with excelsior. Cups for food and water are attached to the wall of the cages. All rats used were placed on a diet containing the following ingredients to each 100 parts: rolled oats 15, hominy 60, dried meat scraps 14, Dryco 10, sodium chloride 1. To 100 Gm. was added cod liver oil in the

amount of 1.25 cc. Additional nutriment consisted of diluted milk daily and greens twice a week. Later orange juice was added to the diet at the suggestion of Dr. H. H. Donaldson. The quantity of food was not fixed. They were given daily more than ample for their needs, the food remaining at the end of twenty-four hours being discarded. Water was ingested ad libitum.

All twelve rats originally used were of Wistar strain and of known age and known parentage. Eight of these were divided into mature and prepubertal test and control pairs, each pair consisting of litter mates. The remaining four mature animals were segregated according to sex. One male and one female were injected and the others used as controls.

Up to April 16, over a period of ten months, we have followed two pairs of thymus injected rats in the F_0 generation for ten and six months, respectively. From their offspring, test and control pairs have been mated and the same procedure has been followed in each succeeding generation. Our experiments can be divided into three groups: (1) those pertaining to continuous treatment, daily intraperitoneal injections of rats carried on in succeeding generations, (2) those in which treatment (daily injections) was interrupted for one or more generations, and (3) feeding experiments

TABLE 1—Chemical Composition of Extract

	Mg. per 100 Cc.
Total nitrogen, micro Kjeldahl	5.75
Calcium	4
Inorganic phosphorus	12.6
Lipoid phosphorus	10
Sodium chloride	365
Cholesterol	10
Uric acid	14
Reduced and oxidized sulphur compounds calculated as glutathione.	15.6

in which the thymus extract was administered by mouth. In group 1, three series of animals were studied, 1A, the original group of rats subjected to injection of thymus extract (Hanson) since June 16, 1933, 1B, a second series of Wistar rats subjected to an identical form of treatment, to act as a control to the first group (treatment started on Oct. 5, 1933), and 1C, a group of rats subjected to similar treatment with a new preparation of thymus extract (Hanson) supplied from another source.

THE NATURE OF THE THYMUS EXTRACT USED

The extract used in these experiments was prepared by Hanson² in 1930 briefly as follows: The thymus glands from 2 to 6 weeks old calves were extracted in 0.5 per cent hydrochloric acid solution with the aid of heat. This extraction differs from the extraction from parathyroids by Hanson simply in the degree of acidity used in its preparation. This preparation is extremely stable and is entirely potent and satisfactory for injection in rats even after being kept at room temperature from two and one-half to four years. The extract was golden yellow and resembled bouillon in taste and smell. It has a pH of about 5.0 and is nontoxic in relatively large doses and nonirritating locally on injection.

Chemical analysis of this extract made at three years yielded the results given in table 1.

The strength of the extract used represented 0.6 Gm. of raw calf thymus to 1 cc.

From the Samuel Bell Jr. Laboratory of the Philadelphia Institute for Medical Research in the Philadelphia General Hospital, the Laboratories of the Philadelphia General Hospital, Philadelphia, and the Hanson Research Laboratory, Faribault, Minn.

1. In the text, F_0 animals are referred to as first generation and F_4 as fifth generation, respectively.

2. Hanson, A. M. Treatment of Cancer with Thymus Extract, J. A. M. A. 94: 653 (March 1) 1930.

BIOLOGIC DATA ON NORMAL AND
CONTROL RATS

Controls.—Our controls are of two kinds: (1) the published data obtained in the study of rats at the Wistar Institute, summarized in *The Rat*, by Dr. H. H. Donaldson, and (2) three pairs of Wistar bred rats and their descendants paired as litter mates and carried along in our laboratory on the same food and under the same conditions as the thymus treated test rats.

The biologic data on all our control animals conforms in general with those published from the Wistar Institute. However, our rats were subjected to daily intraperitoneal injections of salt solution containing 20 per cent of glycerin over a period of several months. As this has been found to be without effect, it has been discontinued. At the present time a control series is being run in which injections of an extract made by Hanson from lymphatic glands are being administered.

The comparison of our figures with those of Dr. Donaldson is shown in table 2.

Thus it is evident that our control animals evidence somewhat earlier gonadal development and maturity than the Wistar rats. In addition it should be stated

TABLE 2.—Comparison of Control Rats with Those of the Wistar Institute*

	Strain	
	Wistar Institute	Philadelphia Institute for Medi- cal Research†
Number in litter.....	6.1	4.9
Ears open.....	2½ to 3½	2½ to 3
Teeth erupted.....	8-10	9-10
Fur appeared.....	16	12-16
Eyes open.....	14 to 17	14 to 17
Testes descended.....	40	31-40
Vagina open.....	72	55-62
Comment.....	On a varied breeders' diet	On an adequate stock diet

* The measure of time is days.

† Based on 104 animals.

that the weight curves of the two series of animals are identical up to twenty days, after which the weight of our animals lagged somewhat as compared with the Wistar strain.

RESULTS OF CONTINUOUS TREATMENT OF SUCCESSIVE GENERATIONS OF RATS—SERIES 1A

As the result of continuous treatment of successive generations of rats with 1 cc. intraperitoneal injections daily the test male animals became somewhat heavier than their controls, the females becoming heavier after mating. The test animals seemed to breed more frequently and had larger litters of heavier average weight. Thus the mature test pair cast nine litters of seventy-eight plus animals and the mature control pair cast three litters of eight animals by March 13, 1934, at which time the control mother died. The prepubertal test pair cast four litters of twenty-seven plus animals, the female dying during labor, Nov. 14, 1933, while the prepubertal control pair cast two litters of ten plus animals for a corresponding period.

Growth and Development of the Second Generation Rats (F_1).—In all, ninety-three rats were born in thirteen litters to two pairs of test animals of the first generation (F_0) under treatment. The biologic data indicate rapid breeding on the part of the parents, an average period between casting of litters of 28.5 days

for the test animals as compared with 42.5 days for the controls. The average litter was composed of more than seven rats, as compared with less than five per litter for the controls. The animals at birth were approximately 10 per cent heavier than the controls. Seventy-nine per cent of the offspring of the test animals survived, as compared with 37.8 per cent of the offspring of the controls.

No precocity was observed in this generation in the earlier litters relative to the opening of the ears, the eruption of the teeth, the development of fur, the opening of the eyes. However, gonadal development and maturity were somewhat earlier than normal. In the later litters, definite evidence of precocity began to appear. Thus, in the tenth litter (cast after April 16) the animals at birth were considerably larger than normal. The animals were covered with fur and opened their eyes by the tenth day. The tenth litter also evidenced a considerable increase in the growth curve at 20 days, the test rats weighing 46 Gm. as compared with 28 Gm. for the controls.

In summarizing the results of treatment in the second generation (F_1), it might be said that treatment of the parents with thymus extract (Hanson) apparently results in an increased number of litters, an increase in the size of the litters, an increased birth weight, and a decreased infant mortality compared with our controls. In later litters born to such parents, evidences of precocity appear; i. e., increased birth weight, earlier eruption of the teeth, appearance of fur, opening of the eyes, descent of the testes and opening of the vagina.

Growth and Development of Third Generation Rats (F_2).—In test animals of this generation, i. e., animals born of two generations of rats treated with thymus extract, the rate of growth and development was astonishing. In all, 134 rats were born in seventeen litters to five pairs of second generation (F_1) rats under treatment with thymus extract. The interval between gestations was 39.6 days as compared with 42.5 days for the controls. An average of 7.8 rats per litter was cast as compared with 4.9 in the control litters. The average birth weight was 5 Gm. for the test animals as compared with 5.3 Gm. for the controls. Seventy-six per cent of the test young survived as compared with 37.8 per cent of the controls. The ears opened on the first day. The incisors erupted from the first to the second day. The animals were covered with fur from the third to the sixth day. The testes descended from the fifth to the thirteenth day. The vagina opened from the twenty-third to the thirty-second day.

Rate of Growth and Development in the Fourth Generation (F_3).—The fourth generation consists in all of 100 animals born in seventeen litters to eight pairs of rats treated with thymus extract. The parents, grandparents and great grandparents had all received injections of thymus extract (Hanson). The interval between casting litters averaged thirty-four days as contrasted with a period of 42.5 days in the controls. The average litter consisted of six animals with a birth weight of 5.3 Gm. as compared with an average control litter of 4.9 animals with an average birth weight of 4.6 Gm. Sixty-nine per cent of the young survived as compared with 37.8 per cent surviving in the control series. The ears opened within twenty-four hours in every rat. The incisors erupted within twenty-four hours. Fur appeared between the second and fourth days of life. The eyes opened on the fourth day. The testes descended from the fifth to the twelfth day and

the vagina opened from the twenty-first to the twenty-seventh day.

Rate of Growth and Development of Fifth Generation Rats (F_4).—The fifth generation consisted of twenty-one rats born to one pair, nine in the first litter and twelve in the second litter. All nine of the first litter died, apparently from lack of the mother's milk. All twelve of the second litter survived. The average birth weight in these animals was 5.6 Gm. as compared with 4.6 Gm. in the controls. The ears were open at the first inspection and the incisors likewise had erupted. These animals developed hair between the second and third days, the pelt being perfect within seventy-two hours. The animals opened their eyes between two and one-half and three days. The testes descended on the fourth day and the vagina opened on the eighteenth day. So alert and mature were these animals on the third day that one pair was weaned and has never been in the cage with the mother or with any other rats since the third day. These animals found their own water, milk and food supply and have surpassed all their litter mates in weight by 2 Gm. each. On the twenty-fifth day these animals weighed 94 Gm. as compared with 37 Gm. for controls of the same age, practically 150 per cent more.

RESULTS IN SECOND SERIES OF RATS UNDER CONTINUOUS TREATMENT—SERIES 1B

So incredible seemed the results of thymus injection in our first series of rats that we felt confirmation was imperative. A conference was held with Dr. H. H. Donaldson as soon as the precocity of our third generation test rats was noted. At this conference it was decided to continue treatment of the original group until ten litters could be studied and also at the same time to repeat our experiments, starting with a new series of rats.

Accordingly two pairs of controls were started on daily intraperitoneal injections of 1 cc. of thymus extract (Hanson), Oct. 5, 1933. In this series we find complete confirmation of our earlier results. In the second generation the period between casting of litters is short, varying from twenty-two to twenty-six days. Four litters of the third generation were born between Feb. 22 and May 6, 1934. The average litter was seven and the birth weight nearly 5 Gm. The ears opened within two days. The animals were covered with fur in from three to five days and the eyes opened in from four to five days. At birth these rats appeared normal. They flourished in early life, then faltered and wasted away, apparently from lack of the mother's milk. Two rats of the fourth litter were removed from the mother and placed with a "wetnurse" control mother. They evidenced the same precocity, the testes descending on the fifth day and the vagina opening on the twenty-sixth day.

Thus a repetition of our earlier experiments yielded complete confirmation of our earlier results in striking precocity, in the rate of growth and development appearing in the young of the third generation.

RESULTS IN A SERIES OF RATS UNDER CONTINUOUS TREATMENT WITH THYMUS EXTRACT FROM ANOTHER SOURCE—SERIES 1C

All the results so far described have been obtained from the use of the original preparation of thymus extract sent to us by Hanson. As has already been stated, this extract was prepared in 1930 and hence has stood for some two and one-half to four years prior

to being used. The new preparation of thymus extract was received on Jan. 6, 1934. It was administered intraperitoneally 1 cc. daily as in the other studies recorded. It has been continued over a period of from four to six months.

Six rats of the first series born of old thymus injected rats and hence representing the second generation or F_1 were placed under treatment. If this extract had been as effective as the old, the animals born to these three pairs of rats should have evidenced the same degree of precocity as our third generation (F_2) rats treated with the original thymus extract. In no instance did the offspring conform to those of our third generation (F_2) under treatment with the original thymus extract. Hence we decided that this extract was lacking in potency.

The same type of experiment was carried out with rats of the third generation (F_2) under treatment with old thymus extract. Their offspring likewise failed to conform with the expected precocity. From these experiments, which will be recorded in detail later, it



Fig. 1.—At right, control rat 14 days old; at left, third generation thymus test rat 15 days old.

can be seen that the effect of the new thymus extract administered by injection is slight or perhaps lacking. During the six months of treatment, the animals of the second and third generations injected with the new

TABLE 3.—Development of Thymus Treated Rats Contrasted
with Controls

	Controls	F_1	F_2	F_3	F_4
*Average birth weight, grams.....	4.6	5.1	5.3	5.3	5.6
Ears opened, days.....	2½-3½	2	1-2	1	1
Teeth erupted, days.....	8-10	1-9	1-2	1	1
Hair appeared, days.....	12-16	3-12	4-6	4-5	2-3
Eyes opened, days.....	14-17	12-14	4-6	4-6	2-3
Testes descended, days.....	35-40	*15-29	*5-21	*5-12	4-5
Vagina opened, days.....	55-62	*20-45	*23-32	*21-27	18-19

The figures in this table are based on a somewhat different set up than those published in Science and in the detailed paper, which will appear later.

* The low numbers usually relate to late litters in the generation and the high numbers to the first litters born.

thymus extract failed to manifest the acceleration of growth and development that should have accrued had the animals continued on injections of the original thymus extract.

The salient features relative to the accruing acceleration in the rate of development in succeeding generations can be easily appreciated from the data in table 3.

EFFECTS ON THE OFFSPRING OF RATS OF THE WITHDRAWAL OF TREATMENT WITH THYMUS EXTRACT (HANSON)

An effort has been made to determine the effect of omitting treatment through one or more generations. It was thought that it would be of interest to know whether this effect persisted after cessation of treatment, and if so for what period of time. In this connection we have observed many groups of animals, totaling over 200.

This experiment is difficult of presentation. However, details are available and will be published shortly. The results of interruption of treatment can be stated briefly. Cessation of treatment through one generation usually results in the entire disappearance of precocity. This does not hold in all instances, particularly for the first litter born after cessation of treatment of the parents. Here mild precocity may appear, provided interruption of treatment has not been of long duration.

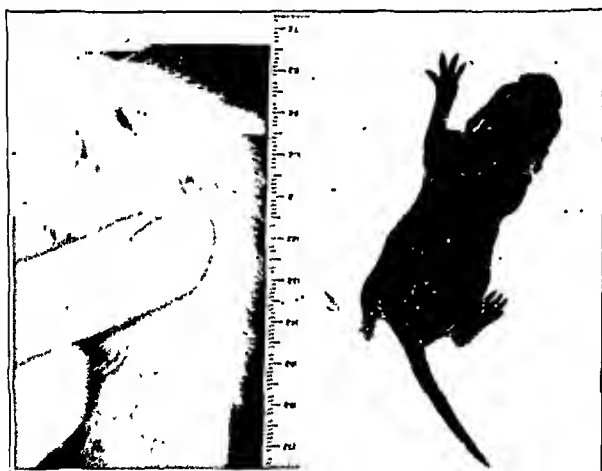


Fig. 2.—At right, control rat 7 days old; at left, fourth generation thymus test rat, 6 days old, the eyes open.

In the second litter normality is reestablished almost invariably, while the third litter conforms to normal in every instance.

EFFECTS OF FEEDING THYMUS EXTRACT

An effort has been made to determine whether or not thymus extract is effective when administered by mouth. In order to determine its effectiveness, it has been administered to four pairs of rats, all of which were born to animals having received old thymus extract by injection. In other words, these four pairs of animals represent second generation (F_1) rats under thymus treatment. These pairs, had treatment with the old extract been continued by injection, would have shown in all probability the marked precocity already recorded in our third generation (F_2) thymus treated rats.

From 8 to 10 cc. of the new thymus extract has been mixed daily with the food of each pair of rats over a period of four months. The first pair of rats cast one litter, consisting of six animals, all of which survived. They showed an average birth weight of 5.3 Gm. Their ears opened on the second day, the teeth erupted from the fourth to the sixth day, hair appeared from the

ninth to the twelfth day, the eyes opened from the twelfth to the thirteenth day; the testes descended on the twenty-second to the twenty-sixth day, and the vagina opened on the forty-sixth day.

The second pair had one litter of six, all of which survived. Their average birth weight was 5.2 Gm. Their ears opened on the second day, the teeth erupted on the eighth day, hair appeared from the tenth to the twelfth day, the eyes opened on the twelfth day; the testes descended on the twenty-ninth day, and the vagina opened on the fortieth day.

The third pair cast one litter of twelve animals, all of which survived. Their average birth weight was well over 6.9 Gm. The ears opened on the second day, the teeth erupted on the eighth and tenth days, hair appeared from the tenth to the twelfth day, the eyes opened from the twelfth to the thirteenth day; the testes descended on the twenty-second and twenty-third days, and the vagina opened on the thirty-sixth and fortieth days. No marked precocity was seen in the fourth litter.

It is apparent in these studies that the new thymus extract when fed by mouth does not induce the precocity that would have been expected had these animals received the old thymus extract intraperitoneally. From these results we are convinced that the new thymus extract when administered by mouth has little or no effect. Unfortunately this experiment was not attempted with old thymus. The new thymus extract used intraperitoneally was, as has already been indicated, relatively ineffective. Hence we feel that from these experiments the evidence is not at all convincing and in order to determine whether or not thymus extract is effective by mouth we feel that a similar experiment must be carried out on a series of rats with an extract known to be potent when it is administered intraperitoneally.

ACTIVITY AND BEHAVIORISM OF RATS UNDER THE INFLUENCE OF THYMUS EXTRACT (HANSON)

The psychic precocity is as striking as the physical in the thymus treated strain of rats. Thus, fifth generation (F_4) test animals move about the cage at 3 days of age and appear almost as capable and alert as normal rats of 16 to 20 days of age. These animals will climb out of a wire net enclosure from 3 to 4 inches high and manifest all the activities of normal animals four or five times their age. Weaning is possible at 3 days of age, the little rats finding their own supply of water, milk and food. They nest, burrowing under the excelsior, and find a resting place and have no need of further care from the parents. Animals weaned as early as the third day have fared as well as or better than their litter mates left with their parents.

The thymus treated animals appear to be healthy, contented and docile. Their actions asleep or awake resemble those of normal controls in every way. They do not resent the needle to any great extent, apparently suffering no pain or distress following the injection of thymus extract. We have wondered at times whether the chlorbutanol used as a preservative in this extract might in any way account for the docility observed.

White rats swim instinctively. The young rats swim as soon as their eyes open and they are covered with fur. Thus, our third generation rats swam at the age of 6 and 7 days, our fourth generation rats at 4 and 5 days, and our fifth generation rats at 3 and 4 days. None of these animals would enter water voluntarily,

but when placed in water appear momentarily at a loss and then swim to the nearest ledge. If the water is not too deep, they stand on their hind legs and attempt to spring to safety. Control rats cannot swim until after the eyes open; i. e., until from 14 to 16 days of age.

It should be clearly understood that the effect of thymus extract is confined largely to the rate of growth and development in the young. After sixty days the weight curves of control and test animals approach each other. Eventually in the fully mature animals little difference in size is apparent. Giants do not develop. Thymus is concerned chiefly with the young. To date we have seen no evidence that the life of rats is shortened by thymus, but our experiments have extended only over a year.

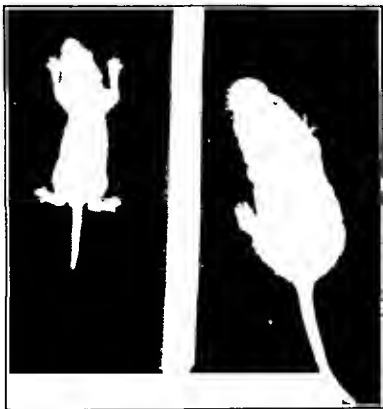


Fig. 3.—At left, control rat 5 days old; at right, thymus treated rat of fifth generation, 3 days old, the eyes open.

TOXICITY

Large doses of thymus extract (Hanson) are toxic. The administration of 5 cc. intraperitoneally results shortly in temporary incapacitation or collapse. Electrocardiac tracings made in the Heart Station of the Philadelphia General Hospital in conjunction with Dr. Thomas McMillan, head of the department, and Dr. Samuel Bellet reveal interference in conduction and the development of auriculoventricular block. Larger doses kill by complete heart block.

THE WEIGHT CURVES OF RATS UNDER THE INFLUENCE OF THYMUS EXTRACT

Weight curves of rats under the influence of thymus extract reveal a markedly accruing acceleration in weights in rats of the third, fourth and fifth generations. This is shown in the accompanying chart, in which C represents the controls, F_1 the second generation, F_2 the third, F_3 the fourth and F_4 the fifth generation under the effects of excess of thymus. The shaded areas represent the growth of more than 2,000 Wistar rats between Oct. 7, 1933, and Jan. 30, 1934. These curves are based on three litters of controls (eighteen animals), five litters of the F_1 generation (fifty-two animals), four litters of the F_2 generation (thirty-one animals), two litters of the F_3 generation (eighteen animals) and three litters of the F_4 generation (sixteen animals). All our animals were on a stock diet and were never mated later than 60 days, whereas the rats of the Wistar Institute were on a varied breeders' diet and were usually not mated earlier than 90 days.

A study of these curves indicates deficiency in growth in our control rats after the twentieth day and a striking and increasing acceleration in the weight of our thymus treated animals of the third, fourth and fifth generations. Our fifth generation rats at all times from the fourth to the fortieth day weighed more than double the control rats and at all times up to 30 days of age

outweighed the rats of the Wistar Institute. Between the third and twentieth days our fifth generation rats exceeded the Wistar rats in weight by more than 100 per cent.

After the sixtieth day these curves tend to come together. This will be presented in a later publication.

SUMMARY

1. The preparation of thymus extract (Hanson) forwarded to us by Hanson is a potent thymus extract, derived from the thymus of young calves.

2. Thymus extract (Hanson) seems to increase the weight and growth of prepubertal and mature male rats and in mated mature female rats.

3. Thymus extract (Hanson) administered to the new-born exerts but little effect on growth and development, although earlier opening of the eyes has been noted at times.

4. Thymus extract (Hanson) administered intraperitoneally to parent rats seems to increase the number and size of the litters and the birth weight of the offspring.

5. The most striking biologic effects of thymus extract (Hanson) are obtained and are most evident in the offspring following continuous treatment by intraperitoneal injection of successive generations of rats.

6. The third generation test animals, i. e., rats born of thymus treated parents and grandparents, are larger at birth and evidence striking precocity in growth and development, interpreted by early eruption of teeth, appearance of fur, opening of the eyes, descent of the testes and opening of the vagina.

7. Successive generations of rats born to thymus injected parents evidence accruing acceleration in growth and development. Thus in the fifth generation teeth have erupted and ears opened on the first day. The eyes opened and the animals were covered with fur by the third day. The testes descended between the fourth and fifth days and the vagina opened in twenty days.

8. In the thymus treated strain of rats the young mature earlier and breed earlier. Thus in the offspring of the third generation of test animals, litters have been cast on the fortieth and forty-fifth days.

9. The effect of thymus treatment is more marked in the offspring than in the parents.

10. Weight curves show an accruing acceleration in each succeeding generation. Animals of the fifth generation weigh more than double normal between the third and the twentieth day.

11. The acceleration and the rate of growth and development in the untreated young born of thymus treated ancestors is apparently not effected through the mother's milk, since in two experiments it occurred

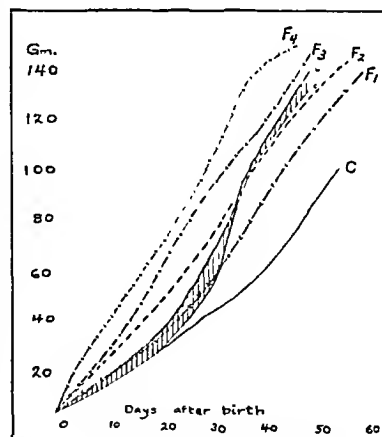


Fig. 4.—Weight curves of thymus test rats and their controls.

when the young were suckled by a control "wetnurse" mother and did not appear in control animals suckled by thymus treated mothers.

12. Thymus extracts made by Hanson's method are not all equally potent, as evidenced by one preparation secured from another source.

13. It has not been determined as yet whether or not thymus extract by mouth is effective. Our own experiments in this connection are subject to criticism.

14. Interruption of thymus administration for one generation nullifies completely or at least to a large extent the effects of previous thymus administration, even though this treatment may have extended through several generations of rats. The lack of thymus effect becomes more striking in succeeding litters.

15. While precocity is lacking in the early litters born of thymus treated parents, it appears in later litters.

16. Rats under thymus treatment appear unusually docile, healthy and contented.

17. Excessive amounts of thymus extract result in toxicity, as evidenced by increasing auriculoventricular dissociation and eventual heart block.

18. From our own investigations, no claim can be made for the specificity of the thymus in this connection. Control studies bearing on this are imperative and in progress.

CONCLUSIONS

1. Thymus extract (Hanson) has accelerated the rate of growth and development, has hastened the onset of adolescence in the offspring of treated rats, and has seemed to increase the fertility of parent rats.

2. The injection of succeeding generations of parent rats has resulted in the amplification of the effects of thymus extract.

CHRONIC ATOPIC ECZEMA (NEURODERMATITIS) IN CHILDHOOD

LEWIS WEBB HILL, M.D.

BOSTON

It is common for infantile eczema to improve with age and to disappear during the second year. This is not always so, however. In a series of 900 cases of eczema in infants and young children, 210 occurred between the ages of 2 and 12 years. In 127 of these the eczema had existed since early infancy; in eighty-three it began after the second year. It is the first group that I propose to discuss: chronic eczema in childhood, which had its inception in early infancy.

This eczema is characterized by papulation and thickening, but with little vesiculation. The classic case shows involvement of the antecubital and postpopliteal spaces, the wrists and the neck. The skin in these areas is dull red and thick, with a few small papules which are excoriated from scratching. It is often very thick and leathery, without much papulation, but with many furrows, and a great exaggeration of the normal lines of the skin; that is, lichenification. Itching is intense, and much of the pathologic condition of the skin is caused by long continued rubbing and scratching. Sometimes the eruption may be scattered all over the body in small plaques and papules.

Dermatologists have given many names to what I shall call "chronic atopic eczema," the most common of

which are "flexural pruritus," "Besnier's prurigo" and "neurodermatitis." Since the disease in childhood, although histologically not strictly an eczema, is the same process, modified by chronicity, that these children had when they were infants, which, according to American nomenclature, was eczema, chronic atopic eczema seems the best term for pediatricians to use. It is atopic because reagins are found in the blood, because it is often associated with the other atopic disorders, hay fever and asthma, and because it usually gives positive intracutaneous or cutaneous tests to proteins. It is to be distinguished from contact dermatitis, which is allergic but not atopic, because reagins are not found in the blood, because it is not associated with hay fever or asthma, and because scratch or intracutaneous tests with proteins are negative but patch tests with non-protein substances are positive.

Some dermatologists would agree with this nomenclature; some would prefer the term "neurodermatitis."

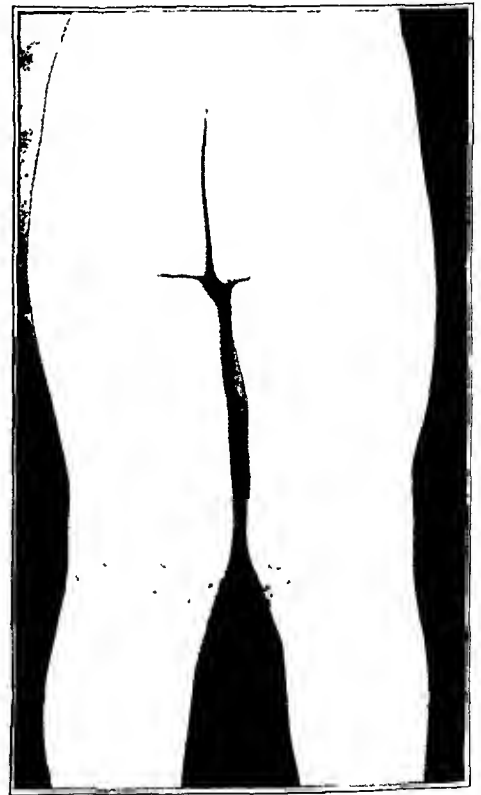


Fig. 1.—Typical eruption.

It is reasonable to suppose that the basic etiology for the disease in these children is much the same as it was when they were infants, and that the difference in clinical appearance is due to chronicity and long continued external trauma.

Protein skin tests were done by the cutaneous method in seventy-four of the more severe cases in the group under discussion, with positive reactions in 77 per cent. In 100 eczematous infants under 1 year of age, skin tests were positive in 63 per cent.

Positive reactions were obtained in thirty cases to egg, in fourteen to cat hair, in nine to wheat, in nine to spinach, and in six to milk. Various other foods and epidermals gave reactions in from one to five cases. The occurrence of egg reactions is less (40 per cent)

From the eczema clinic, Children's Hospital, and the Department of Pediatrics, Harvard Medical School.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

than it is in infants under 1 year (54 per cent), and it is interesting to note that, while the next most common protein to give reactions in infants is lactalbumin, cat hair takes its place in older children. It may be said from my own experience, as well as from that of others, that most children who have had eczema from infancy are atopic. It is likely that other factors are

If positive skin tests are found, there are two possibilities in treatment:

1. Removal of the positive foods from the diet, or other positive allergens from the environment.
2. An attempt at hyposensitization, either specific or non-specific.

Hyposensitization is valuable in hay fever; in asthma it is sometimes worth while; in chronic atopic eczema it may be rarely useful in a limited number of special cases, but by no means as a routine measure.

Specific hyposensitization has been attempted in one of three ways:

1. By feeding gradually increasing amounts of the offending food.
2. By intracutaneous or subcutaneous injections.
3. By the propeptan method of Urbach, in which, before each offending food is eaten, a specific peptone tablet is taken by mouth.

Nonspecific hyposensitization has been attempted by the injection of nonspecific proteins, such as milk, typhoid vaccine, blood or various peptones, or by autochemotherapy.

When I first began working with infantile eczema, the question arose whether any of the methods directed at hyposensitization should be commonly used. After I reviewed the literature, and after talking with various allergists and immunologists, it seemed that these were of very doubtful value in eczema at any rate and not to be compared to hyposensitization in hay fever or even in asthma. In the first place, it is likely not to work,



Fig. 2.—Typical excoriated eruption.

sometimes added, notably staphylococcic and fungous infection.

The treatment of eczema may be summed up in six words: Find the cause and remove it. The first thing in dealing with these patients, therefore, is to determine the causative allergens, if possible, from the history, secondly by skin tests, and, if these are negative, possibly by elimination diets. A positive skin reaction to a food or epidermal by no means always indicates that the eczema is due to that particular allergen.

It has been brought out by Rowe that in food atopy skin tests are sometimes negative in spite of the fact that symptoms are due to some particular food. With this in mind, he devised his ingenious series of elimination diets, which have often proved of value in determining food sensitivity in adults. This procedure is not so well adapted for use in eczema as it is in other food atopies, such as abdominal pain and migraine, for improvement in most cases of chronic eczema is so slow and there are so many other factors involved besides the diet that it is often difficult to judge whether or not a certain diet is doing any good. Also it is not so easy to use these diets for children as it is for adults. Furthermore, with young children it is well not to experiment too much with the diet. In spite of these certain disadvantages the principle is sound, and I have used Rowe's diet 1, slightly modified, as a basic diet, and have then added every week other foods, in an attempt to determine what was or was not harmful. This basic diet consists of rice, lamb, rye crisp wafers, string beans, carrots, celery, peaches, pears and jell-o. Such investigation is worth while in all severe cases with negative skin tests, but I have seen very few clean cut results with it.



Fig. 3.—Close up of figure 2.

and, if it does work, its effect is more often temporary than permanent; in the second place, it may be such a long and tedious procedure that it is not worth while attempting unless very definite beneficial results can be expected; in the third place, it is very difficult to evaluate results in such a chronic process as this type

of eczema, and the skin often becomes worse instead of better during treatment. Most of those in America who have used propeptan therapy are not at all enthusiastic about it, and Urbach himself says that it is of no value in "neurodermatitis" (chronic eczema). Another difficulty is that in chronic eczema there is almost always multiple sensitization; the situation is



Fig. 4.—Lichenification.

different from that in hay fever, in which a single and very definite sensitivity is likely to exist, or in asthma, in which the allergic manifestations are periodic instead of continuous and there are not so often the secondary pathologic changes in the sensitized tissues that there are in chronic eczema.

If there were any method of specific or nonspecific hyposensitization that would cure eczema, it would be universally used. Instead, most allergists are not in favor of it, and those who are use widely varying methods. One must conclude that at the present time for atopic eczema (note that I do not say contact dermatitis, which is a different thing) there is no method of specific or nonspecific hyposensitization that can be depended on to give good results in the majority of cases. For this reason I have rarely attempted it except in a few cases in which it has been obvious that the eczema was almost entirely due to very definite sensitization to one particular common food. I think also that hyposensitization applies more, both in theory and in practice, to those individuals who have really violent symptoms when they come into contact with or eat the substance to which they are sensitive. Such is rarely the case in eczema, for any child who reacts violently to some food never takes enough of it to give him eczema, as it is immediately apparent to the mother that the food in question is a poison to him.

Hypsensitization is not well adapted for use when the original eczema is present, and if tried at all it is better first to prove that it is due to the suspected allergen by removing the latter from the diet and noting results. Then, if after a considerable period of freedom from symptoms eating of the food again causes symptoms, it may be attempted by the oral method.

There is, however, no very good answer to the eczema problem until there is available some permanent and effective method of doing away with atopy in general, perhaps either by changing the chemical balance of the body cells in some way so that the atopic reaction cannot take place or by some method of nonspecific hyposensitization. Nonspecific, because there is multiple sensitivity in so many cases that what is desired is not hyposensitization to one or two proteins but a direct

abolition of the atopic state itself, so that hay fever, asthma and eczema, or any other condition which depends on an underlying atopic constitution will each be treated in the same way. Unfortunately there is today no effective means of bringing about this ideal of nonspecific hyposensitization.

In eczema, avoidance of the offending allergens is at present in almost all cases the most practical treatment, and often in the course of time the child becomes spontaneously desensitized. There are ordinarily not enough food sensitivities to prohibit a satisfactory diet, and there are many effective methods of getting rid of a cat. If apparently offending foods can be withdrawn without harm to the child, all well and good; if he is sensitive to so many that withdrawal is likely to cause loss of weight, it is better to treat the eczema locally and to forget about the diet. Every pediatrician has seen too many babies and young children with eczema dieted too rigidly, often with no benefit to the eczema and much harm to the child.

Proper local treatment is important. It must be remembered that in this sort of eczema the skin disturbance has lasted a long time; the skin has been insulted by many things, and for these reasons more or less permanent changes have been produced in it. With infantile eczema, in which no such chronic changes have taken place, if there is definite sensitivity to one particular food, withdrawal of this is often followed by speedy results. This is not so often true of chronic eczema, and little can be accomplished without skilled



Fig. 5.—Lichenification.

and persistent local treatment. The essential change in the skin is one of cellular infiltration; therefore strong remedies are usually indicated, such as crude coal tar or wood tar preparations, Swartz's ointment (mercurochrome with salicylic acid), and sulphur with salicylic acid. If there are small circumscribed patches, painting with crude coal tar undiluted is very effective, especially for cracks at the lobe of the ear.

Chronic eczema is not cured over night, and local treatment must be persisted in even if results are at first disappointing. In cases in which there is much lichenification, roentgen treatment is usually of value in resolving the infiltration and in relieving the itching. Its results are likely to be only temporary, however, and with repeated exposures there is some danger of causing atrophy of the skin.

It is very difficult and usually misleading in any such chronic condition, which is so subject to relapse, to tabulate therapeutic results in percentages of cured, improved, and so on, and I shall not attempt it. It may be said, however, that results are fairly good. Some patients are cured, many are relieved, but recurrences are common. There are a few cases of the diffuse type, with redness and thickening all over the body, for which little can be done, even by the most skilled dermatologist.

To talk about eczema is easy and always pleasant; to cure the patient is quite another matter, and in spite of allergens, reagents, skin tests, elimination diets, and so on, the actual practical treatment is not entirely satisfactory, whether by dermatologist, allergist or pediatrician, or by all combined. It can never be so until there is available some good and consistent method of attacking the atopic state itself.

I am not in the least pessimistic about eczema—merely trying to see the situation honestly as it is and not as I would like to see it. The understanding of this disease is constantly increasing, but there are many things still to be explained, and the kernel of it has by no means as yet been reached. In no disease is it easier to make erroneous observations or to draw false conclusions from correct observations.

There is no subject in pediatrics in which a sound conservatism and an unbiased critical attitude are more necessary.

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ABSTRACT OF DISCUSSION

DR. MARION B. SULZBERGER, New York: Dr. Hill's ideal of finding the cause of infantile eczema and then removing it is, with present methods, often impossible to realize; for substances that are the actual causes of the eczema frequently give negative skin tests and, on the other hand, not all substances that give positive skin tests prove to be the etiologic agents. Egg white, for example, gives many positive wheal reactions, even in infants whose eczemas continue without ingestion of egg constituents in any form or by any conceivable route. Therefore the various test methods, including elimination diets, are still so likely to give inconclusive, not to say confusing, results that they must often be dispensed with. While skin tests are essential in the scientific studies of eczema, and sometimes indispensable even in the management of the individual case, in many routine cases a logical plan of therapy can first be tried. This may give satisfactory results and obviate the necessity for skin testing. Local and roentgen therapy are sometimes sufficient to achieve a cure, but the manner in which the local remedies are applied may determine success or failure of the treatment. Simple change of environment, or hospitalization, sometimes causes an abrupt remission. In the immunologic approach, the differential diagnosis between contact eczema, atopic dermatosis and seborrheic dermatitis should be made whenever possible. This is often difficult. However, it is most desirable, because the elimination of environmental and dietary allergens is presumably of no benefit in most cases of true seborrheic dermatitis. In both atopic and contact dermatoses, the practical immunologic approach may best be expressed by the word "change." Change the environment and the diet, as far as this is compatible with the maintenance of health and proper nutrition. Particular attention should be paid to the bedding material and to the

sources of dust in the room. All who have seen rapid cures under simple elimination of one or more of the commoner causative agents will agree that, although unfortunately rare, these cases justify the recommendation to study the infant's environment and to change it as much as possible, without jeopardizing the general state of nutrition and health. Fungi, as mentioned by Dr. Hill, may prove to play an important rôle in some infantile eczemas. Particularly fungi of the *Monilia* group seem to me to be most suspect, for these organisms are ubiquitous, are strong sensitizers, and have been proved capable of causing eczematous eruptions in adults. What I have said about fungi may apply, but to a less degree, to other micro-organisms. For another reason it is important to differentiate atopic from contact dermatitis whenever possible. It is probable that, in pure contact dermatitis in infants, foods will be of little or no significance, and elimination diets of little or no promise. Differentiation between contact and atopic dermatitis is generally possible in adults; in infants it is usually found to be difficult.

DR. J. VICTOR GREENBAUM, Cincinnati: I noticed that Dr. Hill had 127 cases of this condition. Judging from our experience in Cincinnati, this is indeed an unusually large number of cases. That reminds me of a story that probably is familiar to many. A young doctor years ago, on being asked the specialty in which he intended to enter, answered "infantile eczema." On being asked the reason for this unusual decision, he answered: "First, because there are so many of these cases; second, these cases never get well; third, these cases never die, and, fourth, these cases never bother you at night." I hope this young man did not come to Cincinnati, because, first, there are rather few cases in Cincinnati; second, the patients frequently get well; third, they sometimes die, particularly if they are sent to the hospital, as brought out by Dr. Schwartz in his report, and fourth, I know from experience that they do bother you at night. In Dr. Hill's summary, he stated he would give results of his group, but I noticed he said he could not draw any conclusion from the results and therefore would not present them. In ten years' time at the Cincinnati General Hospital, we have had sixty-one cases listed under the diagnosis of eczema in the pediatric service. Seventeen of these cases had to be discarded as improperly diagnosed, leaving forty-four cases of undoubted eczema. Of these cases, twenty-six entered the hospital for treatment of eczema. Incidentally complications, chiefly of the respiratory tract, developed in twenty-one of these twenty-six. Skin tests were made in six cases. The dietary changes based on the skin tests were made, resulting in four patients improved, one unimproved and one recovered. Of the remainder, eighteen recovered, twenty-four improved, one died and one case was intractable. All sorts of treatment were used, including tar and mercury. It can be seen from these results that 36 per cent of these babies recovered and 59 per cent improved, giving a total of 95 per cent showing favorable outcome. I have gone over the cases during the past five to six years in the Jewish Hospital, in the Cincinnati General Hospital outpatient clinic, the Children's Hospital, and the Children's Hospital outpatient department, and they total to the surprisingly low number of approximately seventy.

DR. GEORGE PINES, Los Angeles: Dr. Hill's paper gives one the impression that the etiology in chronic atopic eczema is most difficult to determine, therefore not warranting the time and effort that are put forth in testing these cases. One is justified in this opinion if he takes the attitude that foods alone cause this disease in children. This is the impression of most pediatricians. In the experience with the clinic of the Children's Hospital in Los Angeles, over a period of eleven years I found that there were as many children that were sensitive to things other than foods, resulting in eczemas. Shortly after a child is born he is in contact with as many things as an adult and one should study him as an adult instead of as an infant. Reactions in children are rarely limited to food alone. In a review of 1,500-odd allergic infants at this clinic it was found that foods, and foods alone, were present in only one out of each hundred cases studied; in other words, foods as an etiologic factor alone are present in 1 per cent of the total cases studied. Incidentally, it was found that the other 99 per cent of positive cases were multiple sensitive,

the incidence of foods being present in about 70 per cent, about 19 per cent being environmental factors, and the remainder being those of pollen and the like. I agree with Dr. Greenebaum that deaths occur from eczema, particularly in those children brought to the hospital. They seem to be in good physical condition but suddenly have severe diarrheas, become dehydrated, then after a short period with a high fever, die.

DR CHARLES HENDEE SMITH, New York: There is no problem that is so trying to the pediatrician as the case of chronic eczema. A more or less standard procedure has been adopted in the department where I see these cases. In the first place, we find rather more of them due to diet than was suggested by the last speaker. We therefore put each infant with eczema on a diet of evaporated milk, appropriately diluted, which has been boiled four hours. This follows the suggestion of a clinician with long experience, Dr. Charles Gilmore Kerley. Ratner, in our department, has found by animal experimentation that evaporated milk boiled four hours is the least anaphylactic agent of the various types of milk. To this we add boiled rice. It is possible to keep a child on boiled evaporated milk formulas and rice for a long time, with the addition of some fresh fruit or vegetable juice. Other foods are added slowly. Appropriate local treatment must not be forgotten. The old principle of soothing the acute cases and stimulating the chronic ones holds as much today as ever. I notice that most of the speakers today have dismissed the local treatment as if it were all a matter of ointments. In the acute, oozing stages we use a simple zinc and starch paste, 25 per cent each in petrolatum. The starch lets the secretion through from the inside. It must be remembered that this is not Lassar's paste, which contains 2 per cent of salicylic acid, an irritating substance. The zinc and starch paste is used on a mask or dressing until the oozing has ceased. After this and before stimulation is needed, we have devised a drying paste of considerable value, namely, a zinc paste with K-Y jelly base. When this jelly dries it leaves an elastic coating which protects the skin from the air. We use 2 drachms (8 Gm.) of zinc oxide, 2 drachms of calamine, 2 drachms of magnesia magma and one tube of K-Y jelly. If mixed thoroughly, it can be applied in a thin smooth layer which needs no dressing. It gives a great deal of relief from the itching, which is due to the microscopic cracking of the skin, allowing access of air. It is excellent for poison ivy as well for the same reason. Coal tar is not the answer for stimulating all chronic cases. It burns some skins like liquid fire. This rarely occurs with good old oil of cade.

DR LEWIS H. HILL, Boston: If I were restricted to one routine food for use in infantile eczema, I should probably choose evaporated milk. I should not care to boil it, because it has already been heated to 240 Fahrenheit. There is this, however, about evaporated milk and the other superheated milks. Lactalbumin is very considerably denatured in the process of heating, if the milk is heated very hot. Casein is probably not changed by heating, no matter how long it is heated. In most cases of milk sensitivity in infants and children, the sensitivity is to casein as well as to lactalbumin, so, therefore, if there is a double sensitivity, evaporated milk or boiled milk or superheated milk is likely to do no good. If the sensitivity is to lactalbumin alone as determined by the skin test, evaporated milk or boiled milk or superheated milk may be very valuable. I have had prepared for me a preparation of milk that has been heated to 130 C for an hour, much hotter than evaporated milk, is heated. I am able, with that preparation, to get very large positive skin tests in most babies who show casein sensitivity.

Sunlight and Vitamin D.—Vitamin D differs from most of the other known vitamins in the relative paucity of its distribution in common foods, egg yolk and butter being the only sources which contain it in fair abundance, unless such substances as cod liver oil are included as common foods. This fact seems to indicate that man is expected to derive his necessary supply of this vitamin from exposure of his body to sunlight.—Colwell, S. J. *Vitamins in Clinical Medicine, Practitioner* 132:15 (Jan) 1934

USE OF RECONSTRUCTIVE SURGERY IN CERTAIN TYPES OF DEFORMITIES OF THE FACE

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AND

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A large number of deformities, for correction of which reconstructive surgery is required, are seen primarily by laryngologists. Consequently, we are considering some applications of the principles of this type of surgery for certain types of deformities of the face that are of especial interest to laryngologists.

There are certain general principles in reconstructive surgery that are the same whether applied to this field or to others. Some of these principles are applied in the making of a tubed flap, a delayed flap, a full-thickness skin graft or a Thiersch graft, or in the grafting of bone or cartilage. However, in operations about the face certain problems require additional consideration, owing to local anatomic, functional and cosmetic requirements. No field of surgery requires more careful preoperative study, exacting surgical technique, care in handling tissues, and close postoperative observation.

Of the many deformities that occur about the face, we have selected for consideration four types that should be of interest to the laryngologist. These have no special relation to one another, aside from the fact that they present current problems in reconstructive surgery: (1) some nasal deformities that may be corrected by adjustment of the cartilages; (2) syphilitic nasal deformities; (3) deformities secondary to the removal of intranasal and antral tumors, and (4) deformities of the forehead, the result of osteomyelitis or the removal of tumors involving the frontal sinuses.

SOME NASAL DEFORMITIES THAT MAY BE CORRECTED BY ADJUSTMENT OF THE CARTILAGES

A great deal has been written about the use of cartilage or bone to correct various deformities of the nose, but not sufficient attention has been given to reshaping and adjustment of the nasal cartilages in the correction of certain types of these deformities. This is particularly true of the deformities that follow operation for harelip of adults. Metzenbaum¹ has presented an excellent piece of work, showing the anatomic displacement of the nasal framework that results from dislocation of the lower end of the septum.

In the deformity resulting from operation for harelip of adults, the median line of the nose frequently is displaced laterally, both the basal bones and the cartilage. The greater alar cartilage, on the flattened side, is displaced backward, the ala is flattened and flared outward, and its lower margin has a marked convexity similar to the turned down brim of a felt hat. The vestibule of the nose lies with its long axis laterally, or obliquely, instead of anteroposteriorly (fig. 1).

Correction of this type of deformity requires chiseling free of the nasal bones and setting them over into correct alignment, rotating and bringing forward the

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Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Metzenbaum, Myron. Asymmetry of the Nares, *Arch. Otolaryngol.* 16: 690-697 (Nov.) 1932.

greater alar cartilage, and rolling in the posterior part of the ala. It is advisable to cross-hatch the cartilage posteriorly to eliminate the spring and, following this, to hold the nose in position by means of lead plates and tension sutures. The convex lower margin of the ala must be made like its fellow. It is sometimes necessary to skin-graft the sulcus after freeing up underneath



Fig. 1.—*A*, deformity after operation for harelip. The following may be noted: displacement of the nasal bones and tip of the nose, flattening of the left ala, the short upper lip, and irregularity of the vermilion margin. *B*, postoperative appearance. Correction of the deformity of the nose and upper lip has been effected.

the lip in order to allow insertion of a plate to hold the nose and upper lip forward. A much more marked deformity is present after operation for double harelip of adults; features of this deformity are the wide nose with rounding of the tip, the short columella and frequently the bilateral flaring of the alar cartilages. Elevation of the tip of the nose, lengthening of the columella at the expense of the upper lip, and narrowing of the entire lower cartilaginous part of the nose are necessary. Sometimes excision of an elliptic piece of cartilage from the median line is required in order to narrow it sufficiently. The cartilages forming the flattened, wide tip may be unfolded, brought forward and sutured in place with chromic catgut to form a more normal looking tip. The ala on either side should be rolled in posteriorly after cross-hatching (fig. 2) has been done.

Dermoids of the nose require careful excision and adjustment of the cartilages, because of the situation of the sinus between the nasal bones. Widening of the nose in some cases may require chiseling free of the nasal bones and adjustment of the superior and lateral cartilages to build up the bridge after excision of the cyst.

SYPHILITIC NASAL DEFORMITIES

Syphilis that causes nasal deformities may be of congenital or acquired type. The outstanding feature of this type of deformity is loss of the bony structure and cartilaginous and mucous membrane lining the nose, producing a change that may vary from a slight saddleback deformity to a crumpled mass of skin and tissue, with loss of the columella.

In the congenital type there may be flattening of the face, producing a saucer-shaped deformity, with a very small nubbin of cartilaginous nose, with flattening of the bridge. Replacement of the lining of the nose, either by means of a full-thickness skin graft or a

pedicled flap, is necessary in most cases in order to reconstruct the nose. Gillies suggested the use of Thiersch grafts on dental compound attached to a splint fixed to the teeth to replace the lining, after the skin of the nose had been freed. We have used a similar procedure, employing a full-thickness skin graft, with satisfactory results (fig. 3). This produces two thicknesses of skin between which costal cartilage may be inserted to correct the saddleback deformity. In some cases a post may be necessary in addition, in order to raise the tip of the nose. A removable appliance consisting of a vulcanite tip on a stiff wire, attached to the upper teeth, may be necessary to hold the tip forward in position in certain cases (fig. 4). If a pedicled flap is used to replace the lining, this is usually best taken from the upper part of the arm, and, after delay, it is brought up into position, carried in back of the nose, either underneath the upper lip or through the base of the columella, and held with mattress sutures, the arm being fixed to the head by means of a cast or other suitable device. In congenital deformities reconstruction of the columella is most satisfactorily done by elevating a flap from the center of the upper lip, the base of the flap being where the base of the columella should be, and the distal end of the flap extending down to the vermilion border. The undersurface of the flap is lined with a full-thickness skin graft at the time of the original elevation and then sutured back in place on the upper lip. In ten days the flap is elevated again; the distal end is brought up to a point just behind the tip of the nose, and the wound in the upper lip is closed. The skin graft forms the antero-inferior surface of the columella. Certain congenital nasal deformities require only a cartilage implant to correct the deformity, while others are so marked, with loss of tissue, that total rhinoplasty offers the best solution, a line forehead flap being used. The use of horseshoe-shaped pieces of



Fig. 2.—Nasal deformity, the result of a dermoid cyst: *A*, displacement of the nasal cartilages may be noted. *B*, following removal of the dermoid cyst and adjustment of the nasal cartilages.

cartilage to stiffen the columella and alae, as suggested by Webster,² is a distinct advance in total rhinoplasty.

DEFORMITIES SECONDARY TO REMOVAL OF NASAL AND ANTRAL TUMORS

A very small percentage of patients require reconstructive surgery to replace a portion of the nose or

2. Webster, J. P.: Personal communication to the authors.

cheek following lateral rhinotomy or destruction of a malignant antral tumor by diathermy and radium. They usually present an opening laterally in the nose and cheek, or a deformity, with loss of tissue and perforation through the anterior wall of the antrum. In a small percentage of cases the eye is lost. A lined pedicled flap from the thorax or back is the best method of replacing this tissue. If the patient is a woman the forehead may be used. The area from which the tissue to replace the deformity is obtained should be carefully selected, so that the character of the skin simulates the skin of the face. The skin in the region of the clavicle is usually suitable for this purpose. The tubed flap is elevated, extending from the clavicle down over the thorax, and then the lower end is carried to the mastoid region. The upper end of the tubed flap in the region of the clavicle, which is lined with a full-thickness skin graft, is carried to the face to replace the lost tissue. The lining should be supplied in all these cases. This may be turned in from surrounding tissues of the cheek or supplied by means of a full-thickness skin graft, lining that portion of the flap that will be used in the cheek.



Fig. 3.—Syphilitic nasal deformity, with loss of the lining of the nose. A full thickness skin graft on a Stent's compound splint attached to the upper teeth and carried up into the nose through an incision underneath the upper lip was used to replace the lining of the nose, after the nose had been freed up and the scar tissue excised from the inside. A cartilage implant was inserted later, between the skin and the full-thickness skin graft lining of the nose. A, before reconstructive operation; B, postoperative appearance.

In most deformities following removal of malignant tumors of the antrum, with loss of the eye, there is so much deformity that an attempt to reconstruct the socket so that an artificial eye can be worn is usually not satisfactory. Covering of the orbit and cheek at the same time usually is the best method. If there is sufficient scarring inside the mouth, due to loss of tissue of the cheek, to cause ankylosis of the lower jaw, replacement of this tissue by means of a tubed flap from the thorax is advisable. The flap is brought up so that its distal end is carried into the mouth and sutured in place to cover the raw surface remaining after excision of the scar tissue. The mouth is kept open temporarily by means of a rubber gag. Large openings into the antrum, through the palate and upper jaw, are much better closed by means of a vulcanite plate; not only does this close the opening but teeth may also be attached to it. Kazanjian³ states that, as

a rule, if a flap is used to close large openings in the palate, it is impossible to hold a denture in position. A dental plate is much more satisfactory, for it closes the opening and also supplies the lost teeth.

DEFORMITIES OF THE FOREHEAD, THE RESULT OF OSTEOMYELITIS OR REMOVAL OF TUMORS INVOLVING THE FRONTAL SINUSES

Replacement of the soft tissues of the forehead may require full-thickness skin grafts, pedicled flaps or



Fig. 4.—Syphilitic nasal deformity: A, loss of the framework of the lower two thirds of the nose, and flattening of the face may be noted. The lining of the nose was replaced by means of a pedicled flap from the upper arm. The flap was also used to reconstruct the floor of the nose and to bring forward the upper lip. B, postoperative appearance.

tubed flaps; the latter are used when tissue is brought from a distance. Full-thickness skin grafts are used in clean wounds in which the bone is not involved.



Fig. 5.—A, postoperative deformity of the nose, antrum and ethmoid region, two years and seven months following removal by surgical diathermy and radium, of an epithelioma of low grade. The tumor had bulged this region so that it was necessary to remove the bone at this point. B, postoperative appearance. A double-epithelized tubed flap was brought up from the back to replace the lost tissue.

The technic of cutting and suturing them in place, with careful hemostasis and application of even pressure, must be followed to insure a large percentage of takes.

If an area of exposed bone, the result of osteomyelitis following irradiation or removal of a tumor, is present, it is advisable to remove the entire sequestrum with

3. Kazanjian, V. H.: Personal communication to the authors.

chisel and bone forceps. To cover this area a delayed pedicled flap composed of skin from the nearby forehead or scalp is most satisfactory; the area from which the flap is taken is covered with a full-thickness skin graft at the time the flap is placed in position (fig. 5). A temporary covering of an area of the forehead from which the periosteum has been removed in a clean wound, due to removal of a tumor, by a bipedicled flap with a pedicle in either temporal region saves a great deal of time. A bipedicled flap is brought down from the scalp to the forehead as a visor and after being left in position ten days the flap is dissected free again and replaced on the scalp in its original position, leaving sufficient tissue over the forehead from the under surface of the flap to allow covering it with a full-thickness skin graft. The larger areas of the forehead in which bone has been denuded, and those in which the frontal sinuses have been opened, require tubed flaps which may be brought up satisfactorily from the back or thorax in stages.

ABSTRACT OF DISCUSSION

DR. SAMUEL IGLAUER, Cincinnati: As pointed out by the authors, the general principles of plastic surgery apply to reconstructive surgery of the face. However, greater care must be taken in approximating the skin edges, and the stitches should be removed as early as possible and replaced by collodion cover straps of gauze to hold the edges in apposition. When flaps are used it is important to have the skin of the flap match that of the face in color and texture. Forehead flaps match better than skin from other parts of the body. The secondary contraction resulting from operative incisions is to be anticipated. Alar deformities remaining after a good harelip operation frequently require correction. The flattened ala should be approximated to the septum and, as pointed out by Blair, a wide undermining of the cheek about the ala tends to prevent the recurrence of the deformity. In the correction of the saddle nose deformity in which a lining and a covering flap are used, it is important to have the covers sufficiently loose to permit of the easy introduction of a cartilaginous implant between the flaps. In common with Drs. New and Figi I consider costal cartilage the best substance for implantation. I should like to inquire whether the authors consider anti-syphilitic treatment of any special value in congenital syphilis before undertaking a plastic operation on the nose. For certain depressed deformities of the cheek, the implantation of fat is desirable. In two cases of facial hemiatrophy, by making an incision in front of the ear and the hair line and then depositing the fat under the skin into the depression, a very good cosmetic result was obtained. The fat implant should be somewhat oversized, as it is subject to shrinkage. The deformities of the face after surgery for malignant disease are very distressing but still are of minor importance in comparison with the original malady. Closure or covering of such defects for cosmetic reasons should not be undertaken until it is certain that there is no recurrence of the malignant condition.

DR. FIELDING O. LEWIS, Philadelphia: The authors are to be congratulated on their splendid results. It has been my experience that plastic surgery about the nose and face is very difficult and that satisfactory cosmetic results are hard to obtain, no matter how simple the defect may be. This method of correcting nasal deformities resulting from imperfect harelip operations and from accidental happenings merits special emphasis. I know of no nasal deformity comparable to them in which such a uniformity of bad results can be obtained. Nasal deformities due to syphilis often tax the ingenuity of the surgeon. When the bony and cartilaginous framework have been largely destroyed, the remaining skin is usually so crumpled and distorted by scar tissue that complete rhinoplasty offers the best solution. In syphilitic subjects, one should always bear in mind to make ample allowance for the shrinkage in skin flaps, for it has always seemed to me that there is much

more contraction of the skin in syphilitic patients than in others. Deformities resulting from operations for malignant disease involving the face, sinuses or a portion of the nose require meticulous care. These patients have usually been treated, in addition to surgery, with maximum doses of x-rays or radium or both. As a result there is an extensive fibrosis of the skin, which, owing to the lack of blood supply, greatly hinders and oftentimes completely defeats the taking of the skin flaps. If one is not able to go beyond the area of fibrosis, prosthetic repair is preferable. In cases in which there has been enucleation of the eye, together with antral and other sinus operations, my experience would lead me to advise caution against any hasty attempt at plastic repair, for usually, if one delays, much time and hard labor are saved by the appearance of recurrences, which almost invariably take place.

DR. GEORGE B. JOBSON, Franklin, Pa.: About thirty years ago I began the practice of plastic surgery of the face and mouth in conjunction with our specialty. At that time, only a very few were giving this branch attention, and the methods then were somewhat crude as compared with those of today. During the World War great advances were made, and the improvements instituted then are being used in civil life today by many operators. I wish to present a method for the correction of a cauliflower ear, which has proved successful in several cases. The condition is the result of hematoma auris, which becomes organized into cartilage and scar tissue. Correction is accomplished by making an incision just internal and parallel to the rim of the ear. The skin is carefully dissected from the inner and outer ear surfaces, to the side of the head, if necessary. The auricular skeleton is then sculptured into shape by scissors and scalpel. If absences of continuity of the rim exist, these may be corrected by stitching in pieces of the removed ear cartilages with absorbable catgut. The skin flaps should have several small incisions made in them for drainage; then they are drawn over the modeled ear skeleton and their edges united with interrupted sutures. Half a dozen mattress sutures may be passed through both layers of skin and the cartilage in the depressions to facilitate union. Pieces of small rubber tubing or rubber tissue should be placed beneath the loops of the stitches to prevent cutting. Even pressure must be maintained by filling all irregularities with pieces of cotton wet with saline solution and allowing them to remain until healing takes place. A gauze pad and bandage are applied.

DR. CLAIRE L. STRAITH, Detroit: The authors have brought out beautifully many of the essential things required in producing satisfactory results cosmetically, at least, in facial deformities. In a nose, usually in a total loss, at least, it is the lining, covering and lastly the support, which is introduced later, usually of cartilage, that have to be restored. I wish to confine my remarks to the covering, or the integument used. As has been mentioned, the Indian method, or bringing down a forehead flap, works beautifully in women, but men unavoidably have to go through life with a forehead scar, no matter how nice a scar is produced, by bringing the flap back and then grafting this forehead. For two years I have been using the skin just beneath the ear, which, in men, is practically free from hair, matches the face beautifully, and is easily brought into place with one transfer. So far as I know, this method hasn't been reported before. I first used it in a boy, who, as a baby, was leaning with his nose against a window pane when some one broke the glass. The glass slid down, cutting off the integument over the bridge of the nose and the tip and columella. At the first operation I raised a flap from the skin beneath the ear to the sternoclavicular notch, bringing the edges together to form a tube pedicle. Three weeks later the scar tissue over the bridge of the nose and surrounding the wound was turned in, wrong side out, to produce a lining. The pedicle was detached at its upper end, following the pattern of the new nose and the skin stitched onto the nose in the new position. I put his head in a cast with a connecting band to the chest cast to maintain this position for the next two weeks. The skin was then detached and shaped around the tip of the nose. After this operation, a nice result can be obtained. The procedure provides a graft with one transfer, which matches perfectly the skin of the face, is

practically free from hair, and does not leave a disfiguring scar. It is much better than the Italian method of bringing up the arm skin, because the Italian method produces a skin covering that does not match the face.

DR MYRON METZENBAUM, Cleveland. Three things necessitate reconstruction of the cartilaginous or lower half of the nose. The upper bony half of the nose has an outside bony framework, which is self supporting, and a bony septum. The entire lower half of the nose has a cartilaginous framework and an entire cartilaginous septum, which is the only supporting structure to the lower half of the nose. When the cartilaginous septum is weakened or dislocated, the lower half of the nose may droop or drop to such a degree as to necessitate some type of reconstructive surgery to reestablish normal nasal function. The most frequent injuries to the lower half of the nose are those which occur from infancy to about the age of 10 years. One of the serious results of injuries to the cartilaginous septum is due to hematoma, which is usually bilateral because the same force affects the covering of the septum on the two sides. There is frequently a fracture of the cartilage, allowing the blood to seep through from one side to the other. A hematoma should be opened by a wide incision on both sides, the clots removed and the perichondrium packed close to the cartilage on both sides. If suppuration takes place, the cartilage, especially in young children, will be weaker or large areas will be rapidly destroyed. Secondly, nasal reconstruction of the tip of the nose later in life may be necessitated by injuries to the tip of the nose causing fractures and dislocations resulting in nasal obstruction. Displacements of the lower end of the cartilaginous nasal septum may be recognized by the asymmetry of the nares. Replacement of the dislocated septal cartilage should be done for the same reason that the supporting structures in any other part of the body, when displaced, are replaced to reestablish normal function. Thirdly, the results of the submucous resection operation may necessitate reconstruction of the supporting tip of the nose. The cartilage has no circulation of its own and receives its nourishment from the perichondrium on both sides. When the submucous resection is performed, the perichondrium, if stripped from the entire cartilaginous septum, may cause the remaining cartilage to become like a piece of blotting paper that has been dampened and ever after lacks the ability to support the tip of the nose. Normal nasal function depends on the perpendicularity of the lower end of the cartilaginous septum.

DR GORDON B. NEW, Rochester, Minn. Regarding Dr Metzenbaum's work, I would say that it was mentioned in the paper and that Dr Figs and I believe it to be an advance in its particular field. Dr Straith spoke of the color and texture of the flap in rhinoplasty and advocated using the neck for this purpose. I believe that, for women whose foreheads may be covered by their hair and for men with thin skins on whom full-thickness skin grafts seem to show but little, the forehead should be used for total rhinoplasty. The use of artificial appliances for temporarily replacing the loss of a nose has a definite place, although total rhinoplasty should be done, as most patients are not satisfied to wear any type of artificial nose except as a temporary measure. Dr Lewis's discussion regarding the time to do these plastic operations is important. I wait at least a year following removal of a malignant growth before attempting reconstructive surgery. For deformities about the face, when a considerable amount of irradiation has been given and a large area is to be replaced, the tissue is best brought from a distance, a tube flap being used. As a rule, the blood supply about the area is destroyed and it is difficult to get a flap about the area that is satisfactory. Regarding operation on patients with congenital syphilis, I would say that in the past most of the Wassermann tests have been negative. As a result of the recent development of more sensitive tests, serologic examinations are more likely to be positive. Such patients should have preoperative antisyphilitic treatment. Regarding Dr Iglauer's question as to an external method of holding wounds together following operation, there is an English mixture called "mastisol" which we paint on the skin and apply tape to this. I find it much better than adhesive tape for this purpose.

NUTRITIONAL XEROPHTHALMIA

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DUBUQUE, IOWA

Early Egyptian literature and the teachings of Hippocrates are quoted as prescribing a liver diet for hemeralopia, one of the symptoms of avitaminosis. By recent experiment,¹ this therapy has been proved scientifically correct. In 1857 Livingstone,² describing a disorder of the eyes in members of his African party, wrote that the eyes became affected, as in the case of experimental animals fed on pure gluten or starch, yet it was not until fifty-five years later that Hopkins³ first gave definite proof of the existence of fat soluble vitamin A. In the following year, 1913, Osborne and Mendel⁴ experimentally produced characteristic xerophthalmia and proved that it could be cured, in rats, by the addition of butter fat or cod liver oil to the deficient diet. From this time until 1922, when McCollum and his associates⁵ differentiated vitamins A and D, many of the abnormalities reported following clinical observation and experimental studies, thought to be due solely to vitamin A deficiency, were really due to a deficiency of vitamins A or D or both.

As with similar food factors, the absence of vitamin A is most effective in infants and children or during the period of growth. Reports of large epidemics among an entire populace, such as those in Russia (1887) during lenten fasts, in Japan (1896) and in Denmark (1917), are, in effect, reports of children's diseases. It was not the fasting Russian mothers but their nurslings in whom keratomalacia developed. Adults, however, are not immune and will succumb if the food deficiency is severe enough. The poorly fed soldiers of northern China have been an actual laboratory for the study of avitaminotic ophthalmia.

The relatively high degree of tolerance to dietary deficiency disease in adults explains the rare incidence in mature life. Since the discovery of vitamin A, four cases of xerophthalmia in adults have been reported in the United States. Crohn and Rosenberg⁶ in 1924 observed two cases of inflammation of the conjunctiva and cornea in patients with colitis, who were on a restricted diet. The eye condition did not respond to local treatment but cleared up readily when the patients were given a sufficient diet. Two years later Wohl⁷ reported a case of beriberi and xerophthalmia in a school teacher, aged 32, who had had severe diabetes for six years. The dull, dry and opaque corneas quickly responded to a proper diet and insulin.

Davis,⁸ in 1932, reported the case of a widow, aged 65, who had lived in a village hotel for eighteen months prior to his observation. She had spent two months in bed. The corneas were opaque stippled and lusterless.

1 Paterson, A. I. Softening of the Cornea Treated by Liver Extract. *Tr. Ophth. Soc. U. Kingdom* 50: 626, 1930.
2 Livingstone, David. Travels and Researches in South Africa. London 1905, p. 470.

3 Hopkins, Gowland. Feeding Experiments Illustrating the Importance of Accessory Factors in Normal Diets. *J. Physiol.* 44: 423, 1912.

4 Osborne, T. B. and Mendel, L. B. The Influence of Butter Fat on Growth. *J. Biol. Chem.* 16: 423, 1913. The Influence of Cod Liver Oil and Some Other Fats on Growth, *ibid.* 17: 401, 1914.

5 McCollum, E. V., Simmonds, Nina, Becker, J. E., and Shipley, P. G. An Experimental Demonstration of the Existence of a Vitamin Which Promotes Calcium Deposition, *Bull. Johns Hopkins Hosp.* 33: 229 (June) 1922.

6 Crohn, B. B. and Rosenberg, Herman. Medical Treatment of Chronic Ulcerative Colitis. *J. A. M. A.* 83: 326 (Aug. 2) 1924.

7 Wohl, M. G. Avitaminosis in Course of Diabetes, *J. A. M. A.* 87: 901 (Sept. 18) 1926.

8 Davis, W. T. Xerophthalmia. Report of Case, *J. A. M. A.* 98: 1640 (May 7) 1932.

Vision was limited to counting fingers at a distance of 2 feet. At the end of three weeks, during which her diet was rich in green vegetables, butter fat and viosterol, she recovered completely with a corrected vision of 20/30.

The susceptibility of childhood, the scourge of chronic illness and the ravages of famine, as has been noted, are the usual precursors of xerophthalmia. These con-



Fig. 1.—The left eye at the time of the first examination. The marked inflammatory changes of the conjunctiva are shown.

ditions were strikingly absent in the case to be reported. The patient had no other ailments and lived in the "land of plenty." His very occupation was the raising of food which is the chief source of vitamin A.

REPORT OF CASE

A. B., a farmer, white, aged 53, unmarried, was brought in by a neighbor on account of rapidly failing vision. Since 1928 he had been troubled every winter with swelling of the eyelids, pain in the eyeballs, tearing, photophobia and yellowish discharge. This condition would clear in the spring.

Since the death of his mother in 1924, he had lived alone. His diet consisted of potatoes, bread, oatmeal, sugar, thoroughly cooked meats including beef, pork and pork sausage; oranges, radishes and cabbage in season; he would eat eggs in the spring until June, but did not use them thereafter because of doubtful freshness; he used no milk, cream or butter, and drank black coffee.

The patient entered a hospital in February 1929 with diminished vision, tearing, photophobia and a "rough feeling" in the eyes. The diagnosis was kerato-iritis with the possibility of malacia. He was given the regular hospital diet. Local treatment included drops of 1 per cent atropine solution and hot applications for twenty minutes followed by instillation of 1:5,000 mercurial ointment every three hours during the day. At this time smears and cultures from the conjunctival sacs showed staphylococci in predominance. A tuberculin test and three Wassermann reactions, one after a provocative dose of neoarsphenamine, were negative. The urinalysis was negative; the white blood cell count was 6,300. The patient made a complete recovery in one month. He was told to add oranges and fresh vegetables to his diet.

During the winter of 1931-1932 he consulted an oculist because of a return of the symptoms. At this time the corrected vision of the right eye was 20/200, and that of the left eye 20/25. Most of the depression of vision in the right eye was due to scarring. No definite diagnosis was made. He was given zinc collyria and mercurial ointment for local treatment and asked to return in one week. He did not return.

He came for relief of the present attack Feb. 6, 1934. About the time of the preceding Thanksgiving the eye began to pain and the lids became swollen; one month later vision began to fail and became gradually worse. Ocular pain increased until one week before admission, when it ceased entirely. He was now unable to see to do his usual work. He was losing strength and felt unsteady on his feet.

On physical examination he was mentally slow and unsteady on his feet, but there were no abnormal neurologic signs. He was fairly well nourished; the hair and skin were dry. A papular eruption was present on the forehead, neck and back. The few remaining teeth and surrounding gums were markedly infected. He had several whitish plaques on the inner surface of the lower lip. The mouth, nose and pharynx were dry and showed a slight grayish pallor. No abnormality of heart, lungs, abdomen or extremities was noted.

The most striking feature of the right eye was the peculiar dryness of the cornea; it was opaque and lusterless; the lid margins were moderately swollen and the lashes were covered with a dried greenish yellow exudate. There was congestion and thickening of the lid and bulbar conjunctivae, more marked around the limbus and over the lower lid. Pigmentation was not found anywhere in the conjunctival sac. When fluid was dropped on the eyeball it was shed as though the surface had been oiled. The normal sensitivity of the cornea was absent, the surface was irregular and there were eight superficial vessels extending from all around the limbus to the center. A lace of smaller superficial capillaries encircled the limbus like a fringe 1 to 1.5 mm. wide. The anterior chamber was of average depth; only the color of the iris was distinguishable. The pupil was 2.5 mm. wide and was half filled with a central clump of pigment. It was not dilated by a 1 per cent solution of atropine. A fundus reflex was not obtained. The vision was limited to counting fingers at 10 inches.

The most striking feature of the left eye was the thick, beefy red appearance of the bulbar conjunctiva. The lid margins were swollen and covered with a yellow exudate; the lid conjunctiva was red and thickened. The conjunctival swelling



Fig. 2.—The left eye at the time of the second examination. The improvement after treatment is shown.

was so pronounced at the limbus that it was level with the corneal surface. The cornea was insensitive. At the nasal side was an ulcerated area 3 mm. by 4 mm., through which Descemet's membrane was bulging; the remaining surface was irregular and lusterless. A fringe of capillaries 1.5 mm. wide encircled the limbus. The lower third of the anterior chamber was filled with pus. The hazy outline of the pupil measured 2.5 mm. in diameter and only the color of the iris could be defined. No fundus reflex was obtainable. The vision was limited to hand movements at 1 foot.

At the time of admission the temperature was 98.4 F.; the white blood cells numbered 7,500; the differential count showed neutrophils 68 per cent, small lymphocytes 22 per cent, large lymphocytes 6 per cent, eosinophils 1 per cent, basophils 2 per cent and transitionals 1 per cent. The red blood cell count was 4,410,000; the hemoglobin was 85 per cent. There was an occasional hyaline cast in the urine. Staphylococci were predominant in the conjunctival smears. Examination of scrapings just external to the limbus revealed keratinization of the cells. The general treatment consisted of the regular hospital diet with the addition of 90 Gm. of butter, 24 ounces of 12 per cent milk, cereal with 4 ounces of 20 per cent cream and 2 ounces of a malt syrup containing 13,500 U. S. P. units of vitamin A per ounce daily. The local treatment included warm irrigations with a 1 to 6,000 solution of metaphen every three hours during the day, drops of 1 per cent atropine solution three times a day and 1 to 5,000 mercurial ointment instilled at bedtime; in addition, hot applications were given to the left eye for twenty minutes every three hours.

By the third hospital day the patient began to have pain in the left eye and the discharge from both had markedly increased; this marked the turning point. Two days later the discharge and pain had subsided and the corneas had regained their luster and their normal sensitivity. White sclera showed through at the periphery, and the swelling of the bulbar conjunctiva had receded so that the left cornea appeared nearly normal in relief. By the eighth day the hypopyon had completely disappeared and the ulcerated area was devoid only of epithelium. The whitish plaques in the mouth had disappeared.

During the following ten days the patient again became worse; the discharge increased and became more purulent; superficial ulceration was noted on the right cornea and the old area on the left eyeball again became active. Typhoid vaccine was given intravenously; the response was excellent. Within three days the corneal surfaces had healed and the associated ciliary injection had completely disappeared. A second dose of vaccine was given at this time and on the following day, February 27, all the patient's teeth were extracted. By March 1 the eyeballs were white and free of congestion; the corneal surfaces were intact. He left the hospital March 11, completely recovered but with considerable and permanent damage to the eyes.

PERMANENT CONDITION OF EYES

The palpatory tension of the right eye was normal. The conjunctiva was normal except near the edge of the lower lid, where it was moderately thickened. All but a triangular segment of the corneal surface at its upper extremity, comprising one sixth of its area, was covered by a nebulous opacity. The surface was unbroken but very irregular and covered with many minute facets where the scarring was more pronounced. There were four superficial capillaries at equal intervals extending half way from the limbus to the center of the cornea. Under dilation with atropine the pupil was 3 by 4 mm. wide and the lower two thirds of its circumference was attached to the lens. It was filled with a meshwork of pigment and fine white strands of old exudate through the intervals of which a red reflex, but no fundus markings, could be defined. The vision was 20/100.

The tension of the left eye was normal. The upper tarsal conjunctiva was moderately scarred but smooth; the conjunctiva near the lower lid margin was moderately thickened. Two superficial capillaries, one above and one below, extending two thirds of the distance to the center, marked the temporal border of a flattened macular scar that covered three fifths of the nasal side of the cornea. The remaining two fifths was clear except near the limbus, where the surface was faintly mottled. Under dilation with atropine the pupil was 2.5 mm. wide. It was filled with a network of pigment interwoven with a thin layer of organized exudate. All but a 1 mm. segment, of the inferior temporal portion of the pupillary border was incarcerated in this curtain. This segment formed a rounded indentation 1 mm. wide in the iris margin, through which a bright red reflex was seen. A less brilliant reflex was obtained through other intervals in the pupillary network. No fundus markings could be defined. The vision was 20/100.

COMMENT

Although hemeropia is a frequent symptom in the ordinary, mild, chronic, adult type of xerophthalmia, it was not present at any time in this case. The disease ran a protracted course for six years, with a seasonal variation in severity. During the fall and winter months the patient consumed no vitamin A, while in the spring a few green vegetables and eggs became timely sight-savers. The effect of abundant sunlight, as proved by the ingenious experiments of Powers, Park and Simmonds,⁹ must also have been an important seasonal therapeutic factor.

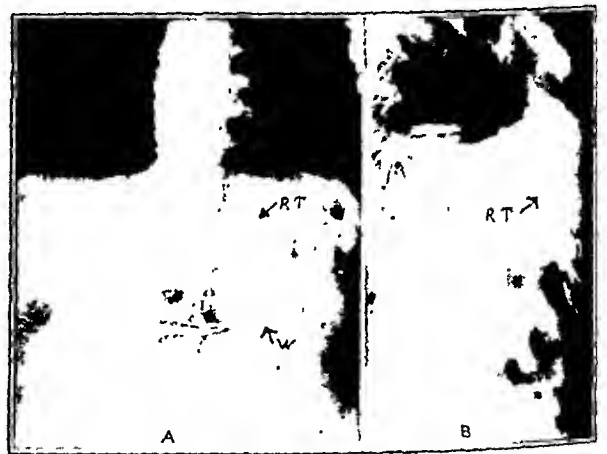
700 Locust Street.

Clinical Notes, Suggestions and New Instruments

A METHOD OF ROENTGEN LOCALIZATION OF FOREIGN BODIES IN THE STOMACH PRIOR TO GASTROSCOPIC REMOVAL

GABRIEL TUCKER, M.D., PHILADELPHIA

The roentgen localization of foreign bodies in the stomach has offered considerable difficulty. When a foreign body is shown in the upper part of the abdomen, the proof as to whether it is in the stomach, the transverse colon or the small intestine



A, anteroposterior view showing rubber tube (R. T.) passing through the hiatal esophagus and curling round the greater curvature of the stomach, coming in contact with the piece of wire (W) in front of the spine. B, lateral view showing the rubber tube (R. T.) passing through the hiatal esophagus, coming in contact with the wire (W). The localization in both planes definitely shows the foreign body in the stomach and its relation to the hiatal esophagus. Roentgenograms by Drs. Pancoast and Pendergrass.

is sometimes quite difficult to obtain. The usual method is the preparation of films in the anteroposterior and lateral planes, which are of considerable value. The administration of an opaque mixture, which passes through the esophagus and immediately comes in contact with the foreign body, will usually give definite information. It is a disadvantage, however, if gastroscopic removal under fluoroscopic guidance is to be made, as it is necessary to wait for the opaque mixture to pass out of the stomach and upper part of the abdomen before fluoroscopic guidance can be satisfactorily given in many cases.

In a recent case in which there was a piece of wire supposed to be in the stomach, it was desired to localize it definitely and at the same time show its relation to the cardiac

9. Powers, G. F.; Park, E. A., and Simmonds, Nina: Influence of Radiant Energy upon Development of Xerophthalmia in Rats, *J. Biol. Chem.* 55: 575 (April) 1923.
From the Bronchoscopic Clinic of the Hospital of the University of Pennsylvania.

end of the stomach and the hiatal esophagus. In order to do this the patient swallowed a rubber tube, which passed through the hiatal esophagus and cardia, coiling itself round the greater curvature of the stomach, giving its relation to the foreign body in the anteroposterior and lateral planes. The foreign body was definitely localized in the stomach and at the same time its relation to the hiatal esophagus was shown, as seen in the accompanying illustration. The tube was also used to empty the stomach before gastroscopy. If it was desired, air could also be insufflated into the stomach through the tube before its withdrawal.

COMMENT

In a new method of localization of foreign body in the stomach, a rubber tube of the Levin or Weiss type feeding tube is passed and allowed to remain in position during the making of films, the patient being placed in the position required for gastroscopy. The advantages of this method are:

1. It shows the location of the foreign body with reference to the tube that is passed into the stomach.
2. The tube stays in the lower part of the esophagus and cardiac end of the stomach and gives a definite localization of the foreign body to the cardiac end of the stomach, where the gastroscope is to be introduced.
3. The rubber tube is withdrawn and gastroscopic removal can be proceeded with immediately.
4. The stomach contents can be aspirated and air introduced if desired before the tube is withdrawn.

236 South Nineteenth Street.

FATALITY RESULTING FROM THE USE OF LASH-LURE ON THE EYEBROW AND EYELASHES

S. B. FORBES, M.D., AND W. C. BLAKE, M.D., TAMPA, FLA.

During the past twelve months, instances of dermatoconjunctivitis due to the use of eyelash and eyebrow dyes have been reported by Greenbaum,¹ Harner,² Bourbon,³ Jamieson,⁴ McCally, Farmer and Loomis,⁵ and Moran.⁶ In the cases reported by the last two the reaction was severe enough to produce ulceration and necrosis of the cornea. Six of the reported cases were due to the use of the preparation "Lash-Lure," and two followed the use of "Godefroy French Hair Coloring"—Larieuse.

The case reported here followed immediately the use of "Lash-Lure" and terminated fatally.

REPORT OF CASE

A woman, aged 52, who had considered herself in good health, had her right eyebrow "plucked" and the dye "Lash-Lure" applied to the right brow and eyelashes. This was done by her daughter, an employee of a beauty parlor. The adjacent tissues began to burn and swell within thirty seconds after the application of the dye. The pain was so severe that the operator decided not to treat the left eyebrow. Within a few hours the patient felt ill and the tissues around the eye were so swollen that she was unable to open her eye. The following day her temperature was said to be 104 and she consulted a physician who gave her a mixed streptococcus and staphylococcus vaccine and applied wet dressings of magnesium sulphate. The inflammatory reaction of the right side of the face extended and the temperature ranged between 102 and 104. Wet dressings of boric acid were used and ointment of yellow mercuric oxide was instilled in the conjunctival sac.

The patient was seen by us for the first time during the evening of March 13, 1934, eight days after the onset. On

examination at 8 p. m., the patient appeared to be extremely ill. The temperature was 103.4, pulse 134, respiration 36. She was clear mentally and did not complain of pain, but she said that she felt completely exhausted. The skin over the right side of the forehead and cheek was red but not tense and glistening. The upper lid of the right eye was covered with a deep sloughing ulcer with much yellowish adherent exudate.

The palpebral conjunctiva of the upper and lower lids showed complete ulceration of a deep character. The conjunctival sac was filled with a yellowish, tenacious exudate that could be removed only with difficulty. As this exudate was removed, a bleeding base was left on the ulcerative areas on the inner surfaces of the lids.

There was some injection of the globe, and the ocular conjunctiva was slightly chemotic. The cornea was hazy in sort of a striped manner, but no real break could be made out after using fluorescein. The pupils were equal and reacted consensually to light and in accommodation. The eyegrounds were negative in the left eye. It was impossible to examine the fundus



Fig. 1.—Appearance post mortem of large sloughing ulcer. The anterior cervical glandular enlargement is well shown.

of the right eye. There was no apparent proptosis of the right eye. The preauricular glands were palpable. The lymph glands on the right side of the neck in the anterior region, particularly just below the mandible, were greatly enlarged, as is shown in figure 1. The nose, throat and teeth were normal.

The area of cardiac dullness was within normal limits, sounds were clear and no murmurs were heard. The rhythm was normal, the rate 136, the blood pressure 114 systolic, 76 diastolic. Respiration was rapid and somewhat shallow. There was no odor of acetone. The percussion note was everywhere resonant, breath sounds were roughened, but no râles were heard on quiet breathing or following expiratory cough. The abdomen was entirely negative on palpation except for what appeared to be an ovarian cyst on the right side about the size of a grapefruit, which was not tender on pressure. There was no edema of the dependent parts or the extremities. All superficial and deep reflexes were moderately exaggerated. Kernig and Babinski's signs were negative and there was no neck rigidity. Aside from the face and neck the skin was clear, there being no evidence of petechiae, purpura or urticaria.

1. Greenbaum, S. S.: Dermatoconjunctivitis due to Lash-Lure, an Eyelash and Eyebrow Dye, J. A. M. A. 101:363 (July 29) 1933.

2. Harner, C. E.: Dermato-Ophthalmitis Due to the Eyelash Dye Lash-Lure, J. A. M. A. 101:1558 (Nov. 11) 1933.

3. Bourbon, O. P.: Severe Eye Symptoms Due to Dyeing the Eyelashes, J. A. M. A. 101:1559 (Nov. 11) 1933.

4. Jamieson, R. C.: Eyelash Dye (Lash-Lure) Dermatitis with Conjunctivitis, J. A. M. A. 101:1560 (Nov. 11) 1933.

5. McCally, A. W.; Farmer, A. G., and Loomis, E. C.: Corneal Ulceration Following Use of Lash-Lure, J. A. M. A. 101:1560 (Nov. 11) 1933.

6. Moran, C. T.: Bilateral Necrosis of the Cornea Following the Use of Hair Dye on the Eyebrows and Lashes, J. A. M. A. 102:286 (Jan. 27) 1934.

The lashes of the right eye were clipped and potassium permanganate irrigations and hot compresses were used. Atropine and mercuric oxycyanide instillations were also used. The patient failed to respond to general supportive measures such as digifolin and hypodermoclysis, and died at 11:30 p. m., just three hours after our first examination. No autopsy could be obtained.

COMMENT

It is with some hesitation that we report this case, owing to lack of laboratory data. A conjunctival culture was made, which showed a pure growth of *Staphylococcus aureus*. Blood counts and blood cultures were ordered, but the patient died before the specimens could be obtained.

The active principle in "Lash-Lure" is an aniline dye, the members of this group being capable of producing a violent allergic response in susceptible individuals. Plucking the eyebrow before application would furnish multiple portals of entry for the dye equivalent to multiple skin tests applied to a small area. There is no doubt that the patient's illness was brought about as a violent local and systemic allergic response. It is



Fig. 2.—The condition of the palpebral conjunctiva on the two lids was the same. This shows only the sloughing ulcer on the under surface of the upper lid.

not clear, however, why this should have caused death eight days later unless a secondary septic invasion, probably some form of streptococcus, is assumed. The appearance in no way suggested erysipelas, and there was no evidence of cavernous sinus thrombosis or involvement of the nervous system.

With the growing evidence to show the disastrous effects resulting from the application of "Lash-Lure" and similar aniline dye preparations in "beauty treatments," some way should be found to prevent their use.

Citizens Bank Building.

Pathology of the Myopathies.—The recent discovery of Sir Henry Dale that efferent stimuli in the vegetative nervous system produce their effect by the liberation of a chemical intermediary of the choline group, and that stimulation of the sympathetic in otherwise denervated skeletal muscle results in tonic contraction, seems to me to open up the possibilities of great advance in our very scant knowledge of the pathology of the myotonias, myasthenias and myopathies.—Collier, James: The Harveian Oration on "Inventions and the Outlook in Neurology," *Brit. M. J.* 2:707 (Oct. 20) 1934.

Special Articles

DYSPNEA

CLINICAL LECTURE AT CLEVELAND SESSION

J. C. MEAKINS, M.D.

MONTREAL

The science of clinical medicine rests on the knowledge of the causes of symptoms and signs and the interpretation of their functional significance. This holds equally valid whether applied to the diagnosis, prognosis or treatment of disease. Symptoms as a rule are a personal prerogative of the patient, while signs are discovered by the physician. There are exceptions to this statement, but these emphasize its general truth. Since an individual considers himself in good health until something arises which interferes with or embarrasses his capacity for work or pleasure, it is therefore a symptom or symptoms which usually first induce him to seek medical advice. Such sensations or symptoms are the first manifestations of disordered or embarrassed function and frequently are complained of before anatomic changes are detectable. Thus it is obvious that they are of the utmost importance. Sir James Mackenzie, one of the greatest clinicians of the past generation and the father of modern clinical cardiology, was firmly convinced that medical research had too long neglected the investigation of the early symptoms and during the latter years of his life devoted his energies to their elucidation. He was particularly interested in the significance and mode of production of visceral discomfort and pain. There is no doubt that the greatest symptom of all is pain in its varying characters, intensities and localizations. It may be called *the* symptom of localization.

But little inferior to pain in symptomatic importance is dyspnea. Some years ago I defined it as follows: "Dyspnea is the consciousness of the necessity for increased respiratory effort." Although this symptom is referred to the respiratory system, its causation is not confined by any means to pulmonary lesions. Whereas pain is chiefly a local phenomenon, dyspnea is broadly systemic and there is practically not one of the great systems which, when disturbed after a certain manner, may not produce a respiratory consciousness. It is with these respiratory disturbances, the mode of their production, and their clinical significance that I wish to deal here.

REGULATION OF RESPIRATION

Ordinarily in the healthy individual respiration is an unconscious function, although it can be modified at will. With these voluntary modifications the present discussion is not concerned. A short review of the unconscious or spontaneous act of respiration is, however, essential.

The rhythmic inflation and deflation of the lungs, which produces pulmonary ventilation, must be able to accommodate itself to great changes at short notice. This is done in the first instance by increasing or decreasing the volume of each respiration and later, if necessary, by an acceleration or diminution in the rate. The turnover from inspiration to expiration is brought

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Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 12, 1934.

about by what is commonly called the Hering-Breuer reflex. I shall not enter into the pros and cons that have given rise to a controversy about this reflex but will merely state that it is supposed to depend on variations in tension of the alveolar wall. As the lungs are inflated by inspiration the tension increases to a certain point, when the reflex turns inspiration to expiration. The pathway for the afferent impulses is through the vagus, while the efferent impulses pass by way of the phrenic and spinal nerves. A mechanism such as described would be automatic but rigid unless some means were at hand to vary the points at which the reflex reversal took place. There is strong evidence to suggest that in the midbrain (anatomically vague but physiologically fairly definite) there is an area called the respiratory center, which initiates the respiratory rhythm and controls the points of the reflex. This center is in its turn responsive to its own hydrogen ion concentration, which is one of the most constant of the internal equilibria. If this increases or becomes more acid, the points of the Hering-Breuer reflex become farther apart and respiration deepens in volume and increases in rate; if it decreases or becomes more alkaline the points approximate and respirations become more shallow and slower until they may finally cease.

It is quite apparent from this short description that the control of respiration depends on two factors, one chemical, the other nervous. It is not within the scope of the present paper to deal in detail with the hydrogen ion control of the blood and tissues, but the rôle of carbon dioxide cannot be omitted. It may be stated in brief that the kidneys are the principal organs that maintain the gross hydrogen ion equilibrium, but it remains for the lungs to control the finer variations through their elimination or retention of carbon dioxide. The vast majority of substances that influence the reaction of the blood and tissues diffuse quite slowly in and out of cells, while carbon dioxide is very soluble and readily diffusible. Therefore, although it is a weak acid, it is ideal for the finer regulation of the acid base equilibrium of the body. If for any reason the tissues, including the respiratory center, tend to an increase of hydrogen ions, the respiratory center through its nervous control of the Hering-Breuer reflex and of the respiratory muscles (diaphragm and intercostals) increases the pulmonary ventilation, which in turn augments the elimination of carbon dioxide, which reduces the hydrogen ion concentration of the blood and, in turn, of the tissues, thus helping to restore the normal internal environment. The opposite occurs when the hydrogen ion concentration decreases; then pulmonary ventilation is reduced. At times, respiration struggles against an increasingly impossible task, as in untreated diabetic acidosis or the profound and increasing alkalosis of intractable vomiting.

The respiratory center is also sensitive to changes in oxygen tension. If for any reason an adequate supply of oxygen is not furnished to the respiratory center, it is more sensitive to its normal or increased hydrogen ion concentration. This reduction in oxygen supply may be due to a number of causes: (1) imperfect aeration of the blood as it passes through the lungs, (2) a deficiency of hemoglobin, as in anemias, or (3) a reduced total blood flow or a local slowing of blood flow through the respiratory center.

It is obvious, then, that dyspnea can be produced by either increased acidity or decreased oxygenation of the respiratory center. But there is also a local pulmonary

factor, which has probably not received sufficient recognition in the past but which may be of profound significance in the genesis of dyspnea. The primary stimulus of the Hering-Breuer reflex is the tension change in the lung parenchyma that occurs on inflation, and any condition, such as pulmonary engorgement, that decreases the distensibility of the lung will exaggerate the excitability of this reflex. In other words, any condition that increases the rigidity of the lung will tend to produce rapid and shallow breathing with dyspnea. If the nervous and clinical control of respiration as outlined is intact and in normal equilibrium, respiratory consciousness should not be present under all conditions of rest and work appropriate to the individual's age and training.

Before proceeding to deal individually with different pathologic conditions, I will state that dyspnea is quantitative. Any one can become short of breath under given conditions of exercise, even the perfect athlete. Further, advancing years reduce one's capacity for physical work, but dyspnea is not really abnormal unless it is produced by conditions that are less than would be expected for the average individual, taking into consideration his age and manner of life. Dyspnea that would be considered abnormal in a youth might be quite well expected in an octogenarian. In progressive states dyspnea will be first noticed on exertion and as the cause increases the margin of activity will become more

TABLE 1.—Causes of Dyspnea

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- | |
|--|
| 1. Acidosis (including carbon dioxide acidosis) |
| 2. Oxygen want |
| 3. Lesions near the respiratory center |
| 4. Increased sensitivity of |
| Hering-Breuer reflex {Pulmonary fibrosis |
| Pulmonary emphysema |
| Pulmonary congestion |
| 5. Interference with diaphragmatic or intercostal action |
| 6. Neuroses |
-

and more limited until there is respiratory consciousness even during complete rest. Therefore, dyspnea is not only a qualitative but also a quantitative symptom of comparative accuracy.

Numerous attempts have been made to correlate the degree of dyspnea with various measurements, such as the vital capacity and the ventilation equivalent. Any such correlation has been shown to be thoroughly untrustworthy. However, when one comes to analyze the lung volume and its subdivisions in greater detail, it can be shown that the degree of respiratory impairment is directly proportional to the ratio of the functional residual air to total capacity of air or, more simply expressed, the ratio of the amount of air normally in the lungs to the volume of air in the lungs on full inspiration. Time does not permit of entering into a discussion of the real meaning of this ratio; suffice it to say that under average normal conditions it lies between 3 and 4 to 10 and that, as this ratio approaches unity, dyspnea becomes more and more intense. The measurement of this ratio is of especial significance in the estimation of the disability resulting from silicosis and other forms of pulmonary fibrosis.

In table 1 there is a brief but, I believe, comprehensive synopsis of the causes of dyspnea. It is true that there may be a number of variants of each of these causes. These may be produced by different means, but the end result will be in general the same. In order that a more detailed outline may be afforded, I have grouped them under principal systems. This grouping

may seem arbitrary at times but it has the advantage of brevity and also I believe of clarity.

The exact nature of the substances causing the acidosis in uremia and prostatism is not stated. It would be beyond the scope of the present paper to enter into a discussion of these. Furthermore, in certain cases of

TABLE 2—*Metabolic Disturbances*

Disease or Condition	Stimulus	Type of Breathing	Treatment
Exercise	Carbon dioxide excess	Full and deep	Physical training
Diabetes	Ketosis (acetoacids)	Full and deep	Insulin and carbohydrates
Nephritis, uremia	Acidosis	Full and deep (Cheyne Stokes)	Treat nephritis
Prostatism	Acidosis	Full and deep	Relieve urinary retention
Hyperthyroidism	Carbon dioxide excess, sympathetic ?	Full and deep	Iodine or operation
Insulin shock	Low blood pressure, sinus carotidæ ?	Rapid and shallow	Carbohydrates

diabetes, terminal nephritis and prostatism, circulatory complications either as associated lesions or due to age may exert a powerful influence in producing dyspnea when the acidosis may be mild or absent. The more

TABLE 3—*Pulmonary Diseases*

Diseases or Condition	Stimulus	Type of Breathing	Treatment
Laryngeal or bronchial obstruction	Carbon dioxide retention, oxygen want	Forceful inspiration and ineffective expiration	Removal of obstruction
Asthma	Carbon dioxide retention, oxygen want, later loss of elasticity	Forceful inspiration and ineffective expiration	Epinephrine, epedrine and desensitization
Emphysema	Loss of elasticity and sensitivity of Hering-Breuer reflex	Forceful inspiration and ineffective expiration	Abdominal binder to support diaphragm in expiration
Pneumonoconiosis	Loss of elasticity and sensitivity of Hering-Breuer reflex ?	Forceful inspiration and ineffective expiration	Abdominal binder to support diaphragm in expiration
Lobar pneumonia	Pulmonary congestion and sensitivity of Hering-Breuer reflex	Rapid and shallow	Treat pneumonia specifically, continuous oxygen therapy if there is cyanosis; artificial pneumothorax ?
Massive collapse	Pulmonary congestion and sensitivity of Hering-Breuer reflex	Rapid and shallow	Artificial pneumothorax; carbon dioxide therapy
Infarction	Pulmonary congestion, sensitivity of Hering-Breuer reflex and low blood pressure (see shock)	Rapid and shallow	Treatment of the shock
Bronchopneumonia	Pulmonary congestion, sensitivity of Hering-Breuer reflex, low blood pressure, carbon dioxide retention, oxygen want	Rapid and shallow	Continuous oxygen therapy if cyanosis is present

one tries to analyze and reduce to simple statements the pathologic physiology of dyspnea, the more one encounters lesions in which there is a summation of the possible causes that may operate in varying degrees in different cases.

In obstruction, asthma, emphysema and probably pneumonoconiosis, the functional disturbances of respiration are chiefly inherent in the difficulties of expira-

tion. Inspiration is accomplished by the action of a strong muscular mechanism. Expiration is ordinarily a passive act furthered by the negative intrapleural pressure, but in those conditions due to the loss of elasticity it is transformed into an active function producing a positive intrapleural pressure, which in time undoubtedly will be harmful to the return flow of the venous blood.

Furthermore, in these conditions the lungs are almost in a state of full expansion when inspiration is initiated, therefore a greater physical effort is demanded to expand the inelastic lung still farther. It has been found that the functional residual air in these conditions is greatly increased, while the total capacity is unchanged or decreased. Therefore, instead of the ratio of the functional residual air to the total capacity

TABLE 4—*Circulatory Diseases*

Diseases or Condition	Stimulus	Type of Breathing	Treatment
Cardiac Mitral disease	Pulmonary engorgement, sensitivity of Hering-Breuer reflex	Rapid and shallow	Treatment of cardiac function and pulmonary engorgement; abdominal binder
Congestive cardiac failure	Pulmonary engorgement, sensitivity of Hering-Breuer reflex, central anoxemia ? carbon dioxide retention	Rapid and shallow	Treatment of cardiac function and pulmonary engorgement; abdominal binder, oxygen therapy if cyanosis relieved, venesection for increased venous pressure
Myxedema	Pulmonary engorgement, sensitivity of Hering-Breuer reflex	Rapid and shallow	Treatment of hypothyroidism with caution
Coronary lesions	Chronic: pulmonary engorgement, sensitivity of Hering-Breuer reflex. Acute: shock, low blood pressure (see shock)	Rapid and shallow Rapid and shallow	Oxygen therapy if cyanosis relieved, venesection for increased venous pressure; treatment of shock
Peripheral Hypertension	Pulmonary engorgement, later central anoxemia ?	Rapid, with tendency to Cheyne Stokes	Treatment of pulmonary engorgement as above
Renal hypertension	Pulmonary engorgement, later central anoxemia ?	Rapid, with tendency to Cheyne Stokes	Treatment of pulmonary engorgement as above
Arteriosclerosis without hypertension	Pulmonary engorgement, later central anoxemia ?	Rapid, with tendency to Cheyne Stokes	Treatment of pulmonary engorgement as above
Anemias	Oxygen want ?; muscular weakness ?; congestive failure ?	Rapid and shallow	Treatment of anemia

being about 0.4 (4 to 10), it is between 0.7 and 0.8 (7 or 8 to 10). This would have but little effect in the normally elastic lung but in these cases in which the elasticity is so greatly reduced and proper ventilation grossly impaired, it contributes to the difficulty of gaseous exchange and thus accentuates the dyspnea.

The interaction of different causes of dyspnea in disturbances of circulation makes the untangling of the different factors somewhat difficult to express in general terms. The degree of each functional disturbance varies from case to case and from time to time in the same case. There are in these cases four possible factors: pulmonary engorgement leading to hypersensitivity of the Hering-Breuer reflex; arterial anoxemia due to faulty pulmonary aeration; central anoxemia due to arterial anoxemia or due to slowing of the general blood flow or to a local arterial lesion as in advanced

stages of essential hypertension, renal hypertension or arteriosclerosis without hypertension. Absolute proof is wanting that there is a reduction in the oxygen consumption of the brain in severe cases with dyspnea and orthopnea; in fact, all evidence suggests the contrary but it also strongly indicates that the higher centers are enduring a lower partial pressure of oxygen. This would be equally so whether there was an arterial anoxemia, a general slowing of the blood flow or local slowing due to arterial disease. Increasing venous pressure would tend to aggravate these conditions and there seems little doubt that orthopnea is an attempt to compensate for this. The dyspnea of anemia is probably also due to a combination of several factors, of which oxygen want due to the reduced amount of hemoglobin to carry oxygen is probably the most important, as it would not only affect the respiratory center itself but lead to impairment of myocardial as well as respiratory efficiency.

Among the nervous disorders are grouped a miscellaneous collection of conditions, some of which may

TABLE 5.—*Nervous Disorders*

Diseases or Condition	Stimulus	Type of Breathing	Treatment
Cerebral Traumatic (edema or hemorrhage)	Stimulus to respiratory center	Deep and slow; deep and rapid; periclude	Relief of Intra-cranial tension
Tumors	Stimulus to respiratory center	Deep and slow; deep and rapid; periclude	Relief of Intra-cranial tension
Postencephalitic	Stimulus to respiratory center ?; psychic ?	Paroxysmal	? (Treatment of psychosis if present)
Psychic	Anxiety neurosis	Rapid, shallow and irregular	Treatment of primary cause
	Conversion hysteria	Rapid, deep and irregular	Treatment of primary cause
Shock	Low blood pressure; sinus caroticus ?	Rapid and shallow	Treatment of primary cause
Respiratory paralysis			
(a) Nerve	Mechanical	Rapid and shallow	Treatment of primary cause
(b) Muscular			
Abdominal distention	Mechanical	Rapid and shallow	Treatment of primary cause
Thoracic pain	Reflex inhibition of movement	Rapid and shallow	Treatment of primary cause

not rightly belong there but for the sake of conciseness are included. Probably the most interesting and the least recognized are those due to psychic causes. They are much commoner than is usually appreciated and often lead to mistakes in diagnosis. Their outstanding character is the irregularity of the respirations both in depth and in rate and the tendency to paroxysmal outbursts.

A few words must here be given to the dyspnea that occurs in various conditions of visceral shock such as occurs with coronary and pulmonary infarction, renal and gallbladder colic and Dietl's crises. The dyspnea in all these conditions appears to be intimately associated with the fall of blood pressure, and there is much to suggest that the sinus caroticus is in the same manner responsible for the respiratory disturbance.

I have attempted in the short time at my disposal to give a bird's eye view of this rather large subject. I have tried to leave out nothing of importance and at the same time not to baffle with too much detail the practical importance of dyspnea or consciousness of respiration. There are many knots still to be unraveled and, as it is the most important of the early symptoms of systemic disease, continued endeavors will be well rewarded.

REPORT OF THE COMMITTEE ON DEFINITION OF BLINDNESS

Your committee was appointed in response to a request from the Department of Public Welfare of the State of Illinois for a definition of blindness, in scientific terms, that might be made statutory. Such a definition should be brief, definite and comprehensive. It cannot include and settle all the problems that grow out of blindness. It cannot radically alter the meaning generally attached to a word that has been widely used by many people over a long period of time. It can be made practical only by recognizing that blindness varies in degree, and the resulting disabilities must be broadly implied by the use of auxiliary words to indicate conditions that can be generally recognized. Your committee is indebted to the Report on Definition of Blindness compiled by the Bureau of Legal Medicine and Legislation of the American Medical Association in October 1933.

To give effect to the report of your committee it must be considered and discussed in the Section on Ophthalmology, and, when agreed to by the section, the endorsed definitions must be transmitted to the House of Delegates for its approval. The rules of the House of Delegates prevent the introduction of new business on the last day of the annual meeting.

The definition of a word is fixed by usage. Blindness has been so widely used by people who had no exact knowledge of what they meant by it that it cannot be restricted to a sharply defined impairment to vision.

The makers of dictionaries, from studies of the use of words, have come to general agreement in their definitions of blindness. The Oxford Dictionary gives: blind, "destitute of the sense of sight"; blindness, "blind condition, want of sight." The Standard Dictionary, "the state or condition of being blind." The Century, blindness, "want of sight." The International, "state or quality of being blind." Gould's Medical Dictionary, "deprived of sight, want of vision."

The general disposition to help the blind requires definitions that can be applied by legislation, appealed to in the courts, and serve for purposes of justice and in decisions as to insurance and workmen's compensation. Definitions agreed on and understood by ophthalmologists are useful, although they need to be embodied in special legislative acts designed to help the blind. In the Blind Persons Act of Great Britain the definition used is "One so blind as to be unable to perform any work for which eyesight is essential." For the "Education Act" the blind are those "too blind to be able to read the ordinary school books."

The public needs to know that poor vision of different kinds and degrees is worthy of legal recognition. In a broad way, visual acuity of less than one tenth may be recognized as economic blindness. Equal disability from restriction of the visual field may demand the same recognition. There is a series of disabilities for seeing that extends from full vision to complete blindness. No definition can draw a rigid line between vision and blindness that shall apply to all persons and all kinds of visual impairment. It will clear away some confusion to insist that questions of the existence and degree of blindness must be passed on in each particular case by some one accustomed to study and treat the diseases of the eye.

We recommend the adoption of the following definitions for grades of blindness:

Total blindness is inability to perceive light; lack of light perception. The person who is totally blind cannot tell whether strong light falls on his eyes or whether they are in total darkness. Light perception is vision such as one has when the eyelids are closed.

Economic blindness is absence of ability to do any kind of work, industrial or otherwise, for which sight is essential. In general, visual acuity of less than one tenth has been classed

as economic blindness, meaning that objects can be recognized only when brought within one tenth of the distance at which they can be recognized with standard vision. Such vision in the better eye when corrected with the best possible glass would be recorded as less than 0.1 or 6/60 or 20/200, or as an equally disabling loss of the visual field.

Vocational Blindness is impairment of the vision that makes it impossible for a person to do work at which he had previously earned a living. He may still have vision enough to do some other kind of work that may yield him an adequate support. Such vision in the better eye with the best possible correcting glass may vary from one tenth to one third; that is, from 0.1 or 6/60 or 20/200 to 0.3 or 6/18 or 20/60, depending on the vision required for the occupation previously followed.

Educational blindness is such loss of sight as makes it difficult, dangerous or impossible to learn by the methods that are commonly used in schools. This necessitates two types of schooling for such individuals; namely, sight saving classes and schools for the blind. The requirement for admission to sight saving classes is vision in the better eye with the best possible correcting glass of less than 20/70 and more than 20/200.

The requirement for admission to the school for the blind is vision in the better eye, with the best possible correcting glass, of 0.1 or 6/60 or 20/200 or less.

Respectfully submitted.

EDWARD JACKSON, Chairman.
A. C. SNELL.
HARRY S. GRADLE.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—ED.

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R Trinitrophenol 10.00 Gm.
Alcohol 100.00 cc.
Sterile water to make 1,000.00 cc.

M. Label: Apply on compress to burns of limited extent. This solution may be kept on hand.

application. A change of dressing is indicated by the appearance of a discharge on the outer covering.

(b) In using a trinitrophenol (picric acid) compress (prescription 1), one should soak a sterile gauze pad

in the solution, cover by a dry gauze pad, and bandage lightly, distended blisters having previously been punctured in an aseptic manner. Rubber gloves should be worn to prevent staining of the hands. In superficial burns the original dressing may be left on until complete healing has taken place. A dressing may be changed as often as required by a discharge commencing to appear at the surface of the dressing, maybe every two or three days. If the previous dressing sticks, it may be softened by moistening with the same solution. This dressing must not be used on extensive burns because of the danger of poisoning.

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(c) Gentian violet jelly (prescription 2) is claimed to be superior to any of the foregoing because it is antiseptic, analgesic and nontoxic and produces a thin, light eschar, qualities not presented thus combined in any of the others.

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When, by reason of improper previous treatment, infection has occurred with excessive and offensive discharge, foul sloughs and inflammation spreading into surrounding tissue, cleansing must be done by irrigation with Surgical Solution of Chlorinated Soda and loose sloughs must be removed with forceps and scissors. Such treatment should be repeated daily, and during the intervals hot boric acid dressings, large enough to extend way beyond the limit of redness, should be applied so as to provoke reactionary hyperemia in surrounding tissue to check the spread of the infection. These dressings should be changed at first often enough to keep them hot; i. e., at least every two hours day and night. As soon as spreading of infection has been checked, they need not be applied as hot and should be changed merely often enough to keep them moist; i. e., every four hours.

When the infection has been "cleaned up," the raw surface is treated in accordance with the principles of ulcer therapy (q. v.).

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Extensive burns threaten life in proportion to the surface area involved.

1. Shock (q. v.) is treated by absolute recumbency, warmth, morphine sulphate 0.015 Gm. hypodermic injection, pushing of fluids by all available channels, aiming at from 4 to 8 liters in the twenty-four hours, antagonizing hypochloridation by Physiologic Solution

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involvement is very extensive, débridement being employed to remove all undoubtedly dead tissue.

3. A "cradle tent" is placed over the patient, who is to lie in it, without clothing or dressing, on a sterile sheet with the most affected body surface uppermost. Enough incandescent electric lights (maybe four or six) are permitted to burn within the "tent" to maintain a temperature of about 85 F.

4. Coagulation of dead surface cells should be undertaken as promptly as possible, for every hour's delay endangers life.

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M. (Must be freshly prepared.)

Label: Spray with atomizer over affected surface every fifteen to thirty minutes.

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(b) Gentian violet in 1 per cent solution sprayed on the burned area every two hours is claimed to form a tough but more elastic eschar, which being antiseptic inhibits germ growth, which is likely to destroy the small epithelial islands that may have been spared by the burn and that are responsible for the septic temperature so prone to develop after the first few days under the tannic acid treatment. After a good eschar is formed, the area is sprayed every four to six hours during the day. Blebs are opened and the unstained tissue thus exposed is sprayed with the dye solution. The eschar is examined daily for softened areas, which must be removed by picking up with forceps, after which the surface is again sprayed with the dye. The eschar, which acts as a scaffolding to the healing process, curls up at the periphery, whereupon it should be trimmed away to prevent the formation of pockets, which might become infected. By the third week the eschar should be removed by means of warm compresses of sterile physiologic solution of sodium chloride and it will be ready for the next step:

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
H. A. CARTER, Secretary.

FACTORS INFLUENCING THE CHOICE OF A SOURCE OF RADIANT ENERGY

(ULTRAVIOLET, LUMINOUS AND INFRA-RED)

HENRY LAURENS, PH.D.
NEW ORLEANS

The number of diseases or of abnormal conditions really or primarily benefited by sunlight is small in comparison with the enormous number for which such claims have been made by manufacturers and clinicians. A recent report of the Council on Physical Therapy of the American Medical Association¹ bears testimony to this.

No one now doubts that sunlight represents one of the benefits of an outdoor life, that it is one of the things that make for physical and mental well being, that in extrapulmonary tuberculosis it confers immeasurable benefit, that in rickets certain wavelengths are specific; but there is still a strong tendency to exaggerate the vital importance of sunlight (natural and artificial) and to make extravagant claims for it as a therapeutic force. Certain diseases and disabilities are partly due to deficient radiation of various kinds, and doubtless the health of the community may be improved by providing more radiation where sunlight does not reach the small minimum required for health; but sunlight is only one of the many environmental factors that affect vitality.

On the face of it, it would seem a simple matter to select an artificial source of radiant energy (ultraviolet, luminous and infra-red energy). This is true, however, only for experienced physical therapists, and particularly those who have made some special study of this branch or subdivision of physical therapy. The average physician, on the other hand, knows little or nothing about the characteristics of natural sunlight, and less about the "artificial sunshine" emitted by lamps. A perusal of the literature put out by many manufacturers only confuses him, if he reads it literally, with its claim of simulating the sunlight of the High Alps or of some other geographic area. There is, of course, no source of radiant energy that does this, although it is closely approximated by a carbon arc, consuming 25 amperes or more, burning specific carbons, such as the "Sunshine" carbons.

The energy emitted by various artificial sources varies in intensity and in spectral distribution. The intensity of solar radiation (sunlight) on the earth's surface varies considerably, chiefly on account of location, season and time of day. The sun itself is a variable star, the total amount of radiation that it emits varying by as much as 5 per cent. Furthermore, the amount of radiation that reaches the earth's surface is greatly dependent on changes in atmospheric transparency occasioned, for example, by smoke, water vapor and dust.

From the Laboratory of Physiology, Tulane University of Louisiana School of Medicine.

1. Regulations to Govern Advertising of Ultraviolet Generators to the Medical Profession Only, J. A. M. A. 102:841 (March 17) 1934.

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The use of radiant energy (natural or artificial sunshine) for therapeutic or scientific purposes must be built on a strong foundation of physics, and users of lamps, since they are essentially trying to imitate sunlight and its effects, must know something about the physics of their sunlight. They certainly should know how much, or approximately how much, energy (expressed in ergs, gram calories or microwatts) the patient is getting, and the distribution of this energy; that is to say the percentage of the total energy that is ultraviolet, luminous and infra-red.

The radiations of artificial sources represent but approximations to sunlight and no two sources are alike in respect to the distribution of the energy they emit. This is the physical reason why different sources cannot produce the same physiologic or therapeutic action. Every one using artificial sunlight should realize this and not be misled into believing that the energy emitted by this, that or the other lamp represents "artificial sunlight" when in many cases it is as far from that as it can possibly be.

The variations in the intensity of the energy actually emitted by the sun are the result of either long period fluctuations, due to changes in solar activity, or of short period fluctuations, due to obscurations in the solar atmosphere which, rotating with the sun, produce depressions whenever they point toward the earth. The variations in total solar energy influence particularly the ultraviolet. For instance, with a range of only 2.3 per cent in total energy the ultraviolet at 3,500 angstroms² shows a variation of about 30 per cent and much more at and shorter than 3,100 angstroms—the antirachitic region.

At the surface of the earth with the sun moderately high and a total radiation intensity of 1 gram calory per square centimeter per minute (70,000 microwatts per square centimeter) and 1.5 gram calories per square centimeter per minute (105,000 microwatts per square centimeter), the percentage of the ultraviolet is between 1 and 5, the luminous between 41 and 45, and the infra-red between 52 and 60. When the sun is lower (i. e., farther from the zenith) the ultraviolet is decreased and the infra-red increased. At high altitudes above sea level the percentage of ultraviolet increases at the expense of the infra-red. The total energy, of course, is also greater than at sea level. Only about 75 per cent of the sun's energy penetrates as low as 1,800 meters and only 50 per cent to sea level, and this on the clearest days and when the sun is high. The seasonal variation in the shortest ultraviolet wavelength getting through to the earth's surface at midday is about 120 angstroms (from 2,970 to 3,090 angstroms) and the diurnal variation ranges between 60 angstroms in winter (from 3,060 to 3,120 angstroms) and 240 angstroms in summer (from 2,960 to 3,200 angstroms). Summer midday sun is only 10 per cent richer in the infra-red than is winter sun, in the red 45 per cent, in the green 90 per cent, in the blue-violet 250 per cent, and in the ultraviolet 1,000 per cent. Spring sunlight is the strongest and richest in infra-red, the autumn sun, by comparison, being richer in ultraviolet, the maximum content of which is reached in the summer.

The shortest wavelength that gets through the atmosphere to the earth depends on solar altitude; e. g., at Davos, Switzerland (1,560 meters), with the sun 30 degrees above the horizon the shortest wavelength

recorded was 3,043 angstroms, while at 60 degrees it was 2,979 angstroms.

Solar radiation is often described as extending from 3,000 angstroms to 3 microns.³ On the long waved side there is a small amount of radiation as long as 5 microns, and traces beyond that, but less than 1 per cent is longer than 3 microns. And on the short-waved side it is only on days of exceptional clearness and purity of the atmosphere that any wavelengths shorter than 3,000 angstroms penetrate to sea level. In New Orleans, for instance, on only one day since the beginning of 1928 has the wavelength 2,990 angstroms been recorded. During the winter months the spectrum rarely extends below 3,060 angstroms, except on very clear days. From June 1 to Dec. 31, 1929, only three days showed limits shorter than 3,040 angstroms; only five days in 1930 and only twelve days from January to August 1931. Air pollution, clouds and haze decrease the extent of the spectrum, so that even in August the spectrum does not often extend below 3,100 angstroms. Measurements made in Chicago showed that there was comparatively little ultraviolet radiation of wavelengths shorter than 3,030 angstroms from December to March. On the other hand, it has been demonstrated in many cities (New York, Boston, Toronto, New Brunswick, Ithaca, New Orleans) that winter sunshine is antirachitic; that is to say, it contains a sufficiently large proportion of wavelengths shorter than 3,130 angstroms to cure and prevent rickets.

It is of interest to remember that in all there are six principal causes of variation in solar radiation intensities at the surface of the earth: (1) variations in the amount of energy radiated from the sun, (2) variations in the earth's solar distance, (3) amount of water vapor in the atmosphere, (4) dustiness or haziness of the atmosphere, (5) zenith distance of the sun, and (6) altitude above sea level.

The hemispherical dome of the sky may be compared to the sun as a source of radiant energy. Skylight is nothing more than sunlight scattered by the atmosphere. The scattering is inversely proportional, in a perfectly dry dust-free atmosphere, to the fourth power of the wavelength, and therefore ultraviolet is relatively much more increased in scattered daylight than in direct sunlight.

On a clear summer day at places up to about 1,560 meters above sea level the total diffuse radiant energy from the sky is between 12.5 and 33⅓ per cent of the total, and at midday the radiation received on a horizontal surface from the sky averages 25 per cent of that received from the sun. At Davos, Switzerland (1,560 meters), on a perfectly clear day the sun accounts for 88.5 per cent and the sky for 11.5 per cent of the luminous rays incident on a horizontal surface.

At New Orleans at noon on clear days the sky contributes between 7 and 17 per cent of the total (sun and sky) radiation. The presence of clouds increases considerably the percentage of the total contributed by the sky; e. g., on April 24, 1931, sky radiation at noon composed 31 per cent of the total (sun and sky) radiation.

The spectrum of the ultraviolet radiation from the sky ends approximately just where that of the sun does. At Davos, Switzerland, the values for the ultraviolet shorter than 3,660 angstroms received directly from the sun are hardly 90 per cent of those from the sky alone. At higher altitudes above sea level this does not hold

2. The angstrom unit of wavelength is one ten-millionth millimeter.

3. The micron is one one-thousandth millimeter.

for solar altitudes above 40 degrees, the sun being then a more powerful source of ultraviolet than is the sky.

It is strange, in the light of such facts, to consider how much importance is attached to exposure to direct sunshine. Of course, when such exposure is made, radiation is being received from both the sun and the sky; but, so far as the ultraviolet is concerned, the sky alone is a more potent source than is the sun alone.

According to careful measurements the total amount of ultraviolet radiation of wavelengths less than 3,100 angstroms in sunlight is extremely small. Coblentz and Stair in 1929 concluded that even on the clearest days at the noon hour in summer such energy at the most amounted to only 0.3 per cent of the total incident radiation (or about 0.004 gram calory, or 280 microwatts), and more likely only one tenth of this value at sea level stations. The so-called average value, which would be much lower, depends on the condition of the sun, the altitude and latitude of the station, and the almost infinite variety of air pollution and weather conditions that are encountered at different seasons of the year and during different years. In New Orleans, Laurens and Mayerson find that the maximum ultraviolet of wavelengths shorter than 3,100 angstroms on clear days approximates 0.001 gram calory per square centimeter per minute (70 microwatts).

Greider and Downes found the percentage of the total radiation between 2,900 and 3,100 angstroms at the Springfield Lake Sanatorium, near Akron, Ohio, and at Cragmor Sanatorium, near Colorado Springs, Colorado, to be of the order of 0.01 and 0.02 and on Mount Wilson (1,750 meters) about 0.1. At Davos (1,650 meters) the ultraviolet between 2,900 and 3,100 angstroms is 0.4 per cent of the total ultraviolet and at the two sanatoriums mentioned by Greider and Downes it is between 0.6 and 0.7 per cent. Pettit deduced that on Mount Wilson the intensity of the ultraviolet component of wavelengths 2,900 to 3,100 angstroms in midsummer sunlight amounts to about 70 microwatts per square centimeter (0.001 gram calory per square centimeter per minute). This amounts to 90 microwatts per square centimeter (0.00129 gram calory per square centimeter per minute) for wavelengths 2,900 to 3,130 angstroms. Coblentz and his co-workers now believe that the average amount of ultraviolet solar radiation of wavelengths shorter than 3,130 angstroms for mid-latitude sea level stations during the clearest weather during midday in midsummer is about 90 microwatts (0.00129 gram calory), decreasing to about 20 microwatts (0.000285 gram calory) on the clearest days in midwinter.

CHOICE OF SOURCE

In many places the intensity of sunlight varies too much or is too weak for too great a proportion of the time to permit of its being a practical source of radiant energy. In the choice and use of an artificial source, there are two basic considerations: (1) the physical nature (quantity and quality) of the energy emitted by the lamp; (2) the specific part or parts of the spectrum of sunlight found most efficient in the particular condition it is desired to alleviate or aid and which should thus be sought in sufficient quantity in the artificial radiation.

There is a general, almost universal, but wrong, tendency to limit the biologic effects of radiant energy and their therapeutic action to the ultraviolet and particularly to the region between 2,900 and 3,130 angstroms. That radiation is solely or mainly active because

of the ultraviolet fraction has been unequivocally demonstrated in only a few instances (rickets and infantile tetany). There is considerable evidence on the other hand that the luminous and infra-red rays, even if not specific in their action, aid the ultraviolet rays.

At the Finsen Light Institute in Copenhagen it is believed that the sun is unquestionably the best of all sources of radiant energy, where and when it is available, and that the best artificial source is to be decided on the basis of the similarity of its spectrum to that of the sun or as to its content of those rays which typify the therapeutic action of sunlight.

On the basis of the quality of ultraviolet wavelengths and of the results obtained at the seashore, at sea level inland and in the mountains, Strandberg of the Finsen Institute believes that energy of wavelengths 3,130 angstroms and longer is the region of influence in the treatment of extrapulmonary tuberculosis. Therefore, if one is forced to use artificial energy instead of sunlight, one should choose a type of lamp which, like the sun, exhibits a continuous spectrum and possesses the greatest number of blue, violet and longer, rather than shorter, ultraviolet rays, as well as luminous and near infra-red rays. Phelps at New Haven agrees with Strandberg, but his method of demonstration did not exclude the presence and action of wavelengths shorter than 3,130 angstroms.

Bernhard, at St. Moritz, in the treatment of wounds of all sorts, uses sunlight as such, without concentrating the ultraviolet or filtering out the infra-red. He firmly believes that the benefits observed are due to the penetrating wavelengths (between the green-yellow and shorter infra-red). This is borne out by the poor results on wound healing exerted by "ultraviolet rays" emitted by a mercury vapor arc in quartz.

It has been abundantly demonstrated that the luminous and infra-red rays emitted by tungsten lamps or parlor or bathroom electric heaters are of value in conditions requiring deep action, as in the relief of pain in sprains, fractures, pulled tendons, bruised muscles, and so on, rather than the ultraviolet.

It is clear that under different conditions all parts of the radiant energy spectrum will yield results, if particular conditions demand the wavelength a particular source emits strongly. But clinicians interested in this branch of physical therapy should know what they are doing, what wavelengths they are using, the total intensity of the energy emitted, and its percentage spectral distribution. This they should do in preference to describing as "ultraviolet" the total radiation from a lamp, of inconsiderately ascribing to the "ultraviolet" all the effects produced, and of speaking of all sources of radiant energy as "ultraviolet" sources or generators, when they emit at the same time much greater quantities of luminous and infra-red rays.

For therapeutic purposes the sun, the mercury vapor arc in quartz and the flaming carbon arc burning cored carbons filled with mixtures of carbon dust and metals have been the only ones of practical importance. The "Sunlight" lamps or "Sunlamps" developed by the General Electric Company are a combination of a mercury vapor arc in special ultraviolet transmitting glass bulbs (Corex D) and a tungsten arc. At the bottom of the glass bulb is a little pool of mercury. When the lamp is turned on, a V-shaped tungsten filament glows and the heat vaporizes the mercury so that an arc forms between two tungsten electrodes. Eighty-one and eight-tenths per cent of the energy comes from the electrodes,

1.7 per cent from the filament and the remainder from the arc.

The General Electric Mazda Sunlight Lamp S-2 is smaller and less expensive than the S-1. Its ultraviolet output is also somewhat less, but by exposing the skin at a shorter distance from the lamp (24 inches) the biologic effectiveness equals that of the type S-1 lamp at 30 inches.

The mercury vapor lamp used to deteriorate very rapidly, but its length of useful life has been markedly increased in recent years, so that the physician may expect a useful life of between 2,500 and 3,000 hours. The deterioration, when the lamp is properly treated, is due to changes in the quartz, making it less transparent. When the lamp is improperly operated and cleaned, the deterioration is more rapid and particularly affects the emission of the ultraviolet for which, so far as the physician is concerned, the mercury vapor lamp in quartz has been particularly developed, the ultraviolet component representing between 9 and 28 per cent of the total energy of all wavelengths emitted by the lamp.

Coblentz, Dorcas and Hughes, several years ago, made a comparison of the distribution of the radiation

a distribution of 4 per cent ultraviolet, 9 per cent luminous and 87 per cent infra-red.

One of the National Carbon Company's Professional Model A-1 carbon arc lamps has been in use in my laboratory for about eighteen months. With 25 amperes flowing through the arc, the total energy emitted is 0.320 gram calory per square centimeter per minute incident at a meter (22,400 microwatts), with a distribution of 6 per cent ultraviolet, 50 per cent luminous and 44 per cent infra-red. With a Corex D screen, which eliminates by absorption the short ultraviolet and the long infra-red rays not found in sunlight, the total energy emitted is 0.287 gram calory (20,090 microwatts), and its distribution 5 per cent ultraviolet, 62 per cent luminous and 33 per cent infra-red.

When therapeutic "C" carbons are burned in this lamp the total energy emitted has a value of 0.266 gram calory (18,620 microwatts), with a distribution of 9 per cent ultraviolet, 24 per cent luminous and 67 per cent infra-red.

The point of these details is to emphasize the close similarity between the energy emitted by a carbon arc lamp, when operated on an appropriate amperage and burning "Sunshine" carbons, to sunlight. Compare the values for a Hanovia air cooled mercury lamp with a distribution (as given by the company) of 28 per cent in the ultraviolet, 20 per cent in the luminous and 52 per cent in the infra-red; and of an old Cooper Hewitt air-cooled quartz mercury lamp in my laboratory with a total energy output, when operated at between 4 and 5 amperes, of between 0.0562 and 0.0619 gram calory per square centimeter per minute incident at a meter and with a distribution of 13 per cent ultraviolet, 7 per cent luminous and 80 per cent infra-red.

In connection with the Sunlight Lamp of the General Electric Company, Taylor gives the following values for the distribution of the energy in terms of percentage of total from shortest wavelength to 7,400 angstroms: from shortest to 4,000 angstroms = 5.05; from 4,000 to 7,400 angstroms = 7.80, the remainder, or 87.15 per cent, being infra-red.

These lamps have been shown to be capable of curing rickets when weekly erythema doses were given. They were developed, however, for "dual lighting" for illumination and health. This purpose does not seem to have been realized and in my opinion never will be.

If penetrating rays are desired, there is no use to look further than a 500 watt gas-filled tungsten lamp. The total energy emitted approximates that of sunlight. The shorter wavelengths can be screened out by a sheet of red glass, and the longer by a water cell or a sheet of Corning G-392-H (heat absorbing) glass. Such a source has found usefulness in conditions in which deep action has been desired, as in sprains, fractures or bruised muscle. Similar results are obtainable with the carbon arc burning "Sunshine" carbons and using screens to cut out the ultraviolet and longer infra-red, which would produce surface action and thus limit the time during which application could be made, owing to ultraviolet erythema and the prickling, burning pain of the longer infra-red rays.

The ordinary quartz mercury arc is of the low voltage type, in which the incandescent column of mercury carries a relatively high current, amounting to 4 or more amperes, or from 400 to 600 watts in the burner. The temperature and vapor pressure are relatively high and the ultraviolet radiation is contained principally in the intense emission lines at 2,540, 2,800, 2,970, 3,020, 3,130, 3,340 and 3,650 angstroms.

*Distribution of Radiation of Various Lamps
Compared with Sun*

	1,700 3,700A	3,700 6,000A	6,000 14,000A	14,000 42,000A	42,000 120,000A
Sun, Washington					
5/23/28 11 12 a m	4.8	34.5	26.9	21.4	0.4
6/28/28 11 a m	5.0	35.3	30.5	19.7	0.5
Flagstaff					
9/30/26 1 p m	5.3	34.6	37.7	22.0	0.6
10/ 4/26 11 30 a m	5.0	35.0	36.0	22.6	0.6
10/16/26 1 p m	5.0	35.4	36.3	22.7	0.6
Quartz mercury arc 78 volts, 4 amperes, direct current	8.5	9.2	3.2	20.5	58.6
White flame C arc 127 mm carbons					
38 volts, 30 amperes, alternating current	4.1	18.8	19.5	39.2	18.4
58 volts, 29 amperes, direct current	4.0	17.0	21.0	33.0	25.0
Blue flame C arc 127 mm carbons					
38 volts, 30 amperes, alternating current	5.4	6.7	11.9	52.1	24.0
50 volts, 29.2 amperes, direct current	4.4	7.6	13.4	52.6	21.8

of various lamps and that of the sun. The accompanying table illustrates their results.

A carbon arc lamp ("Pan-Ray" of the Atlas Electric Devices Company of Chicago), which has been in use for eight years in my laboratory, emitted when new (1926) about 1 gram calory per square centimeter per minute incident at 1 meter (70,000 microwatts). In 1928 this had diminished to 0.797 (55,790 microwatts), in 1929 to 0.747 (52,290 microwatts), in 1930 to 0.721 (50,470 microwatts), in 1931 to 0.571 (39,970 microwatts), in 1932 to 0.449 (31,430 microwatts), and in 1933 to 0.447 (31,290 microwatts). This diminution in total intensity is due to deterioration of the reflector surfaces. These values are for the "Sunshine" carbon (one-half by 12 inches) when the lamp is operated at between 25 and 28 amperes. The distribution in 1929 was 6 per cent ultraviolet (shorter than 4,000 angstroms), 31 per cent luminous (4,000 angstroms to 1.4 microns) and 63 per cent infra-red (longer than 1.4 microns); in 1933, 4 per cent ultraviolet, 35 per cent luminous and 61 per cent infra-red.

When this lamp is burning the therapeutic "C" carbons, the total energy emitted is 0.441 gram calory per square centimeter per minute (30,870 microwatts), with

The "cold quartz" mercury vapor lamp has a low vapor pressure, a low amperage (0.015) and a high potential (5,000 volts, open circuit) glow discharge. There is no great rise in the temperature of the burner, because the power consumed is small (about 75 watts in the primary of the transformer, and only about 8 to 10 watts in the lamp). About 95 per cent of the radiation of wavelengths less than and including 3,130 angstroms is emitted in the resonance line at 2,537 angstroms. Coblenz reports that in the emitted energy from a "cold quartz" official applicator the 2,540 angstrom line had an intrinsic intensity of 215 microwatts per square centimeter (0.00307 gram calory per square centimeter per minute) at the surface of the applicator; further, that the relative intensities of the short wavelength ultraviolet lines at 3,130, 2,970 and 2,540 angstroms were 45, 14 and 865. The total radiation of wavelengths less than and including the line at 3,130 angstroms at a distance of 25 cm. from the lamp was 186 microwatts per square centimeter (0.002657 gram calory per square centimeter per minute).

The total energy of one of the official applicator type lamps measured in my laboratory by a thermopile method was found to be 0.0018 gram calory per square centimeter per minute (126 microwatts per square centimeter) at a distance of 1 meter from the lamp, as compared with 0.0619 gram calory per square centimeter per minute (4,333 microwatts per square centimeter) for the old Cooper Hewitt high temperature lamp.

An important question is the minimum ultraviolet radiant flux (radiant power) that a source must emit in order to insure effective therapeutic action. The amount of ultraviolet radiation that can be applied to the body without producing a burn depends on the tolerance of the skin. This can be measured by the erythema produced, specifically a mild or "minimum perceptible erythema," or one that disappears in the course of twenty-four hours. The spectral erythemic reaction is produced only by ultraviolet rays of wavelengths shorter than about 3,150 angstroms with a maximum reaction at the wavelength 2,967 angstroms and a lesser maximum percentage in the region of 2,500 angstroms. The midday, midlatitude, sea level ultraviolet in summer sunshine with an intensity of from 80 to 90 microwatts per square centimeter produces a minimum perceptible erythema in from twenty to forty-five minutes, depending on the person. In winter the intensity is only about 20 microwatts (on the clearest days at noon) and the time is lengthened to from three to five hours. Forenoon and afternoon summer sunlight has an average intensity of 30 microwatts per square centimeter.

The intensity (radiant flux) from sources of heterogeneous ultraviolet radiation of wavelengths less than and including 3,130 angstroms, evaluated according to the spectral erythemic response curves, should not be less than the equivalent of 20 microwatts (200 ergs, 0.000285 gram calory) per square centimeter of homogeneous radiation of the wavelength of maximum erythrogenic effectiveness, which wavelength for practical purposes is taken at the emission line of mercury vapor 2,967 angstroms.

Although there is no close relationship between the spectral erythemic response and the therapeutic action of radiant energy, the erythemic reaction is taken as a criterion for judging the effectiveness of a lamp for three reasons: (a) It is practically the only physiologic

reaction that is established with a relatively high degree of accuracy; (b) in the case of exposure to intense sources of ultraviolet radiation, it is a simple and practical means of preventing severe burns, and (c) in the case of weak sources of ultraviolet radiation it is an efficient safeguard against possible fraudulent sale of lamps that are deficient in ultraviolet radiation. The ultraviolet radiant flux emitted by the present-day "professional models" of the various kinds of therapeutic lamps greatly exceeds this specific minimum value.

Some sort of standardization of measurement and of dosage is needed in order that results may be compared. The specification may be in terms of (a) radiant power in microwatts per square centimeter or (b) total energy in ergs per square centimeter. The total energy must be ascertained by a nonselective method that can be calibrated in absolute units (thermopile and galvanometer), as must the homogeneous erythemogenic radiation of wavelength 2,967 angstroms employed as a standard. Coblenz⁴ has worked out a suggestion for a unit based on the comparison between the erythema produced by measured amounts of heterogeneous ultraviolet radiation evaluated by a balanced thermocouple and filter radiometer. In this evaluation the erythema produced by a measured amount of homogeneous radiation of wavelength 2,967 angstroms is used as a standard. For the various sources of heterogeneous ultraviolet radiation of wavelengths less than and including 3,130 angstroms the erythemogenic equivalent of 20 microwatts (0.000285 gram calory) per square centimeter of homogeneous radiation of wavelength 2,967 angstroms in microwatts per square centimeter is approximately as follows: the sun at midday, midsummer, midlatitude, sea level, 91; the Mazda S-1 lamp, 80; the Mazda S-2 lamp, 93; the high temperature quartz mercury arc, 58; the so-called cold quartz mercury vapor lamp, 36; the carbon arc, from 45 to 90 (estimated, depending on electric current, kind of carbons and windows); and the Mazda CX tungsten filament lamp, 130 (estimated).

At the specified operating distance of from 2½ to 3 feet (75 to 90 cm. approximately) the ultraviolet radiant flux from these various artificial sources equals or exceeds the specified minimum values, in all cases excepting the 500 watt Mazda CX lamp. These lamps (Mazda tungsten filament) are not suitable sources of ultraviolet radiation for therapeutic purposes, although they may be used when penetration to subcutaneous regions is desired. At convenient operating distances (30 inches, or 80 cm.) they cause profuse sweating, which is an objectionable feature in general body irradiation. This can be avoided by using a source that emits a high intensity of the short wavelength ultraviolet radiation relative to the total emitted by the lamp and reflector. This permits operating the lamp at a sufficient distance from the patient and yet obtaining an effective dose of ultraviolet radiation.

It is becoming more and more evident that, aside from knowing whether a lamp emits sufficient ultraviolet energy to be of clinical value (specification of minimum intensity of ultraviolet radiation necessary to insure effective therapeutic action) and knowing about how long an irradiation with it will produce a desired degree of erythema, a dosage meter in practical heliotherapy has no value. The individual patient is the

4. Coblenz, W. W.: Ultraviolet Radiation Useful for Therapeutic Purposes, *J. A. M. A.* **98**: 1082 (March 26) 1932; **99**: 125 (July 9) 1932; Report to the Council on Physical Therapy on Heliotherapy Methods in Some European Sanatoriums, *ibid.* **100**: 410 (Feb. 11) 1933.

important consideration, how he reacts, favorably or unfavorably, and the dosage modified accordingly.

The Council on Physical Therapy accepts only the products of companies whose claims do not exceed the performance of the generators described. No lamp should be purchased either for office or for hospital use until it is ascertained whether or not it has been "Council accepted." The physician has a wide choice: carbon arcs, quartz mercury vapor lamps, both in office models and solarium or group models, "cold quartz" lamps, "sunlamps" and infra-red lamps, according to his needs and the physics of the energy emitted and the therapeutic indication.

It is not out of place to call attention again to the fact that the number of human ills and abnormalities for which radiant energy, as emitted by the sun, carbon arcs and quartz mercury vapor lamps, is specific or adjuvant is small, much smaller than the number for which claims are made by manufacturers, as well as by members of the medical profession.

Ultraviolet rays (shorter than 3,130 angstroms) are specific in the cure and prevention of rickets (infantile and adult) and infantile tetany. Such wavelengths are not always available in sunshine, and recourse to artificial sources is frequently necessary. The quartz mercury vapor lamp, the "Sunlamp" and the carbon arc (either "Sunshine" or "C" carbons) yield more than enough of these rays.

Cases of extrapulmonary tuberculosis (including lupus vulgaris) are markedly benefited by careful exposure to sunlight (Rollier at Leysin and Lausanne) or to the closest approximation to natural sunlight; viz., the energy emitted by a carbon arc lamp (Finsen Institute at Copenhagen). The benefits, I am convinced, are due not solely to ultraviolet rays, either those specific in rickets or somewhat longer, but as well to the light or luminous rays and to the heat or infra-red rays, which are so preponderantly present in natural sunshine and carbon arc radiation. The reports of the results with the quartz mercury vapor lamp in the treatment of extrapulmonary tuberculosis are disappointing.

Natural sunlight will hasten the healing of sluggish, indolent wounds, as was demonstrated so clearly by Oskar Bernhard at St. Moritz. This effect, however, is certainly not a specific effect of short ultraviolet rays. The effect is a deep one and is brought about by wavelengths that penetrate through the epidermis and part of the dermis. The effect is an indirect one through the circulation, as Torraca demonstrated. The surface action of ultraviolet wavelengths shorter than 2,900 or of those slightly longer (up to 3,100) in large quantity is detrimental to the healing of wounds, unfavorably influencing the processes of repair. The influence is due to longer ultraviolet, luminous and infra-red rays, and so the quartz mercury vapor lamp is not indicated while natural sunshine and the energy from "Sunshine" carbons are.

Ultraviolet rays alone do not lower the blood pressure, but carbon arc radiation ("Sunshine" carbons) does—that is to say, of a certain percentage (between 60 and 70) of persons with abnormally high blood pressure. I have shown in both ambulatory and hospitalized patients that both systolic and diastolic pressure may be materially reduced (from 10 to 15 per cent) by general carbon arc irradiation, given in erythema-producing doses, not too frequently repeated, so as to avoid tanning. The "cure" is temporary, and the treat-

ments have to be repeated, being given every ten days or two weeks in those whose pressures have been lowered by earlier more often repeated large doses (usually every fourth or fifth day).

There are many substances and proprietary preparations that have been introduced for the purpose of lowering blood pressure. As Sir Thomas Lewis puts it, none have come to be regarded as reliable or even as offering much or any prospect of benefit. Perhaps the most striking reflection on their value is the short period of popularity that each enjoys. The amount by which pressure is lowered by these remedies is not usually great and the fall is either transient or restricted to the period of the drug's administration. There is no known method of lowering pressure materially and over long periods of time; the most effective treatment is a suitably restful regimen.

I believe, because I have demonstrated it, that carbon arc radiation in large enough doses to set up an inflammatory reaction, accompanied by marked vasodilatation, not too frequently repeated, so as to avoid pigmentation, will produce a 10 to 15 per cent reduction in both systolic and diastolic pressures. The mercury vapor lamp in quartz will not do this and the effect is thus not the specific effect of ultraviolet rays but of these and, in addition, the luminous and infra-red, as emitted by "Sunshine" carbons.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
GENERAL DECISION. RAYMOND HERTWIG, Secretary.

ENERGY CLAIMS FOR FOODS

All foods except the simple mineral foods and water contain chemical energy available for use by the healthy body to support the many activities and life processes and incidentally to maintain temperature. This use of the term "energy" in defining the caloric energy value of foods should not be confused with the popular usage signifying the state of extreme well being, good health, vitality, strength, vigor or endurance. These conditions depend on many factors, including freedom from disease, native constitution, physical environment, good general nutrition, wholesome life habits and others. Even good nutrition, a necessity for health, requires far more than available food-energy only; all the nutritional essentials of a complete, well balanced diet, in adequate amounts, are demanded.

Food advertising should correctly inform the public of the energy values of foods in carefully chosen terms that may be properly interpreted. The distinction between the caloric and popular senses of the word "energy" must be recognized and observed.

Examples of appropriately phrased food-energy claims are: "Good source of food-energy," "High in food-energy content," "Furnishes (x) calories of food-energy per ounce of food," "Provides food-energy for supporting energy demands of the body for work and play," "Furnishes food-energy for replenishing the energy losses of any physical work." Misinformative uses not correctly interpretable by the public and fostering deceptive advertising are exemplified by the statements: "Energy food," "Gives energy," "Furnishes energy for pep and vitality," "For quick energy," "For reviving or renewing energy." Illustrations representing vigorous muscular activity accompanying misinformative energy claims accentuate the unwarranted implications.

The terms "food value" or "nutritional value" should not be used synonymously with "food-energy value." The food or nutritional value of a food includes the vitamin, mineral, protein, fat, and other values.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

CALIFORNIA PRUNES EDUCATIONAL
ADVERTISING

Sponsor.—United Prune Growers of California, a marketing organization for 85 per cent of the prune growers of California.

Description.—United Prune Growers of California educational advertising for California grown prunes

Handling and Processing.—Mature prune plums dropping from the tree by their own weight are conveyed to a central drying plant, immersed in boiling water or alkali solution (1 pound of sodium hydroxide to 20 gallons of water) for fifteen seconds to crack the skin to facilitate drying. The alkali is removed by water sprays. The fruit is dried on wooden trays in the sun for from five to ten days or in dehydrators for twenty-four hours. About 30 per cent of the harvest is dried by the latter method. The partially dried prunes are allowed to "sweat" in bins to equalize their moisture content and are then sent to central packing houses, where they are cleaned by hot water sprays, passed slowly through nearly boiling water, shaken to remove adhering water, inspected by gloved workers, and automatically or semiautomatically packed in boxes and paper or cellophane cartons or bags, cooled and shipped. The fruit retains a temperature of over 63 C. for not less than five hours' after the heating.

Analysis (submitted).—

per cent

Pits (per cent of entire prune)	14.9
(Representative analysis of flesh of prunes from three main growing sections)	
Moisture	18.4
Total solids	81.6
Water soluble solids	78.0
Ash	2.2
Alkalinity of water soluble ash (cc. N-acid per 100 grams prune flesh)	20.5
Alkalinity of acid soluble ash (same)	7.3
Protein (N \times 6.25)	2.8
Reducing sugars minus dextrose	44.3
Dextrose ¹	29.7
Levulose by difference	14.6
Sucrose	2.2
Starch ²	1.0
Dextrin ²	negligible
Pentosans	2.7
Hemicellulose ²	14.6
Pectic acid	1.3
Cellulose ³	3.9
Lignin ⁴	5.1
Crude fiber	1.8
Total acid as citric acid	1.2
Calcium (Ca)	0.06
Chlorine (Cl)	0.03
Copper (Cu)	0.0003
Iron (Fe)	0.004
Magnesium (Mg)	0.05
Manganese (Mn)	0.0005
Phosphorus (P)	0.10
Potassium (K)	0.91
Sodium (Na)	0.07
Sulphur (S)	0.02
Potential alkalinity (excess base forming elements in terms of cc. normal alkali per 100 grams prune flesh) ⁵	24

Calories.—3.1 per gram of flesh, 88 per ounce of flesh.

Vitamins.—500 Sherman units of vitamin A, 22 Sherman units of vitamin B and 80 Sherman units of vitamin G respectively per ounce

Claims of Sponsor.—California prunes are laxative, owing to bulk and certain natural extractives that stimulate intestinal activity. Among the outstanding fruits richest in iron. An excellent source of quickly available food energy owing to the high content of readily assimilable sugars. Recent biologic

tests show that the addition of 200 Gm. (eighteen prunes) per day to the usual diet has no effect on the alkali reserve of the body except to narrow normal variation.

IRRADIATED VITAMIN D PASTEURIZED
MILK

Distributors.—1. Carlson-Frink Company, Denver. 2. Stefan's Dairy Products, Oklahoma City, subsidiary of Southwest Utility Dairy Products Company. 3. Ira Wilson & Sons Dairy Company, Detroit.

Description.—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays (patent No. 1,680,818).

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation see THE JOURNAL, Oct. 7, 1933, page 1155. Cherry-Burrell equipment is used.

Vitamins.—Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used. Contains 135 U. S. P. X (Revised, 1934) vitamin D units per quart.

Claims of Distributor.—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

FRANKFORD BRAND TOMATO JUICE

Distributor.—Frankford Grocery Company, Frankford, Pa.

Packer.—American Packing Corporation, Evansville, Ind.

Description.—Canned tomato juice with added salt; retains in high degree the natural vitamin content; the same as the accepted Triple AAA Brand Pure Tomato Juice (THE JOURNAL, July 2, 1932, p. 35).

"THE STORY OF SALMON" PROMOTIONAL
ADVERTISING

Sponsor.—Department of Home Economics, American Can Company, New York.

The purpose of the department is to distribute interesting and factual material on various canned foods.

Advertising.—The booklet "The Story of Salmon" discusses the natural history, conservation and canning of salmon as well as the nutritive value of canned salmon.

SILVER TIP BRAND PANCAKE TABLE SYRUP
SWEETHEART PANCAKE TABLE SYRUP

Manufacturer.—D. B. Scully Syrup Company, Chicago.

Description.—A table syrup; corn syrup flavored with refiners' syrup. The same as Banner Blue Corn Syrup with Cane Flavor (THE JOURNAL, March 5, 1932, p. 817).

MACY'S BABY FOODS

STRAINED APRICOTS

(ADDED SUGAR AND SULPHUR DIOXIDE)

STRAINED CARROTS, GREEN BEANS, PEAS,
SPINACH, TOMATOES AND VEGETABLE
TABLE SOUP

(SEASONED WITH SALT)

STRAINED PRUNES

Distributor.—R. H. Macy & Company, Inc., New York.

Packer.—Stokely Bros. & Company, Indianapolis.

Description.—Respectively strained apricots (added sugar and sulphur dioxide), carrots, green beans, peas, spinach, tomatoes and vegetable soup (all seasoned with salt), and prunes; prepared by methods efficient for retention in high degree of the natural mineral and vitamin values. The same as Stokely's for Baby: Specially Prepared Strained Vegetables and Fruits (THE JOURNAL, May 26, 1934, p. 1762; May 26, 1934, p. 1763; June 2, 1934, p. 1851; June 9, 1934, p. 1943; June 30, 1934, p. 2186; July 7, 1934, p. 29; July 14, 1934, p. 110; July 21, 1934, p. 189).

1. Lothrop and Holms Indust & Engin Chem. Anal Ed 3:334, 1931.

2. Leach, A. E. Food Inspection and Analysis, revised ed., New York, John Wiley and Sons, Inc., 1920.

3. Dore, W. H. Indust & Engin Chem 12:20, 1920.

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - Seven dollars per annum in advance

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SATURDAY, NOVEMBER 10, 1934

COMMITTEE ON ECONOMIC SECURITY

Last June, as was pointed out in a previous editorial in *THE JOURNAL*,¹ President Roosevelt created a committee on economic security to look into plans and advise prospective legislation that will provide people with decent homes and productive work and "safeguard them against misfortunes which cannot be wholly eliminated in this man-made world of ours." The committee included the Secretaries of Labor, the Treasury and Agriculture, the Attorney-General and the Federal Emergency Relief Administrator. This committee established a staff and selected as secretary and executive director Edwin E. Witte, a labor economist long associated with the industrial commission of the state of Wisconsin. The committee set up a technical board of twenty persons in the government service with special knowledge of various phases of economic security and also established a staff of specialists to look into different aspects of the subject.

In a bulletin for the press, just issued, it is pointed out that there is contemplated an advisory council to be named by the President. This council is to be composed of representative citizens who will advise on broad general policies. A special medical advisory committee is also to be appointed. In its first bulletin the Committee on Economic Security said, "Following the approach outlined by the President, the Committee is trying to draw up a comprehensive program which will give protection to the individual from all the vicissitudes and hazards of modern life—unemployment, accident, sickness, invalidity, old age, and premature death." The report of the committee is due to be made to the President on December 1 and will not be made public until released by the President.

Following the publication of the editorial that appeared in *THE JOURNAL*, a statement was received from Miss Perkins to the effect that a group of distinguished physicians would be constituted as an advisory board in the field of medicine. In a recent statement Miss Perkins announces that the medical

advisory committee will consist of eleven eminent physicians and surgeons from all parts of the country, including the presidents of the three principal national organizations. Other advisory committees are to be created in dentistry, hospital management and public health. Pursuant to the receipt of the letter from Miss Perkins, the chairman of the Board of Trustees of the American Medical Association offered to the Committee on Economic Security the information assembled by the Bureau of Medical Economics of the American Medical Association. In the bulletin just issued by the committee it is pointed out that the Committee on Economic Security plans to consult with Dr. R. G. Leland, director of the Bureau of Medical Economics of the Association, and that it welcomes constructive suggestions from any one for meeting the economic problems arising from illness in families with low incomes.

Edgar Sydenstricker, chief statistician of the United States Public Health Service and director of public health activities for the Milbank Memorial Fund, has been placed in charge of the studies which it is hoped will yield "the best possible means for providing adequate medical care for those who are without means." It will be remembered that Mr. Sydenstricker as a member of the Committee on the Costs of Medical Care brought in an independent minority report in which he pointed out that the recommendations of the majority and the minority did not, in his opinion, go far enough. It will be remembered also that at the meeting of the American Academy of Political and Social Science, held in Philadelphia last February, Mr. Sydenstricker presented the following pragmatic approach to the problem:

There is, of course, no one solution. It seems to me that the needs of the situation must be met by a combination of methods. Those who compose our well-to-do class can continue to purchase the medical care to which they are accustomed and the physicians who serve them can reap the benefits of an economic system which permits the concentration of purchasing power within that class. I am not here to argue for or against the existence of such a class; that question is outside of the bounds of our discussion. We accept the fact, so far as medical care is concerned, as a condition. Those who are too poor to pay for medical care must be given medical care; the only change in the present situation would be the payment, on an adequate basis, of physicians and others for rendering good medical care to this unfortunate class. For the most expensive services—the treatment of those afflicted with mental diseases, tuberculosis, cancer, orthopedic defects, the impairments resulting from poliomyelitis and the like—the public must assume an increasing responsibility. But the great majority of people—those who earn their livelihood in the American way of living, who want to pay for their medical care—are not in a position to budget the unpredictable costs of medical care. In almost every other unpredictable contingency the method of insurance has been applied with success in our own country. In almost every other country this method of distributing costs has been applied in a partial way to sickness. We should go beyond the health insurance systems of Great Britain and Europe which provide medical care to employed individuals only, and we should go further than to provide public medical service for infants, children, and mothers, or for tuberculosis and mental diseases. All kinds of medical care, at home or in institutions, should be provided;

1. The Administration Studies Social Insurance, editorial, J. A. M. A. 103: 609 (Aug. 25) 1934.

and those who receive this care should include not merely those who are employed but all persons and their families having incomes below an amount sufficient to purchase medical services in any contingency. We should leave cash benefits during sickness to be taken care of by unemployment or by commercial insurance. No proprietary or profit-making agencies should be included and no independent intermediary between the potential patient and medical agencies should be permitted. In such a program the maintenance of the physician's professional freedom is of cardinal importance; adequate remuneration of all who render medical service is necessary, and the promotion of higher quality of medical care, the professional administration of professional personnel and activities, the maintenance of the private relationship between physician and patient, and the patient's free choice of physician are obviously essential.

We are informed that Dr. Walter Bierring, president of the American Medical Association, Dr. James Alexander Miller, president of the American College of Physicians, and Dr. Robert B. Greenough, president of the American College of Surgeons, have accepted positions on the medical advisory committee and that a conference of the various advisory bodies will be held in Washington on November 14 and 15. Dr. Olin West, secretary of the Association, has been asked to attend this conference. It should be borne in mind that the staff headed by Mr. Witte, the technical consultants and the advisory groups will eventually consummate their efforts in reports and plans which are to be turned over to the Committee on Economic Security and that this committee will then give to the President its suggestions as to how economic security is to be provided for those of our population who are said to require it. Presumably there will eventually be proposed legislation on which hearings will be held by Congress in the usual manner. Physicians should be aware of the various phases of this matter. The various bureaus and officers of the Association, including the Board of Trustees, are in intimate touch with the activities now under way and are doing their best to make certain that the point of view of organized medicine is adequately presented.

DISEASE AS A MENTAL STIMULUS

The relation of bodily disease to the character and nature of mental activity is always an interesting subject for study and speculation. The neuroses, the psychoneuroses, the hysterias and their connection with physical ills provide a ceaseless flow of professional literature. The long list of successful invalids suggests the possible mental stimulus of disease. Perhaps her physical frailty inspired Elizabeth Barrett Browning. Robert Louis Stevenson "suffered from infancy from great fragility of health"¹ and later developed tuberculosis. Sydenham, whose treatise on gout is such a masterpiece, wrote it probably because he had it himself. In such instances one may postulate the physical condition as a mental stimulant. The effect of the development of dementia paralytica on the writing of

de Maupassant would in itself be an interesting study. When viewed statistically, however, it is questionable whether physical or mental illness is more frequent in men of genius than in the population at large. Thus Hart² has drawn up a list of 100 representative geniuses and found nine who, at one time or another, showed psychotic or psychopathic traits and thirty-three who suffered at some period of their lives with ill health. Such proportions probably would not differ materially from those of the general population at the times when these geniuses lived. Hunger also, as a bodily discomfort similar to disease, has been discussed as a possible mental stimulant.³ Reed cites Goldsmith as an example and states that, "among the litterateurs of the past, we find numerous instances, too numerous to be accidental, in which the work which brought renown was done during a period of hardship." Financial hardship other than absolute hunger can produce this urge, as witnessed by the prodigious literary activity of Scott under conditions of financial stress. On the other hand, Hart² found that practically half of his 100 men of genius were economically secure all their lives and 77 per cent either were always secure or attained security. Such economic comfort must be far above that of the people as a whole.

Departing from the individual, what has been the effect of disease on the course of civilization? Granting the probability that human mental capacity has not changed materially in the last thirty thousand years, what effect can disease have had in racial development? Has natural selection by disease eliminated the mentally unfit? This seems scarcely likely in view of the present statistics. Certainly disease, especially epidemics, has influenced the geographic distribution of many peoples and hence their history.⁴ The fact is certain, the exact manner uncertain. Some diseases have undermined the abilities of whole peoples, others have driven people to greater activity or to lands of better opportunity. The frequent decimations of population resulting from disease may have either delayed the advance of civilization or stimulated the remaining people to greater effort than had been necessary before.

This possible stimulating effect of disease on the collective growth of civilization has been the subject of a recent address.⁵ According to Pusey it is the need to surmount the difficulties of life that has been the spur that has urged man on to mental as well as physical effort. The elemental stimuli to progress are relatively few—hunger, sex, social propensity, vanity, injuries, disease, and danger from beasts and men and from the elements and natural hazards. Of these, few have more constantly prodded man in his progress than the injuries, pains and illnesses that have beset him.

2. Hart, H. H.: The Unhappiness of Genius, *J. Nerv. & Ment. Dis.* 80: 410 (Oct.) 1934.

3. Reed, C. B.: The Literary Value of Hunger, *Proc. Inst. Med. Chicago* 3: 133 (No. 2) 1921.

4. Dempster, J. H.: Disease as a Factor Influencing History, *J. Michigan M. Soc.* 33: 146 (March) 1934.

5. Pusey, W. A.: Disease, Goad of the Mind, *Brit. J. Dermat. & Syph.* 46: 341 (Aug.-Sept.) 1934.

1. *Encyclopedia Britannica*: Robert Louis Stevenson.

Thus from Egypt and Babylonia to Greece, from Imhotep to Hippocrates, medicine is found to be one of the chief concerns of the mind. Pusey quotes Heide! as saying "It is not mere chance that Aristotle in this connection draws most of his illustrations from the field of medicine. . . . The extraordinary frequency of their [the Greeks'] appeals to medical practice in illustrations of scientific procedures . . . justifies the assumption that medicine along with mathematics afforded the best examples of science in the fifth and fourth centuries, B. C." Skin disease and dermatology, according to Pusey, can allocate to themselves much of this credit, for, from the beginning of history, they have constituted one of the major interests of medicine. The great epidemic of leprosy in Europe, which began about 500 A. D., reached its height in the Crusades and died out in the sixteenth century, and bubonic plague were the worst afflictions of that plague-ridden period. Leprosy had two useful effects on the growth of medicine during this time. It was responsible for the development of hospitals and nursing, and it placed a new emphasis on the objective study of disease. In the development of knowledge of histology, contagion, bacteriology, infection, immunity, allergy and metabolism, skin diseases have played a prominent part.

Are these considerations an idle speculation? The difficulties besetting the path of individual advance and comfort have always challenged the ingenuity of mankind. Disease and want still oppress vast numbers and there is no reason to believe that the challenge will not again be met successfully.

RESISTANCE OF THE THYROID TO STIMULATING SUBSTANCES

In a recent discussion of antihormones,¹ the possible relation of these substances to the clinical use of glandular products was considered. The demonstration by Collip and his co-workers that circulating antibodies may be produced by the injection of various gland stimulating principles indicated the necessity for great caution in the use of endocrine preparations in patients. A subsequent publication by Loeb² of Washington University emphasizes further the complexity of the problem. He points out that the development of resistance in the thyroid to various stimulating substances is dependent not alone on the production of antihormones in body fluids; factors apparently within the gland itself appear also to play a large part in this phenomenon. Following the injection of a thyroid stimulating preparation, the rate of mitotic proliferation of the cells in the thyroid of the guinea-pig increases to a maximum in a few days and then decreases, presumably before sufficient neutralizing substance can be present in the blood to account for this change.

Histologic changes in the thyroid similar to those produced by the thyroid stimulating factor of the pituitary, but less intense, may occur following partial thyroidectomy and administration of iodide. The time relationship of the changes in rates of cellular proliferation are also similar in the two cases. Loeb believes that it is improbable that this reaction could be due to the development of circulating antibodies against iodide. Further, it is a general principle in endocrinology that increase in concentration of the product of a gland tends to suppress further secretion of that substance by the gland. This is true of the thyroid also: administration of thyroid hormone depresses the activity of the organ. Thus it appears that development of a refractory state in the presence of stimulating substances may result from the composite action of a number of factors.

The St. Louis investigator suggests that the development of antihormones may result from the presence of protein in the pituitary extracts employed from which the active fraction of the molecule has not been separated. The antibodies produced would therefore act not against the hormone itself but against the foreign protein introduced with it. While this may well occur, this thesis does not account for the fact that, as observed by Collip and Anderson,³ a mixture of the thyroid stimulating factor and a neutralizing serum not only does not increase the metabolic rate of the animal into which it is injected but may actually decrease it. This seems to indicate that the serum actually inactivates some of the thyroid stimulating principle of the animal into which it is injected. Furthermore, Anderson and Collip⁴ have shown that the pituitary glands of animals which have become resistant to thyrotropic hormone following its prolonged injection are lacking in this factor. While, as Loeb suggests, there may be other plausible explanations of these phenomena, the problem will not be settled unless and until it is found possible to separate the active principle from specific proteins.

It is not yet known where the circulating antibodies to gland stimulating hormones are produced in the body. The antithyrotropic factor apparently is not produced in the pituitary, as Anderson and Collip have shown that it may be developed in the absence of this gland. It would be important to know whether the antihormone to the thyroid stimulating factor can be developed in a totally thyroidectomized animal. The cellular mechanism presented by Loeb appears to be the fundamental one; the production of neutralizing substances in the blood stream is probably a secondary factor much as this occurs in immunity to disease.

It is too early to speculate as to the ultimate significance of these observations. The work of Loeb and of Collip and their co-workers demonstrates further the

1. Antihormones, editorial, J. A. M. A. 103:492 (Aug. 18) 1934

2. Loeb, Leo. Mechanisms in the Development of an Active Resistance to the Effects of Substances Stimulating the Thyroid Gland of the Guinea Pig. Science 80:252 (Sept. 14) 1934

3. Collip, J. B., and Anderson, E. M.: The Production of a Serum Inhibitory to the Thyrotropic Hormone. Lancet 1:76 (Jan. 13) 1934

4. Anderson, E. M., and Collip, J. B.: Studies on the Physiology of the Thyrotropic Hormone of the Anterior Pituitary. J. Physiol. 82:11 (Aug.) 1934

bewildering complexity of endocrine interrelationships. Increasing knowledge of this subject reveals more and more the hazard entailed in clinical application of recent contributions in this field.

Current Comment

HOSPITALIZATION OF THE MENTALLY ILL

Members of the House of Delegates and others have been solicited by Dr. John M. Grimes to purchase a book that he has printed purporting to contain the results of the study recently made by the Council on Medical Education and Hospitals of the hospitalization of the mentally ill in the United States. Such individual use of the Council's material is, of course, wholly unauthorized. A report prepared by Dr. Grimes when he was employed by the Association was not published because in the opinion of the Council and an advisory committee of psychiatrists and neurologists his conclusions were not supported by the evidence presented. Two partial reports that have already been published will be supplemented when further studies have been completed.

THE METRIC EQUIVALENT OF THE TEASPOON

Although efforts have been made to introduce the use of the accurate graduated medicine glass for the measurement of liquid medicines, most people seem to prefer to take medicine from the teaspoon. For a long time it has been recognized that the present equivalent of a teaspoon is not a universal standard of measurement. Originally the teaspoon was considered the equivalent of the fluidrachm, which is about 4 cc.; this has been generally accepted since the metric system became official. This is, Nitardy says, an incorrect equivalent even though it has been adopted by the United States Pharmacopeia. Attempts have been made several times to have adopted the more nearly correct equivalent of 5 cc. The need for a more accurate equivalent has been repeatedly shown. Wilbert¹ long ago found that the teaspoonful dose as measured with the same spoon by different people varied from 3 to 7 cc. The capacities of various teaspoons as measured by Army² ranged from 3.8 to 7.8 cc. More recently Adams³ showed that the teaspoons of four different makes delivered amounts varying from 4.22 to 7.39 cc. The average content of a teaspoon in Europe is recognized as 5 cc. by the pharmacopeias of several countries. The British pharmacopeia does not give any capacity for a teaspoon. Nitardy⁴ determined the capacity of a European teaspoon that was more than a hundred years old and found it to be 4.4 cc. Since the average teaspoon obviously holds more than 4 cc, an effort should again be made to have a more nearly correct metric equivalent for the average teaspoon recognized in the United States Pharmacopeia.

1. Wilbert, M. I. *Am J Pharm* 74: 120, 1902.
2. Army, H. V. *J Am Pharm A* 6: 1056, 1917.
3. Adams, J. L. *Bull Pharm* 38: 17, 1924, Year Book Am Pharm A 13: 74, 1924.
4. Nitardy, F. W. How Much Is a Teaspoonful? *J Am Pharm A* 23: 813 (Aug) 1934.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next two broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

November 15 The Health Audit
November 22 Eat, Drink and Be Merry.
November 29 Holiday No broadcast

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

November 13 Does Medicine Cost Too Much? Morris Fishbein, M.D.
November 20 The Doctor of Tomorrow, W. W. Bauer, M.D.
November 27 Dollars and Disease, Morris Fishbein, M.D.

THE ATLANTIC CITY SESSION

Twenty-First Annual Tournament of the American Medical Golfing Association

Dr. Walt P. Conaway, Atlantic City, has been chosen chairman of the committee on golf for the annual session of the American Medical Association in Atlantic City in June 1935. The American Medical Golfing Association will hold its twenty-first annual tournament at the Northfield Country Club Monday, June 10. Dr. John P. Loudon, Yakima, Wash., is the present champion of the association, having won the Will Walter Trophy at Cleveland last June, with a score of 152 for thirty-six holes against a field of 185 players.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

District Meeting.—Dr. Jasper T. Matthews, Heber Springs, was elected president of the Second District Medical Society in Batesville, October 10. Dr. Paul H. Jeffery, Bethesda, vice president, and Dr. Oscar J. T. Johnston, Batesville, secretary. Speakers at this session included Drs. Fergus O. Mahony, El Dorado, "Present-Day Trend in Medicine", Edward Clay Mitchell, Memphis, "Upper Respiratory Tract Infections in Children"; Joseph F. Shuffield, Little Rock, "Principles in Treating Some of the Common Fractures," and Herbert H. McAdams, Jonesboro, "Fibroid Tumors of the Uterus." The next meeting will be held in Batesville, April 8, 1935.

CALIFORNIA

Society News.—Speakers before the Alameda County Medical Association October 15, were members of the surgical staff of Alameda County Hospital, Oakland: Drs. Theodore C. Lawson, "Traumatic Surgery"; Frank H. Bowles, "Anomalies of the Breast," and Sumner Everingham, "Fascial Repair in Hernia."

Personal.—Dr. Henry O. Howitt, San Rafael, has been appointed health officer of Marin County to succeed the late Dr. John H. Kuser.—Dr. Nazareth J. Crisp has been named city health officer of Benicia, succeeding the late Dr. Philip B. Fry.—Following her resignation as medical adviser to women and director of women's physical education at Stanford University, Palo Alto, Dr. Bertha S. S. Dymont is engaged in private practice.

Obstetric Meeting.—The Pacific Coast Society of Obstetrics and Gynecology will meet at Del Monte, November 21-24.

under the presidency of Dr. Lyle G. McNeile, Los Angeles. The following program will be presented:

- Dr. Karl L. Schaupp, San Francisco, A Study of Prenatal Care from Two Five Year Periods at San Francisco Hospital.
- Dr. Albert L. Mathieu, Portland, The Early Diagnosis of Chorio-Epithelioma.
- Dr. Albert V. Pettit, San Francisco, Repair of Pelvic Floor.
- Dr. Clarence A. DePuy, Oakland, Subarachnoid Injection of Alcohol for the Relief of Pain.
- Dr. John A. Sperry, San Francisco, Uterine Fistulas.
- Dr. Henry A. Stephenson, San Francisco, Critical Analysis of Maternal Mortality in San Francisco Hospitals.
- Dr. Thomas F. Wier, San Diego, Pituitrin and Narcosis in Labor.
- Dr. Frank C. Ainley, Los Angeles, Vomiting in Pregnancy.
- Dr. Norman H. Williams, Los Angeles, The Use of X-Rays in Obstetrics.
- Dr. Emil J. Krahulik, Los Angeles, Rupture of the Membranes Before the Onset of Labor.

DISTRICT OF COLUMBIA

Army Lectures.—October 15 marked the opening of the monthly lectures to which the medical department of the U. S. Army invites the medical and dental professions of the district. Lieut. Col. Sidney L. Chappell discussed "Brain Tumors, with Especial Reference to Encephalography as a Diagnostic Procedure," and Major Ira F. Peak, "Treatment of Syphilis of the Central Nervous System." This series of lectures will continue until May.

University News.—Surg. Gen. Robert U. Patterson, U. S. Army, gave the Smith-Reed-Russell lecture for October at the George Washington University School of Medicine, on "The History of Yellow and Typhoid Fevers in the U. S. Army." The annual banquet of the society was held October 23, and addresses were given by Dr. Charles Wardell Stiles of the U. S. Public Health Service and Henry B. Ward, LL.D., permanent secretary, American Association for the Advancement of Science, on "History of Hookworm Disease in the New World" and "Salmon Psychology," respectively.

GEORGIA

Society News.—Speakers before the Seventh District Medical Society at Coosa Country Club near Rome, September 26, included Drs. Evan O. Shellhorse, Dalton, on "Treatment of Infantile Diarrhea with Raw Apples," and James S. McLester, Birmingham, Ala., President-Elect of the American Medical Association, "Problems Relating to Vitamin Deficiency."—Among others, Dr. Tom V. Willis, Brunswick, addressed the Eighth District Medical Society at Waycross, October 9, on chronic malaria.—Drs. James L. Campbell and James E. Paulin, both of Atlanta, presented papers before the joint meeting of the Ninth District Medical Society and the Hall County Medical Society, September 19, on cancer and rheumatoid arthritis, respectively.

ILLINOIS

Personal.—Dr. and Mrs. Henry J. Heusinkveld, Fulton, observed their fiftieth wedding anniversary, October 1.—Dr. James J. Walsh, Camp Custer, Mich., has been named head of the medical department of the Veterans' Administration Facility at Danville, succeeding Dr. Aldine E. Morgan, who is being transferred to Oregon.

Chicago

Grant for Biologic Research.—The Rockefeller Foundation has made a grant of \$50,000 to the University of Chicago to carry on biologic research. This is an increase over the annual grant of \$30,000 which the foundation has given to the university for the last five years. The additional \$20,000 will be used to cover the expenses of the sex research program, which until this year has been financed by the committee on research in problems of sex of the National Research Council.

Dr. De Lee Awarded Medal.—Dr. Joseph B. De Lee, founder of the Chicago Lying-In Hospital, was presented with the Jesse L. Rosenberger Medal by the University of Chicago, October 28, in "recognition of his great service to humanity and of his lifetime of untiring devotion to his profession and his widespread influence on the practice and teaching of obstetrics." The presentation was made during a celebration given by the hospital board and the Mothers' Aid Club, observing the thirtieth anniversary of the latter and the sixty-fifth birthday of Dr. De Lee. A graduate of Northwestern University School of Medicine, 1891, Dr. De Lee is professor of obstetrics and gynecology at the Division of Biological Sciences, University of Chicago. In 1895 he founded the Chicago Lying-In Hospital, which, since 1927, has been affiliated with the University of Chicago.

Formally dedicated in 1931, the building cost \$1,900,000 and has a capacity of 157 beds.

Society News.—Dr. Achille Mario Dogliotti, professor of surgery, Royal University of Turin, Italy, addressed the Italian Academy of Medicine of Chicago and the staff of the American Hospital, October 22, on "Ventriculography" and "Treatment of Facial Spasm."—At a meeting of the Chicago Surgical Society, November 2, speakers included Drs. William F. Riehoff Jr., Baltimore, on "Total and Partial Pneumonectomy," and Fremont Chandler and Eric Oldberg, "Extrapyramidal Tract Section for Congenital Spasticity with Athetosis."—The Chicago Laryngological and Otological Society was addressed, November 5, by Drs. Andrew C. Ivy on "Physiology of the Labyrinth"; Sherman L. Shapiro, "Pseudocerebellar Abscess," and Francis L. Lederer, "Hemorrhage in Lung Cancer."—Speakers before the Institute of Traumatic Surgery, November 19, will be Drs. Edson B. Fowler, Evanston, Ill., and Harry R. Hoffman on "A New Operation for Habitual Dislocation of the Shoulder" and "Traumatic Neuroses," respectively.—Carlos I. Reed, Ph.D., assistant professor of physiology, University of Illinois College of Medicine, addressed the Chicago Club for the Study of Arthritis, November 7, on "Metabolic Changes in Arthritis Patients Under Viosterol Therapy."

INDIANA

Medical Museum.—Efforts are being made to establish a medical museum at Indiana University School of Medicine. Any one with old medical books, instruments or anything of interest to the medical profession who wishes to donate them to the museum should communicate with the bureau of publicity of the Indiana State Medical Association, 1021 Hume-Mansur Building, Indianapolis.

Personal.—Dr. Walter B. Christophel was recently elected president of the Mishawaka Chamber of Commerce.—Dr. Herman O. Seipel, formerly coroner of Porter County, has succeeded the late Dr. Harvey S. Cook as health officer of Valparaiso.—Dr. Junius L. Lamberi, Brazil, has been appointed health officer of Clay County, succeeding the late Dr. William Palm.

Survey of Handicapped Children.—The Indiana University psychologic center of Riley Hospital, Indianapolis, will sponsor a survey in the public schools of children with physical handicaps that retard their progress. Results of the investigation will be used to map out a program of training teachers to meet the problem presented by these children, the journal of the state medical association reports. Teachers will be asked to report students who stutter, lisp or have cleft palate, delayed speech, or sensory defects such as vision and hearing.

Society News.—A joint meeting of the Grant County medical and dental societies, Marion, October 23, was addressed by Dr. Joseph E. Schaefer, Chicago, on "Mouth Infections and Mouth Lesions."—At a meeting of the Madison County Medical Society in Anderson, October 15, Dr. Lawrence H. Gilman, Indianapolis, discussed encephalitis.—The Elkhart County Medical Association was addressed in Elkhart, October 4, by Drs. Nelson M. Percy and David S. Belin, Chicago, on "Gastric and Duodenal Ulcer and Carcinoma of the Stomach from Clinical, Roentgenologic and Surgical Viewpoints."—Dr. Jewett V. Reed, Indianapolis, discussed head injuries before the Gibson County Medical Society in Princeton, October 8.—Dr. Eugene Birchwood, Chicago, is giving a series of ten lectures on the interpretation of the electrocardiogram before the staff of Holy Family Hospital, LaPorte.—A symposium on rheumatic fever was presented before the Indianapolis Medical Society, October 25, by Drs. Russell R. Hippensteel, George S. Bond and Harold C. Thornton.

KANSAS

Society News.—Papers were presented by Drs. John L. Lattimore and Earle G. Brown, Topeka, before a meeting of the Clay and Geary County medical societies at Junction City, September 12, on fever determination and coronary thrombosis, respectively.—At a meeting of the Harvey County Medical Society in Newton, September 3, Drs. Harold M. Glover, Newton, read a paper on "Anemias of Pregnancy" and Emmet E. Peterson, Halstead, on "The Motor Paralysis of the Larynx."—Speakers before the Southeast Kansas Medical Society in Chanute, September 13, were Drs. Clifford C. Nesselrode, Kansas City, on cancer; Howard Snyder, Winfield, spinal anesthesia; William M. Mills, Topeka, treatment of lung abscess; Warren F. Bernstorff, Pratt, treatment of tetanus; Victor E. Chesky, Halstead, the goiter heart, and Noble E. Melencamp, Dodge City, use of iodine in thyroid disease.

LOUISIANA

Shreveport Fall Clinic.—The Shreveport Fall Clinic was held at Charity Hospital, November 8-9. Dr Willis C Campbell, Memphis, opened the session with an orthopedic clinic. Others on the program included Drs John R Caulk, St Louis, who discussed prostatic surgery, and fate of the kidney in cancer of the bladder, James S McLester, Birmingham, Ala., President-Elect, American Medical Association, newer aspects of deficiency diseases, James R McCord, Atlanta, Ga., puerperal eclampsia and puerperal sepsis, John H Musser, New Orleans, blood dyscrasias and observations on coronary occlusion, William D. Haggard, Nashville, Tenn., thyroid cases and cancer of the rectum, and Horton R Casparis, Nashville, nutrition in infants and children and childhood tuberculosis. Dr Campbell also discussed bone tumors.

Warning to Bakers.—The Louisiana State Board of Health has learned that some bakers consign bread and other products to retail dealers in quantities considerably in excess of their daily sales and requirements. Investigation shows that the left over products, which are picked up the following day and returned to the bakeries, are usually stored overnight in corners or store rooms where they are subject to contamination by roaches, rats, cats and the like, consequently they become stale and unfit for use as food. In many instances an attempt is made to freshen these returned products. The state board, as a warning, points out that the return of bread and other bakery products under these conditions would constitute a violation of the state food and drug law and regulations that make it unlawful for any one to trade in or exchange products unfit for use as food. The board urges bakers to adjust their deliveries to the actual daily requirements of their retail customers in the interest of public health and to protect their dealers and distributors from being charged under the food and drug law.

MASSACHUSETTS

Mental Hygiene Meeting.—The annual meeting of the Massachusetts Society for Mental Hygiene will be held at the Twentieth Century Club, Boston, November 22. Speakers will include Robert Ulrich, Dr Phil, lecturer on comparative education at the Harvard Graduate School of Education, whose subject will be "The Influence of the New Psychology on Education."

The Gay Lecture on Ethics.—Dr Arthur H Ruggles, Providence, R I, delivered the George W Gay Lecture on medical ethics at Harvard Medical School, November 1. The subject of his talk was "Understanding the Individual Patient." Lectures on the care of the patient will be given November 15 and 22 by Drs. Joseph H. Pratt and Stephen Rushmore, both of Boston.

State Hospital Opens New Unit.—A new medical and surgical building has been opened at the Metropolitan State Hospital in Waltham. In the future, patients with mental disorders who may require either medical or surgical treatments will be transferred to the new building. The unit, which is three stories high, has fifty-four beds for men and the same number for women. In addition, twenty-two beds are available for employees.

MICHIGAN

Personal.—October 11 was designated as "Dr Hudson Day" in Merrill, in honor of Dr James H Hudson, who has practiced in the community for forty-four years. A banquet was held at the Rainbow Hotel and he was presented with an armchair on behalf of the community. Dr Hudson, who is 76 years of age, graduated from the University of Michigan School of Medicine in 1883. He served as postmaster of Merrill for sixteen years.

Tuberculosis Meeting.—The Michigan Tuberculosis Society, the Michigan Trudeau Society and the Michigan Sanatorium Society convened in annual session in Ann Arbor, October 11. Speakers included Drs Jabez H Elliott of the University of Toronto Faculty of Medicine on "Tuberculosis in Children." Other physicians on the program included Drs Bruce H Douglas, Detroit, George L Leshe, Howell, Russell S Anderson, Howell, Warren E Forsythe and John Alexander, Ann Arbor.

Society News.—The program of the Kalamazoo Academy of Medicine was given in conjunction with the graduate course of the Michigan State Medical Society, October 16, speakers were Drs Carl D. Camp, Ann Arbor, "Technic and Methods of Neurologic Examination", Robert Dieterle, Ann Arbor, "Psychotherapy in General Medical Practice," and Isaac N. La Victoire, Kalamazoo, "Malarial Treatment of Syphilis of the Central Nervous System." Dr John M Dorsey, Ann Arbor, conducted a neurologic clinic.—Dr Robert Sonnen-

schein, Chicago, addressed the Saginaw County Medical Society at Saginaw, September 25, on "Practical Points in Otolaryngology for the General Practitioner."—Dr William J. Cassidy, Detroit, addressed the St Clair County Medical Society, October 2, on "Eccentricities of Splenic Disease: Treatment and Diagnosis."

NEBRASKA

District Meetings.—The Seventh Councilor District Medical Society held its annual meeting at Geneva, October 18, with the following speakers, among others: Drs Miles J Breuer, Lincoln, on "The Nature and Treatment of Infectious Arthritis," John M Porter, Concordia, Kan., "Use of Blood Transfusion in General Practice," and Joseph A Wernberg, Omaha, "Surgery of Acute and Chronic Empyema." Dr Joseph Bibb, Geneva, president of the state medical association also made an address.—At the annual joint meeting of the ninth and tenth councilor districts of the Nebraska State Medical Association in Kearney, October 9, speakers included Drs Wilmer D McGrath, Grand Island, on symptoms of angina pectoris, Charles F Moon, Omaha, practical obstetrics, and J Stanley Welch, Lincoln, estimating the surgical risk in thyroid cases.

NEW JERSEY

Health at Trenton.—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million for the week ended October 27, indicate that the highest mortality rate (193) appears for Trenton, and the rate for the group of cities as a whole was 10.6. The mortality rate for Trenton for the corresponding period last year was 17.6, and for the group of cities, 10.5. The annual rate for eighty-six cities for the forty-three weeks of 1934 was 11.3 as against a rate of 10.8 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

NEW YORK

Medal for Work in Ophthalmology.—The University of Buffalo will award its annual gold medal to the author of a work on an ophthalmologic subject. Details may be obtained by writing Dr Harold W Cowper, 543 Franklin Street, Buffalo.

New York City

Second Harvey Lecture.—William Cumming Rose, Ph D, professor of biochemistry, University of Illinois, Urbana, will deliver the second lecture before the Harvey Society, November 15, at the New York Academy of Medicine. His subject will be "The Significance of the Amino Acids in Nutrition."

Pediatric Meeting.—A regional conference of the American Academy of Pediatrics with the New England Pediatric Society, the Philadelphia Pediatric Society and the pediatric section of the New York Academy of Medicine was held at the Ambassador Hotel, October 19-20. Among the speakers were

Dr John A Kolmer, Philadelphia, Vaccination in Anterior Polio myelitis
Dr William E Studdiford Jr, Birth Trauma
Dr Samuel T Orton, The Acquisition of Language
Dr Elvira Goettsch, Treatment of Scurvy, with Ascorbic Acid
Dr Joseph F McCarthy, Urology in Pediatrics
Dr Lucy D Porter Sutton, Persistent Auricular Fibrillation
Dr Marshall C Pease Jr, Hereditary Hemophilia Treated with Thelina
Dr Charles Hendee Smith, Lipoid Pneumonia

Voluntary Hospitals Give Forty Per Cent Free Care.—More than 40 per cent of the service rendered in 1933 by the fifty-six voluntary hospitals that make up the United Hospital Fund was given free, according to the fund's annual report. The hospitals provided 4,016,420 days of hospital care, of which 1,586,977 were free ward care, in the outpatient departments 1,794,877 visits were free out of a total of 3,951,391. The total operating expenses of the hospitals amounted to \$24,996,050, toward which they received in income from patients \$15,940,920 and in "miscellaneous earnings" \$985,824, leaving the remainder to be made up from other sources. The average cost of caring for patients in inpatient departments for all hospitals was \$5.33, for service to outpatients, 94 cents per visit. The percentage of occupancy of the 16,206 beds in the fifty-six hospitals was 69.7. The average stay in hospital for all types of institutions was 13.9; 12.8 for general and 17.3 for special hospitals. A total of 7,712 physicians exclusive of courtesy staffs served the hospitals of the fund and there were 18,834 persons employed by them during 1933.

OHIO

First District Meeting.—The annual meeting of the First Councillor District of the Ohio State Medical Association will be held in Cincinnati, November 12, with Drs. James Ewing and Frank E. Adair, New York, as guests. The morning will be devoted to inspection of the cancer clinic of the Cincinnati General Hospital, with discussion of cases by the guests. In the afternoon a session will be held at the hospital with the following speakers: Drs. Robert Conard, Wilmington, "A Simple Measure of Thyroid Dysfunction"; Louis G. Herrman, Cincinnati, "Peripheral Vascular Disease"; Harold O. Lund, Middletown, "Pyelitis in Infancy and Childhood," and Harry M. E. Lowell, Hamilton, "Treatment of Thermal Burns." The district society will join the Cincinnati Academy of Medicine for an evening meeting at its headquarters, at which Dr. Ewing will speak on "Recent Advances in the Scope of Cancer," and Dr. Adair, "The Attitude of the Modern Surgeon Toward the Cancer Problem."

PENNSYLVANIA

Society News.—Dr. Russell L. Haden, Cleveland, addressed the Erie County Medical Society, Erie, October 9, on "Classification and Treatment of the Anemias."—Dr. Robert S. Dinsmore Jr., Cleveland, discussed goiter at a meeting of the Berks County Medical Society, October 9.—Dr. Francis F. Borzell, Philadelphia, addressed the Schuylkill County Medical Society, Pottsville, October 9, on "Dangers of Socialized Medicine."

Graduate Assembly in Harrisburg.—Six speakers will present the program of a graduate assembly sponsored by the Harrisburg Academy of Medicine at the Penn-Harris Hotel, November 20, as follows:

- Dr. Lewellys F. Barker, Baltimore, The Senile Patient; The Treatment of Pernicious Anemia.
- Dr. John M. T. Finney, Baltimore, Extra-Abdominal Conditions Simulating Intra-Abdominal Lesions.
- Dr. Roy W. Scott, Cleveland, The Heart After Forty.
- Dr. Jacob Arnold Bergen, Rochester, Minn., Colitis, Its Pathologic Physiology and Management.
- Dr. John F. Erdmann, New York, Tumors of the Colon.
- Dr. John A. Kolmer, Philadelphia, The Etiology, Diagnosis and Treatment of Focal Infection.

Philadelphia

Ex-Residents' Dinner.—The forty-eighth annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held, December 4, at the Philadelphia Country Club. The guest of honor will be Dr. William A. Newman Dorland, Chicago. Ex-interns are urged to send their correct addresses to the secretary, Dr. George Wilson, 133 South Thirty-Sixth Street.

Tribute to Dr. Gleason.—Dr. Edward B. Gleason, professor of otology, University of Pennsylvania Graduate School of Medicine, celebrated his eightieth birthday, October 13. Dr. Gleason, a native of Philadelphia, is a graduate of the Medico-Chirurgical College of Philadelphia, where he was at one time professor of otology. He is the author of textbooks in otology and has served as president of the Philadelphia Laryngological Society. He was also at one time president of the Philadelphia Common Council.

County Society Seminars Begin.—Dr. Esmond R. Long delivered the first lecture in the first series of postgraduate seminars sponsored by the Philadelphia County Medical Society this season, November 2. The series is a study of tuberculosis, for which Dr. Long gave the historical background. Speakers for coming meetings will be:

- Dr. Morton McCutcheon, pathologic anatomy.
- Dr. Joseph D. Aronson, characteristics of the various types of tubercle bacillus and the tuberculin reaction.
- Dr. George A. Harrop, Baltimore, maintenance of nutrition in the tuberculous.
- Harvey Dee Brown, Ph.D., public health aspects.

Society News.—Dr. Leonard G. Rowntree addressed the Metabolic Association of Philadelphia, October 31, on diseases of metabolism.—Dr. Alfred Gordon addressed the Medico-Legal Society of Philadelphia, October 30, on "Some Basic Principles in Nervous and Mental Breakdown."—Dr. John F. Coppelino, among others, addressed the Obstetrical Society of Philadelphia, November 1, on "Prophylaxis of Congenital Syphilis."—At a meeting of the Philadelphia Roentgen Ray Society, November 1, Dr. Oscar V. Batson and LeRoy D. Ennis, D.D.S., among others, presented a paper on "Anatomical and Roentgenological Consideration of Maxillary Sinuses."

Pittsburgh

State Health Day.—The annual public health meeting under the auspices of the Allegheny County Medical Society and the General Health Council of Pittsburgh and Allegheny County in observance of Pennsylvania Health Day, was held

November 8 at the Hotel Schenley. Speakers were Drs. P. Starr Pelouze, Philadelphia, and William W. Bauer, Chicago, director of the Bureau of Health and Public Instruction of the American Medical Association.

SOUTH CAROLINA

District Meetings.—Among speakers who addressed the Fourth District Medical Association at Union, September 27, were Drs. William S. Fewell, Greenville, on "Heart Disease in General Practice"; Ruskin G. Anderson, Woodruff, "Bronchoscopy in Diagnosis and Treatment," and Francis P. Owings, Union, "Treatment of Cutaneous Burns."—At a meeting of the Seventh District Medical Association, Sumter, September 13, speakers on the scientific program were Drs. Addison G. Brenizer, Charlotte, N. C., on "Compression of the Spinal Cord—Its Surgery"; Robert W. McKay, Charlotte, "Urinary Obstruction in Male Infants"; Hal M. Davison, Atlanta, Ga., "Hypertension," and D. Lesesne Smith, Spartanburg, "Preventive Pediatrics." Drs. William Egleston, Hartsville, and Samuel E. Harmon, Columbia, president and president-elect, respectively, of the South Carolina Medical Association, discussed organizational and economic questions.—The Third District Medical Society held its annual meeting in Newberry, October 4, with the following speakers: Drs. James Heyward Gibbs, Columbia, on "Angina Pectoris"; LeGrand Gurry, Columbia, "Acute Abdomen"; Foster N. Martin Jr., Newberry, "Aplastic Anemia"; George Benet and Charles G. Spivey, Columbia, "Stab Wounds of the Heart." Dr. Samuel E. Harmon, Columbia, president-elect of the South Carolina Medical Association, made an address.

TEXAS

Meeting of Obstetricians and Gynecologists.—Dr. Henricus J. Stander, professor of gynecology and obstetrics, Cornell University Medical School, New York, was the guest speaker at the annual meeting of the Texas Association of Obstetricians and Gynecologists at Galveston, October 6. He delivered the J. F. P. Paine Lecture on "Maternal and Fetal Mortality in the United States" and addressed a dinner session on "Teaching of Obstetrics in the United States." Dr. Ben Hill Passmore, San Antonio, was elected president.

District Meetings.—The Fourth District Medical Society met in Ballinger, October 15-16, with the following speakers, among others: Drs. Stirling E. Russ, San Antonio, on "Treatment of Hemorrhoids"; Arthur G. Schoch, Dallas, "Recent Advances in the Treatment of Syphilis"; Charles P. Schenck, Fort Worth, "Traumatic and Unripe Cataracts," and Homer B. Allen, Brownwood, "Skin Grafting."—Among speakers at a meeting of the Northwest Texas (Thirteenth) District Medical Society at Bowie, September 11, speakers included Drs. Milton H. Glover, Wichita Falls, on "Chronic Arthritis of the Spine"; Louie O. Godley, Fort Worth, "Acute Anterior Poliomyelitis"; St. Julien R. Murchison and Craig W. Munter, Fort Worth, "Adequate After-Care in Prostatectomy and Transurethral Procedures," and John W. Brown, state health officer, Austin, "Relation of the Health Department to the Medical Profession and the Duties of Each."

WASHINGTON

Society News.—Drs. Albert C. Broders, Rochester, Minn., and William C. Speidel, Seattle, addressed the King County Medical Society, Seattle, November 5, on the cancer problem and on the development and present status of the transfusion of blood. Dr. William S. Middleton, Madison, Wis., addressed the society, October 15, on recent trends in medicine. Dr. Alexander H. Peacock, Seattle, showed motion pictures of a recent trip around the world.

Survey of Mental Health Facilities.—In accordance with a request of Governor Martin, the U. S. Public Health Service has detailed Senior Surgeon Grover A. Kempf, Washington, D. C., to make a study of mental health administration in the state. He will make detailed studies of institutions for the care of mental cases, including methods and policies of admission; of the penal and correctional system of the state, including court procedure, special clinics and provisions for temporary care and examination facilities pending trial, and of institutions dealing with delinquent and defective children, with special reference to mental hygiene problems. In addition, general studies will be made of population data, governmental organization, economic resources and fiscal policies and public and private educational policies. The scope of the survey also includes an analysis of policies affecting selection, training, appointment and tenure of office of those engaged in the care

and treatment of the mentally disordered. In the course of the investigation an analysis of the facilities and potentialities for research in nervous and mental diseases will be made.

GENERAL

Society News.—Dr. William Seaman Bainbridge was elected president of the Association of Military Surgeons of the United States at the annual session at Carlisle Barracks, Pa., October 10. The program consisted principally of demonstrations of medical field equipment and maneuvers. Assistant Secretary of War Harry H. Woodring made an address. The association visited the battlefield at Gettysburg, where the latest model airplane ambulance was exhibited.—Dr. Max Biesenthal, Chicago, was elected president of the Mississippi Valley Conference on Tuberculosis at the annual session in Cedar Rapids, Iowa, September 28. Mr. Theodore J. Werle, Lansing, Mich., was named vice president and Mr. A. W. Jones, St. Louis, reelected secretary. Dr. Merlin H. Draper, Fort Wayne, was elected president of the Mississippi Valley Sanatorium Association. The joint convention of the two organizations will be held in Madison, Wis., in September 1935.—National Hearing Week was observed during the week of October 15 by organizations for the hard of hearing, with addresses before various societies, radio programs and exhibits emphasizing the importance of the conservation of hearing.—Dr. Donald C. Balfour, Rochester, Minn., was chosen president-elect of the American College of Surgeons at the annual session in Boston, October 18, and Dr. Robert B. Greenough, Boston, was installed as president. Vice presidents elected were Drs. Arthur W. Allen, Boston, and John A. Gunn, Winnipeg, Canada.

Annual Meeting in El Paso.—The twenty-first annual meeting and clinical conference of the Medical and Surgical Association of the Southwest will be held in El Paso, Texas, November 22-24. Guest speakers will be:

Dr. Rosco G. Leland, Chicago, director, Bureau of Medical Economics, American Medical Association, Current Problems in Medical Economics.

Dr. Holman Taylor, Fort Worth, Special Phases of Medical Economics.

Dr. John H. Musser, New Orleans, Borderline Medical and Surgical Conditions.

Dr. John R. Caulk, St. Louis, Transurethral Surgery.

Dr. George Pines, Los Angeles, Problems in Diagnosis of Gastro-Intestinal Allergy.

Dr. John E. Pemberton, Rochester, Minn., Advances in the Diagnosis and Treatment of the Thyroid Gland.

Dr. Dudley A. Smith, San Francisco, Cancer of the Rectum and Rectosigmoid.

Dr. Harry L. Baum, Denver, Laryngotracheobronchitis.

The guests will also conduct clinics and round table discussions. Headquarters will be at the Hotel Hussman.

Society for Tropical Medicine.—The annual meeting of the American Society of Tropical Medicine will be held in San Antonio, Texas, November 14-16, in conjunction with the meeting of the Southern Medical Association. Papers on amebiasis will be presented by the following speakers, among others: Dr. Henry E. Meleney and William W. Frye, Ph.D., Nashville, Tenn.; Dr. Francis W. O'Connor and Constance R. Hulse, New York; Dr. George W. McCoy, U. S. Public Health Service, Washington, D. C.; Dr. Herman N. Bundesen, Chicago, and Charles A. Kofoed, D.Sc., Berkeley, Calif. Other speakers announced include:

Drs. Max Theiler and Loring Whitman, New York, Quantitative Studies of the Virus and Immune Serum Used in Vaccination Against Yellow Fever.

Dr. Thomas B. Magath, Rochester, Minn., Coccidia in Man.

Dr. Herbert C. Clark and William H. W. Komp, Panama, Further Studies of Malaria in Panama, with Reference in Control with Atabrine and Plasmodium.

Dr. Arnaldo Giovannoli, Italian Institute of Public Health, Rome, Plasmodium Ovale Considered as a Medium as a Modification of Plasmodium Vivax.

Dr. Hugh W. Mason, U. S. Public Health Service, Kasauli, India, The Malaria Parasite in Relation to the Human Host.

Chauncey D. Leake, Ph.D., San Francisco, Principles of Chemotherapy in Relation to Tropical Medicine.

Record Low Death Rate in 1933.—The U. S. Bureau of the Census announces that in 1933 there were 1,342,073 deaths from all causes, representing a mortality rate of 10.7 per thousand of estimated population, the lowest since the collection of mortality statistics was begun in 1900. The admission of Texas to the death registration area last year enables the bureau to publish complete statistics for the entire population of continental United States for the first time. Of eighteen groups into which the deaths are divided, eleven show decreases in rates as compared with the previous year, five show virtually no change, and only one shows a significant increase. The death rate from diseases of the circulatory system increased from 246 per hundred thousand of population in 1932 to 249.8 for 1933. The particular disease that showed the greatest

increase was diseases of the coronary arteries, which went from 14.5 in 1932 to 21.9 in 1933. The rate for 1932 was 10.8. The death rate from cancer, which has increased steadily during the past fifteen years, was temporarily halted in 1933, being 107, as compared with 107.1 for 1932. The rate for 1931 was 103.9. The group of infectious and parasitic diseases showed a decrease, chiefly attributed to a drop in the number of deaths from influenza and tuberculosis; diseases of the respiratory system had a lower death rate accounted for by a decrease in deaths from pneumonia, and diseases of the genito-urinary system revealed a decline in the number of deaths from chronic nephritis. Deaths from diseases of pregnancy, childbirth and the puerperal state also declined from 11.1 to 10.3 per hundred thousand of population in 1933. The suicide rate decreased from 17.4 in 1932 to 15.9 in 1933.

Deaths in Other Countries

Santiago Ramon y Cajal, for many years professor of normal and pathologic histology at the University of Madrid; winner of the Nobel Prize in medicine in 1906 for his work on anatomy of the nervous system; honorary president of the National Academy of Medicine of Madrid; director of the laboratory for biologic investigations in the Instituto Cajal, established in his honor in 1920; honorary member of scientific bodies in many countries, including the National Academy of Sciences in the United States and the Royal Society of England; honored by many prizes and medals from scientific societies and governments; author of textbooks in histology and anatomy; died, October 18, aged 83.—**Sir Richard Havelock Charles**, for many years physician to King George and Queen Mary of England; formerly professor of anatomy and comparative anatomy at Lahore Medical College; president of the Royal Society of Tropical Medicine and Hygiene and dean of the London School of Tropical Medicine; died in London, October 28, aged 76.

Government Services

Federal Fund for Rural Health

Health departments in rural areas will be subsidized by the U. S. Public Health Service through a fund of \$1,000,000 made available by the F. E. R. A. The funds will be disbursed through the state health departments to maintain existing full time county or district health units when local funds are insufficient to provide for adequate health service. According to the *New York Times*, the service will undertake to establish new full time rural units when local funds are inadequate to meet the entire cost, but it will not contribute to any project in which less than 50 per cent of the cost is borne by state or local authorities.

Position for a Parasitologist

The U. S. Civil Service Commission announces an open competitive examination for the position of junior parasitologist for the Bureau of Animal Industry, Department of Agriculture. At present there is a vacancy with headquarters at Beltsville, Md., in which the department wishes to place a woman. Both men and women will be admitted to the examination, however. The duties are to conduct research in animal parasitology, and the salary will be \$2,000 a year, subject to the usual deductions. Applications must be on file with the commission at Washington before November 26. Full information may be obtained from the secretary of the civil service board at the postoffice or customhouse in any city that has a postoffice of the first or second class, or from the commission at Washington, D. C.

Internships in the Public Health Service

The U. S. Public Health Service announces that a number of internships will be available July 1, 1935, to medical students graduating in that year. There will be a number of first year internships, the salary of which is \$79 per month plus quarters, subsistence and laundry, and a smaller number of second year positions with a salary of \$93.25 per month plus quarters, subsistence and laundry. Applications should be addressed to the U. S. Public Health Service, Washington, D. C., and the applicant should state whether he is interested in a first or second year internship. To be eligible for the second year, students must have had one year's internship by July 1, 1935.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 13, 1934.

Report of National Health Service

In the preceding letter the annual report for 1933 on the public health by Sir George Newman, chief medical officer of the Ministry of Health, was reviewed. The main part of the report was dealt with; a section on national health insurance has been reserved for special notice. It constitutes the most reliable information on the subject. Sir George Newman points out that the insurance medical service is a branch of the public health service which is concerned with the prevention and treatment of disease as it affects the insured population. The physicians who provide the service by virtue of their opportunities for the early detection of disease in the individual form the first line of defense against communal disease. In most cases they are also the best instrument for prompt application to the individual of preventive measures. The medical service given to the insured population is vastly superior to service to the same class of people before the introduction of national health insurance and has been improved continuously since its inception.

THE EXTENT OF THE SERVICE

In 1933 the number of insured persons in England and Wales was 16,071,000, while the number of insurance physicians was 16,500. The total cost of medical benefit, exclusive of the cost of administration, was \$44,700,000, of which \$33,800,000 was expended on remuneration of physicians and \$10,900,000 on medicine and appliances.

THE SUPERVISION OF INSURANCE PRESCRIBING

Sir George Newman points out that neither the insured nor the physicians have any pecuniary interest in the cost of medicines, which is a direct charge on the insurance funds. Therefore some form of supervision must be directed to the prevention of unnecessary expenditures. Particulars of the cost of the prescriptions of every insurance practitioner are extracted at regular intervals, and if these appear to disclose extravagance he is visited by a medical officer of the regional medical staff for the purpose of discussing whether more economical methods could not be adopted without loss of efficiency. If further action is required, the minister of health may issue a warning letter to the physician or may refer the case to the panel committee. In 1933 this committee found that unnecessary cost had been incurred in only four cases, a diminished number, for in 1928 the figure was forty-five.

THE QUESTION OF UNNECESSARY PRESCRIBING

The important question remains whether the general average cost of medicines is not unduly high. For several years the cost per head of the insured population has been steadily rising. Part of this is undoubtedly due to the necessity for prescribing expensive forms of treatment, such as insulin and liver extract. The suggestion is frequently made that the insured people of England are confirmed medicine drinkers. On this point it is interesting to compare Scotland, where the physicians generally never adopted the English custom of dispensing medicine to their patients, and the latter have not been induced to consider a bottle of medicine a necessary corollary of a visit to the physician. In England, on the contrary, the physicians have for generations dispensed all medicines to the working classes. The result of this difference is that the cost of medicine for the insured in England exceeds that in Scotland by 50 per cent. Sir George Newman points out that no facts connected with the incidence of disease in the two countries account for this

wide difference and no one would suggest that the standard of treatment in Scotland is lower than in England. In view of the steady increase in the cost of insurance treatment he enjoins the insurance physician to satisfy himself that every prescription is required by the patient's condition. There is no evidence that the standard of health is better in areas where the habit of taking medicine is highly developed. He finally suggests that possibly in order to ensure that due regard is paid to his advice the insurance physician supplies a bottle of medicine against his better judgment. That there is a considerable waste of public money because so many of the insured like to take medicine, for which they do not have to pay, seems beyond question. The *Lancet* suggests as a solution that the insured should be made to pay a small sum toward the cost of medicine.

MEDICAL CERTIFICATES AND CLAIMS FOR SICKNESS BENEFITS

Sir George Newman points out that any scheme of insurance which entitles the insured to money benefits is subject to the risk of illegitimate claims. Certificates of incapacity are not the least difficult of the physician's duties. Therefore in 1920 there was instituted a body of independent medical referees to whom doubtful cases could be referred for a second opinion. This innovation was welcomed both by the physicians and by the benefit societies. These referees play a most important part in the administration of sickness benefit. If a physician appears to have shown lack of care in the issue of certificates of incapacity, he is visited by an officer of the staff for the purpose of discussing both individual cases and difficulties in certifying generally.

Defense Against Gas Attack on the Civilian Population

Mr. Davidson Pratt, general manager of the Association of British Chemical Manufacturers and a member of the technical committee of the disarmament conference, delivered before the Glasgow section of the Society of Chemical Industry an address entitled "The Chemist and National Defense." He said that, in spite of the Geneva protocol, defense against chemical warfare was urgent. A country with a well developed air service and a strong chemical industry had the means ready at hand for a rapidly improvised gas attack on the enemy. Gas had a devastating effect on the morale of people ignorant of its properties and uninstructed in methods of defense. A country that had not educated its public or prepared schemes of defense would be particularly vulnerable. The safest thing for the civilian population was to keep within doors as soon as an air raid warning was given. To make indoor protection as safe as possible there should be in every house, office or building a gas-proof room or rooms in which the occupants could remain until the all clear signal was given. The selection of the rooms, from the point of view both of high explosives and of gas, and the means of making them as gas proof as possible, were problems for the chemist. There would naturally be some provision of gas-proof shelters for people caught in the streets. The proposal for extensive underground shelters, proof against high explosives and gas, was feasible only to a limited extent for certain limited services, because of the enormous expense. But a limited number of such shelters could be provided by peacetime construction of underground garages, for which there was a need. Those engaged in essential services would require gas masks and also oilskin clothing to protect them against airplane spraying and contamination by liquid splashes. Whether the rest of the civilian population would need gas masks was a difficult problem. It would not be possible to supply the millions that would be wanted in an emergency, and so it might be desirable to provide some simple type that would be on sale in peacetime and could be readily made by the million in time of war.

PARIS

(From Our Regular Correspondent)

Oct. 15, 1934.

Dilaudidomania, a New Drug Habit

At a recent meeting of the Hospital Medical Society, attention was directed to the habit forming danger of a much exploited opium derivative, dilaudid. The advantages of this new drug over diacetylmorphine and morphine as a sedative for cough or pain were claimed to be that the dose was only one third that of the other preparations and that there was no danger of the formation of a habit.

Dr. Sainton opposes both of these supposed advantages. He has found that dilaudid gives the same feeling of euphoria and that there is the same craving for larger and larger doses until a habit is formed, as in the case of morphine and diacetylmorphine. One should be as careful in prescribing this new drug as if one were dealing with the older preparations.

Tetanus Without Demonstrable Atrium of Infection

At the July 3 meeting of the Paris Pediatric Society, Drs. Weill-Halle and Klotz reported a case of tetanus with typical but rather mild symptoms in a 4 year old child. Careful search failed to find an atrium of infection in the skin, the visible mucous membranes or the alimentary tract. Recovery followed the administration of antitetanic serum.

In the discussion of this paper, Dr. Apert reported a similar case in an older child in which, however, the atrium was in the intestine. Dr. Schreiber added another in a 9 months old infant without a demonstrable atrium of infection, also cured by serotherapy.

The use of relatively large doses of chloral as an adjuvant to serotherapy was recommended in the treatment of infantile tetanus.

The Father of Modern Advertising

No modern writer has been able to excel Balzac in the portrayal of all types of individuals, such as one finds in his various novels. Although written nearly a century ago, his books seem as full of interest as if they were written today. A French journalist has recently resurrected one of Balzac's characters, a Dr. Veron, who failed as a practitioner and tried journalism. During a luncheon with some fellow newspapermen, Veron predicted that the day would come when publicity for a toilet water or drug would attract as much attention as the review of a new book in their day. The doctor found a formula for a cough drop and exploited his product in the journals to such an extent that he soon waxed rich and was able to abandon both his medical and his journalistic career. The writer who has resurrected Dr. Veron believes that Balzac, through this character, can be regarded as the father of modern publicity.

Has Eugenic Sterilization Any Value?

Every medical student in France and its colonies must present a thesis in order to fulfil the requirements for graduations. Szwarcz (Thèse de Paris, 1934) chose as the subject of his thesis "The Eugenic Sterilization of Abnormals." Some of the author's statements are of interest and will be quoted here:

The arguments thus far presented to defend both the necessity and the efficacy of eugenic sterilization are not based on proved scientific data.

One is unable to prognosticate, except in rare instances, that diseases will be inherited. Aside from certain unusual diseases or familial malformations, the mendelian laws of heredity encounter serious objections.

The data of probable inheritance are too general and subject to too many variations to have any but theoretical value.

The application of average statistics to hereditary prognosis and to eugenic sterilization in special cases is too uncertain. It

frequently leads to serious errors because there is always a possibility that the future generation will be healthy.

It is too soon for geneticists to assume the rôle of experts in the form of being able to predict accurately the heredity of human diseases. The conscientious physician cannot therefore accept the principle of eugenic sterilization with all its practical consequences.

Hereditary stigmas frequently disappear completely or at least appear in greatly attenuated form in children born of diseased parents.

Eugenic sterilization has thus far not greatly decreased the total number in succeeding or even in the present generation. Modern methods of treatment have greatly influenced the possibility of transmission of hereditary taints. Observations covering a period of centuries show that the majority of mental and nervous hereditary stigmas are the result of alcoholism, tuberculosis and syphilis; in other words, the result of faulty environment, which should be conquered by other curative agents than sterilization.

BERLIN

(From Our Regular Correspondent)

Sept. 17, 1934.

Health Insurance in 1933

The Federal Bureau of Statistics has just published a preliminary report on health insurance in 1933. The report gives the number of *krankenkassen*, the number of members, the amount of dues paid and the total performance of the society. Since 1914, the number of *krankenkassen* has steadily declined. In 1914 there were 9,944 *krankenkassen*; in 1928, 7,426; in 1930, 7,183; in 1932, 6,611; in 1933, 6,427, and, at the end of 1933, 6,327 *krankenkassen*.

The average number of members in 1931 was 20,616,000; in 1932, 18,712,000, and in 1933, 18,525,000. While this was the yearly average, the total membership at the end of 1933 was about 1,600,000 greater than at the beginning of the year. The number of obligatory members was reduced by 127,000, and the number of voluntary members by 60,000. There are, however, still 3,400,000 voluntary members, 2,300,000 of whom are members of local *krankenkassen*. The administration of the *krankenkassen* requires the services of 34,300 persons. There are about two administration officials to each thousand members. The number of panel physicians is about 32,000. The monthly or quarterly dues have been considerably reduced. By the end of 1929, nearly 2,000 *krankenkassen* with nearly 12,000,000 members exacted dues in excess of 6 per cent of the wages of members; by the end of 1933 there were only 246 *krankenkassen* with 1,740,000 members still requiring 6 per cent of wages earned. For the granting of performances that exceeded those provided for in the by-laws, certain additional dues were demanded. Only those *krankenkassen* whose dues did not exceed 5 per cent of the wages earned could grant additional performances. This provision prevented 1,458 *krankenkassen* with 8,200,000 members from granting such additional performances. Other *krankenkassen* made use of this feature and paid an increased weekly sick benefit to those members who had to provide for others besides themselves. Further additional performances were granted in the form of special grants for medicine and minor remedies prescribed for members of the family. Some *krankenkassen* assumed (partially or entirely) the costs of minor remedies, cordials and major remedies. Still others paid part of the hospital charges. In the matter of aid for puerperants, the legally prescribed amounts were exceeded by few *krankenkassen*. On the other hand, a number of *krankenkassen* granted an additional amount for a burial, the usual allowance being twenty times the fundamental wages. Nearly 40 per cent of all the *krankenkassen* paid twenty-five times the wage scale, or an increase of 25 per cent. About the same

portion of the *Krankenkassen* paid the burial allowance in the event of the death not only of the head of the family but also of other members of the family.

Further Details on the Sterilization Problem

Since the last report (*THE JOURNAL*, September 15, p. 849), a number of new facts have developed. The previous report contained accounts of the activities of the recently established eugenics courts. In the meantime, figures on the workings of the sterilization law in Baden have been published. Up to June 15, 1934, 3,025 petitions for sterilization had been filed, which represented about 1.2 per thousand of the population. Sterilization was legally ordered in 997 cases and refused in thirty-two cases. Up to the date mentioned, the intervention had been applied to 289 men and 283 women.

Some time ago, the execution of the law was lagging far behind, as the federal minister of the interior emphasized in an official statement. Especially urgent are the procedures against such persons as present the gravest danger of producing offspring with serious hereditary defects. A speeding up of the work of the eugenics courts is necessary for the reason that it is desirable to put an end to the overcrowding of the institutions for mental patients. A great part of the institutions, owing to the executive order that inmates who have hereditary diseases may not be dismissed until a petition pertaining to their individual case has been presented and a decision has been reached, are filled to capacity. The result is that there is danger that new patients seeking entrance cannot be admitted. Therefore, if need arises, several separate chambers in the individual eugenics courts should be organized.

In accordance with a suggestion of the Prussian minister of justice, in the detection of persons amenable to the law, special attention should be given first to the weakminded and schizoid psychopaths, and, secondly, to the criminally inclined juveniles who have been gathered in the penitentiaries, where there are doubtless large numbers of persons who should be sterilized. The decision will be made when such juveniles have reached the age of 20, at which time the list of penalties imposed is already fairly large.

In Saxony, a detection center for weakmindedness, insanity and epilepsy has been established. This detection center is designed for patients with respect to whom a well balanced decision as to whether they belong to the designated groups of hereditary patients could not be secured by putting them in an institution, or in any other way, and for whom therefore a precise psychiatric observation is needed to clarify their condition.

The federal bureau of health instituted a preliminary inquiry in twenty-one institutions for mental patients and epileptic and weakminded persons, concerning which Dr. Dornedden gave a report. It was found that for these 24,000 inmates, at the end of 1933, the duration of treatment, in the same institution, per hundred inmates, was as shown in table 1.

TABLE 1.—Duration of Hospital Stay of Various Groups

Age Groups	Percentages						
	Under 1 Year	1-3 Years	3-5 Years	5-10 Years	10-15 Years	15-20 Years	Above 20 Yrs.
Under age 20.....	19.7	24.7	22.5	26.1	6.4	0.5	...
20-29 age group.....	16.6	20.9	15.6	23.7	11.6	3.4	3.1
30-39 age group.....	13.2	16.0	13.1	25.9	16.2	6.0	9.6
Age group above 40.....	14.1	15.4	10.7	20.7	14.1	6.0	19.1
All groups.....	16.1	18.8	14.7	25.5	12.8	4.4	7.7

It appears from this table that on Dec. 31, 1933, about half of the inmates had been resident up to five years, 25 per cent from five to ten years, and 25 per cent more than ten years, in the same institution. Former stays in other institutions are

not considered, so that these figures are low. About three fourths of the inmates of institutions were from 20 to 59 years old, whereas, of the total population of the German reich, only 57.5 per cent belonged to these age groups. Likewise, the proportion of persons more than 60 years old is higher than the proportion of that age in the total population.

TABLE 2.—Sterilization in Its Bearing on the 24,215 Inmates of Institutions

Type of Disease	Percentage of Inmates Affected	Percentage Requiring Permanent Hospital Care	Percentage of Patients Presumably	
			Dismissible Later	Without Sterilization
Congenital weakmindedness.....	23.2	70.8	26.8	2.4
Schizophrenia.....	43.5	69.0	24.6	6.4
Manic-depressive insanity.....	2.5	39.8	28.0	32.2
Hereditary epilepsy.....	10.7	65.3	23.7	6.0
Hereditary chronic chorea.....	0.2	83.0	9.4	7.5
Other diseases.....	19.0	62.2	7.6	30.3
	100.0	67.0	22.5	10.5

It is evident, therefore, that about two thirds of the inmates of institutions are in need of constant care, while 22.5 per cent may possibly be subjected to sterilization and be allowed their liberty. That amounts, for a total of 160,000 inmates in all such institutions, to about 36,000 sterilizations, which does not take account of the patients admitted each year, of whom presumably less than two thirds need permanent care and hence more than 22.5 per cent may be regarded as possibly amenable to sterilization.

ITALY

(From Our Regular Correspondent)

Aug. 31, 1934.

Meeting of Gastro-Enterologic Society

Members of the Società di gastro-enterologia met recently, for the first time, in Milan, at the Clinica Medica, under the chairmanship of Professor Zoia.

Allodi of Turin presented a paper on achylia gastrica. Theoretically the term "achylia gastrica" should be applied only to those cases in which various tests furnish evidence of a complete and persistent absence of the secretory function. Practically, however, it is logical to include those cases which, aside from a complete absence of acid, present a marked deficiency, with reference to certain other tests. The condition is more prevalent in women than in men. The pathogenesis, according to modern views, is connected with previous inflammatory gastric lesions. As to etiology, importance attaches to endogenous factors (micro-organisms and toxins) originating in the region of the portal vein and the liver. One may distinguish a true achylia from false achylia.

Fasiani and Chiatellino of Padua spoke on the anemias that sometimes follow gastric resection. Total gastrectomy appears to lead frequently to an anemia of the pernicious type. Gastric resection in general leads in a small number of cases to states of simple hypochromic anemia. The practical importance of these hypochromic anemias in connection with partial gastric resections is, from the surgical point of view, not great, because they are rare and easily controlled by treatment. If one chooses the method of resection, the first method of Billroth appears preferable, since, aside from other values, it has the advantage of rendering the disposition to anemia less frequent.

Vespignani and Lenarduzzi of Padua presented a paper on radiologic research in achylia gastrica. Radiology serves to exclude those conditions which may be confused with achylia, the recognition of some of which is aided by the radiologic examination. Radiology may also aid in the diagnosis of

achylia by pointing out the existence of cancer of the stomach or linitis plastica, which may be confused with achylia.

Many conventionists participated in the discussion. Professor Donati of Turin stated that, since achylia gastrica is not an independent entity, it did not seem correct to attempt to describe its symptomatology. In sixty persons operated on for gastric and duodenal ulcer, he had never observed signs of pernicious anemia or grave secondary anemias. Sisto holds that the gastric lesion is to be regarded as due to an impairment of the antianemic substance or influence existing in the stomach. Schiassi called attention to a peculiar syndrome that he had observed and that may be considered under three heads: anemia, hepatosplenomegaly and a type of underdevelopment that may be very marked. He said he was unable to point out the causal factors of this type, but from the point of view of practical medicine the diagnosis is now certain and the therapy is nearly always successful.

Factors That Act on the Pressure of the Cerebrospinal Fluid

Debeus reported to the Società medica of Gorizia the results of his study on the pressure of the cerebrospinal fluid. In cases of intracranial hypertension, as in cerebral tumors and in fractures of the cranium, intravenous injections of methenamine or from 30 to 50 per cent solutions of dextrose are to be recommended. Rachiocentesis gives only temporary aid.

In schizophrenic patients (145 cases observed) the cerebrospinal fluid frequently presented a slight increase of pressure, in addition to a small increase of the proteins and globulins.

Sussi recalled that hypertonic substances find a wide application in the treatment of persons with cranial traumas, in which there is ordinarily a state of hypertension. In the surgical department of which he is director more than 300 cases have been treated in this manner, without lumbar puncture ever being applied. The substances used were a 20 per cent solution of magnesium sulphate, a 40 per cent solution of dextrose, a 40 per cent solution of methenamine, and caffeine.

Antituberculosis Convention

In the Clinica Medica of Genoa the first Ligurian antituberculosis convention was recently held. The three schools that establish the trend in Italy of the modern crusade against tuberculosis are the immunizing school, represented by Professor Maragliano; the constitutional school of preventive medicine, of which Professor Pende is the head, and the school of the curative method of tuberculosis based on artificial pneumothorax.

Professor Pende, director of the Clinica Medica of Genoa, in his address described the purposes of the convention, which was based on the two most important problems of modern social phthisiology: the most suitable method of treating the first tuberculous lesions in young persons and the organization of sanatorial climatic treatment. During a period of six years in which Professor Pende examined 9,752 Ligurian children and workmen in the factories, he found that 2 per cent of the young persons apparently healthy present progressive tuberculous diseases of the lungs. In regard to sanatoriums, Professor Pende emphasized the need of erecting such institutions in the plains and in high plateau regions having an altitude of from 1,100 to 1,300 meters, for the application of mountain treatment, which he considers highly indicated.

Professor Morelli stated that an important feature of the crusade against tuberculosis is the study of the constitution of the victims, which will make it possible to treat rationally all those who are found predisposed to the disease. From more than 50,000 a year, the number of deaths from tuberculosis in Italy has declined to 35,000, as a result of the progress in prophylaxis in the schools and the offices, and of climatic therapy.

VIENNA

(From Our Regular Correspondent)

Sept. 24, 1934.

Organization of Blood Donors in Vienna

An important recent creation of the public health service concerns the organization and documentation of blood donors, who must be ready to furnish at any moment from 300 to 500 cc. of blood. At present there are about 300 professional blood donors in Vienna (mostly unemployed persons), who are kept under constant supervision. For the past eighteen months the following system has been followed: In the General Hospital a room has been equipped for the accommodation of twelve men, who constitute the "blood donors for the day." From six to ten donors are needed every day, and the addresses of twelve other donors who can be secured within a short time make provision for emergencies. Every donor carries on his person his "certificate," in which, along with his photograph, there is a record of his blood group and the results of his blood examinations, which must be repeated monthly, and in which every transfusion is recorded, which prevents any immoderate use of a donor. Women are not much in favor as professional blood donors, although it is planned to use more women than formerly. The use of women presents certain difficulties and will require some changes in the organization of the system. The usual fee for a transfusion of 500 cc. of blood is 80 shillings (about \$16), although higher fees may be charged if the donor is called to a private sanatorium. An attempt is made to take each blood donor in his turn, as far as possible, in order that all of them may be equally employed. Of the six women at present on the list (aged from 20 to 25 years) two are always available, and it is planned to admit others to the list, in order that the difficulties associated with menstruation may be overcome. The record for the number and amount of his transfusions is held by a young athlete who, within a period of eight years, has served thirty-six times as blood donor. He is only 25 years old, but he has already supplied about 18 liters of blood. On a certain occasion he served twice as a donor within three days, but that is no longer permitted. The donors state that the loss of half a liter of blood weakens them scarcely perceptibly—after two or three days they are completely restored. As for the indications for transfusion, that intervention is resorted to now in extensive burns, in poisonings, in operations with great loss of blood, in diabetes, in various forms of primary and secondary anemia, and—of late—in cancer patients.

Statistics of Vienna Physicians

Statistics collected by the board of health of Vienna show that 3,935 physicians were registered in 1933 as entitled to practice medicine. Of that number 1,110 were specialists, 650 were dentists and 730 were hospital physicians; 962 were permanently engaged as physicians to the *kranken-kassen*; in addition, 2,760 physicians were part-time assistants to the *kranken-kassen* but had no fixed appointment. All physicians treated members of the *kranken-kassen* occasionally and were paid for their services in the individual case. It appears that, aside from the hospital physicians, who are not permitted to engage in general practice, nearly all the physicians of Vienna derive their subsistence, at least in part, from the *kranken-kassen*. The total number of physicians is not much greater than last year. The number of specialists shows considerable increase: 1,110 as against 920 in 1932. The number of hospital physicians shows a decrease, having dropped from 800 to 720, as stated. Many hospital physicians have been dismissed without new appointments having been made. A classification of physicians according to their religious faith has been attempted. It is held that the number of Jews and of non-Jews is about equal, although the number of Jews in Vienna is something over 10 per cent. In addition to these practicing physicians,

there are in Vienna about 240 medical officials, who are not allowed to practice but serve as government or municipal physicians or as health officers.

Sale of a Medical Practice as an Ethical Problem

The economic crises have brought up the question as to whether a physician or his heirs are justified in endeavoring to realize on the capital represented by a medical practice. Many discussions on the subject have been held of late at sessions of the *Wirtschaftliche Organisation der Aerzte* of Vienna, and two opposite opinions have been defended. Whereas the lawyers expressed the view that developments of modern economic life have tended to cause the medical profession to be regarded as a commercial enterprise, which can be bought or sold the same as any other business undertaking, the members who cling to medical traditions held the view that a medical practice "rests primarily on ethical principles" and not on the acquisition of money as does a business. They are absolutely opposed to the idea that a medical practice, which nearly always is based only on purely personal qualities, shall be made the object of a commercial transaction. The confidential relation between the physician and his patient is not a marketable product and cannot be transferred to another person at will. Up to the present, too, the laws of Germany, Austria and Czechoslovakia have been opposed to all commercial transactions involving a medical practice. But, when a dental practice or medical institution, such as a sanatorium or hydro-electrotherapeutic institutions, are the interest involved, the law views the matter in the same light as any other enterprise constituting a source of revenue. It may be said, therefore, that the majority of the leaders of the medical profession are opposed to the transfer of a medical practice for a monetary consideration. It is generally recognized, however, that this is the standpoint of the older generation. The younger physicians take a more practical view of the matter, and, while they also are convinced of the need of upholding strictly the ethics of the profession, they do not regard the sale of a medical practice, by any means, as a misdemeanor or impropriety but rather as a dire necessity conditioned by the inexorable developments of modern life.

Cancer of the Gastro-Intestinal Tract

At a session of the physicians of the *Kärntener Spital*, Dr. Förster discussed recently the modern views on ulcers of the digestive tract. As yet none of the theories advanced in explanation of the causes of ulceration have found general acceptance. There is general agreement that ulcers are not due to a purely local process but are the result of a disturbance of the vegetative nervous system. There has been a marked increase of ulcer disease in recent decades. Statistics of various hospitals in Austria show that in 1898 only 0.07 per cent of the clients were "ulcer" patients (departments of surgery and internal medicine). By 1930 the percentage had risen to 5.7. This increase is due in part to the fact that formerly an ulcer often escaped diagnosis. With the coming of roentgen rays and the progress of modern surgery, physicians have learned how frequently ulcerations occur. But, aside from this fact, it is evident that there has been a steady increase of ulcer disease in civilized countries. Ulcers are therefore becoming a heavy burden on the department of public welfare. Ulcer disease should therefore receive the same attention as cancer, rheumatism and tuberculosis. In spite of progress in diagnosis and treatment, it is a cardinal demand that the fundamental cause of ulcer be discovered.

Prof. Dr. Max Sternberg

The death of Prof. Dr. Max Sternberg, an eminent internist, after a long illness, at the age of 71, has been announced. As a student his keen powers of observation and his knowledge of physiology attracted attention, so that he soon became an

assistant at the Physiologic Institute and at the Institute of Internal Medicine. In 1894 he was appointed instructor and in 1903 a professor. He published many articles on the heart, nervous disorders and industrial diseases, and was one of the first to give a course in social medicine in Vienna. He published the results of his researches on the "tendon reflexes," "acromegaly," "systemic disorders of the bones" and "diseases of carpenters and shoemakers"; also on "occupational diseases of the lungs," and he made valuable contributions also to anatomy and physiology. His diagnoses were famous for their accuracy. On the occasion of a reception in his honor, Professor Kundrat, the pathologic anatomist of Wieden Hospital (where Sternberg was the head of the department of internal medicine for thirty years) stated that he had always confirmed at necropsy the 100 per cent accuracy of Sternberg's clinical diagnoses. As chief physician of the large *krankenasse* of the Vienna *Genossenschaft der Gewerbetreibenden*, he was brought in contact with a large number of cases, from which he constantly enriched his medical knowledge. His passing leaves a wide gap in the medical profession of Vienna.

Prof. Dr. Reuss Summoned to Vienna

The pediatrician Prof. Dr. August von Reuss, a pupil of Escherich and Pirquet and who a few years ago was called from Vienna to the University of Graz, has been asked to take over the vacancy caused by the death of Dr. Moll and to serve as director of the Institute for Infants and Mothers in Vienna. This institute exerts a great influence on pediatrics in Austria. Modern welfare work took its inception from this institute, and Professor Reuss is an authority in this field. He plans to organize, within the department of social welfare, a center for welfare work among children, so that the general care of the younger generation and their welfare will be united in his hands.

Marriages

DANIEL MARVIN ADAMS JR., Panama City, Fla., to Miss Mary Thompson of Fort Lauderdale at Miami, September 24.

HAROLD CARL BOYLEN, Wheeling, W. Va., to Miss Audrey Carolyn Lucas of Louisville, Ky., at Wheeling, October 4.

PATRICIA HART DRANT, Philadelphia, to Mr. William Warren Rhodes of Wilmington, Del., August 18.

ROY DE VAUGHAN METZ, Detroit, to Miss Gussie Dean Gaston of Woodruff, S. C., September 24.

LEONARD DEWITT MURPHY, Buena Vista, Tenn., to Mrs. F. H. Brown of Nashville, September 29.

WILLIAM H. KERR to Miss Eula May Rossean, both of Hamburg, Iowa, at Sidney, September 5.

ALVIN F. COBURN, New York, to Miss Agnes Campbell Cooke of Paterson, N. J., October 2.

STEPHEN T. MANONG to Miss Marion Elizabeth O'Leary, both of New York, September 29.

JAMES DEVOTE PERDUE, Mobile, Ala., to Miss Ayrault Chapman of Jackson, July 25.

LOUIS I. GOLDBERG, Philadelphia, to Miss Julia Bredt of Mahanoy City, Pa., July 26.

JOHN R. RANKIN to Miss Vera Evalyn Langley, both of Keokuk, Iowa, September 8.

EDWARD H. FILES to Miss Grace Glass, both of Cedar Rapids, Iowa, September 8.

JOHANNES M. L. JENSEN to Miss Anita Netzwow, both of Milwaukee, September 15.

LUCY CAROL MILLER to Herbert Frank, D.D.S., both of New York, September 22.

GEORGE D. CALLAHAN to Miss Helen Anderson, both of Iowa City, August 22.

JOHN M. KARCH, Cincinnati, to Miss Rosemarie Brinck of Celina, Ohio, recently.

J. MALLORY KATLISLE to Miss Lillian Burt, both of Philadelphia, August 16.

Deaths

Bailey Kelly Ashford * Colonel, U. S. Army, retired, and professor of tropical medicine and mycology, University of Puerto Rico School of Tropical Medicine (Columbia University), died, November 1, at his home in San Juan, P. R. Colonel Ashford was born, Sept. 18, 1873, in Washington, D. C. He studied at the Columbian University, now known as George Washington University, and Georgetown University, where he received his medical degree in 1896 and the degree of doctor of science in 1911. In 1897 he entered the U. S. Army Medical Corps, in which he rose to the rank of colonel. In 1898 he went to Puerto Rico as a member of the military expedition, remaining during the United States occupation of the island, in command of medical department troops. In 1899 he recognized ancylostomiasis as the cause of the anemia prevalent among the rural population of Puerto Rico and in 1904 he founded the Puerto Rico anemia commission to carry on a campaign to combat that disease. Colonel Ashford also conducted extensive research on the etiology and treatment of sprue. The Institute of Tropical Medicine, which Colonel Ashford assisted in creating in 1911, led to the establishment in 1924 of the School of Tropical Medicine of the University of Puerto Rico in affiliation with Columbia University, in which school he continued as professor of tropical medicine. In 1933 both universities conferred honorary degrees on Colonel Ashford and the government of Puerto Rico placed the Ashford bust in the school as a memorial. During the World War he accompanied the first division to France as medical officer and later trained medical personnel at the front. Congress conferred on him the Distinguished Service Medal, while England conferred the Cross of St. George and St. Michael for services with the British. He was a fellow of the American College of Physicians and the American College of Surgeons, a member of the American Society for Clinical Investigation, the Association of American Physicians and Association of Military Surgeons of the United States, past president of the American Society of Tropical Medicine, and honorary member and past president of the Medical Association of Puerto Rico. In 1910 Colonel Ashford was a delegate from the United States to the International Congress of Industrial and Alimentary Hygiene in Brussels. In 1916 the Rockefeller Foundation appointed him a member of the medical commission to Brazil and in 1928 delegate to the International Congress of Tropical Medicine and Hygiene at Cairo, Egypt. He was the author of "Anemia in Puerto Rico," "Uncinariasis in Puerto Rico," "The Organization and Administration of the Medical Department in the Zone of the Armies" (Keen's Surgery, volume VII) and "Sprue" (Tice's Loose-Leaf Medicine, 1931) and editor of "Medical History of the World War."

William Scott Renner * Buffalo; McGill University Faculty of Medicine, Montreal, Que., Canada, 1884; formerly professor of laryngology, Niagara University Medical Department, Buffalo, clinical professor of laryngology and associate professor of otolaryngology, University of Buffalo School of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological Association, American Laryngological, Rhinological and Otolological Society and American Otolological Society; fellow of the American College of Surgeons; past president of the Buffalo Academy of Medicine; at various times on the staffs of the Buffalo Eye and Ear Infirmary, Buffalo Children's Hospital, Sisters of Charity Hospital, Deaconess Hospital, Emergency Hospital, Mercy Hospital, Memorial Hospital, Buffalo City Hospital and the Erie County Hospital, Buffalo, and the J. N. Adam Hospital, Perrysburg, N. Y.; consulting specialist in diseases of the ear, nose and throat, U. S. Public Health Service and the U. S. Veterans' Bureau; aged 73; died, October 10, of bronchopneumonia.



BAILEY KELLY ASHFORD, M.D.
1873-1934

John Rich McDill, Cornwall-on-the-Hudson, N. Y.; Rush Medical College, Chicago, 1885; a founder of the American College of Surgeons; a founder and past president of the Manila (P. I.) Medical Society; past president of the Philippine Islands Medical Association; formerly professor and head of the department of surgery, University of the Philippines College of Medicine, and associate professor of surgery at his alma mater; veteran of the Spanish-American and World wars; chief medical officer of the Federal Board for Rehabilitation of Disabled Soldiers, with rank of assistant surgeon general, U. S. Public Health Service, 1919-1921; chief medical consultant to the U. S. Veterans' Bureau, 1922-1923, and for many years medical officer in charge of the U. S. Veterans' Hospital, Waukesha, Wis.; organized and became chief surgeon to the Woman's Hospital, Manila, in 1902 and St. Paul's Hospital, Manila, 1905-1910; chief surgeon to the Philippine General Hospital, 1910-1912; author of "Tropical Surgery"; aged 74; died, September 14, in the Cornwall (N. Y.) Hospital.

James Cornelius Wilson * Philadelphia; Jefferson Medical College of Philadelphia, 1869; emeritus professor of the practice of medicine and clinical medicine at his alma mater; past president of the Philadelphia County Medical Society, the American Academy of Medicine, the Association of American physicians, the American Climatological Association, the American Therapeutic Society and the College of Physicians; at various times on the staffs of the Pennsylvania Hospital, Jefferson Medical College Hospital, Lankenau Hospital, Philadelphia Lying-In-Charity Hospital, Rush Hospital for Consumptives, Jewish Hospital and the Bryn Mawr (Pa.) Hospital; author of "The Summer and Its Diseases," "A Treatise on the Continued Fevers," "Fever-Nursing," and "A Hand Book of Medical Diagnosis"; editor of "American Text-Book of Applied Therapeutics"; aged 87; died, October 28, of chronic myocarditis.

John Edward Clark, Detroit; University of Michigan Medical School, Ann Arbor, 1877; member of the Michigan State Medical Society; emeritus professor of chemistry and formerly dean of the department of pharmacy and professor of chemistry and toxicology, Detroit College of Medicine; professor of general chemistry and physics, Michigan College of Medicine, 1879-1885; at one time member and president of the board of education; for many years chemist for Wayne County; author of "Clark's Physical Diagnosis and Analysis," and "Laboratory Technique for Medical Students"; aged 84; died, September 19.

John Williams Coon, Stevens Point, Wis.; Jefferson Medical College of Philadelphia, 1884; past president of the Mississippi Valley Conference on Tuberculosis and the Milwaukee County Medical Society; professor of hygiene at the Milwaukee College of Physicians and Surgeons, 1897-1904; superintendent of the Milwaukee County Hospital, 1906-1908, Wisconsin State Sanatorium, 1909-1914, and the Municipal Tuberculosis Sanitarium, Chicago, 1914-1915; medical director of the River Pines Sanatorium; aged 74; died, September 17, of bronchopneumonia, arteriosclerosis and thrombosis.

Edwin J. Norris, St. Louis; St. Joseph (Mo.) Medical College, 1888; Marion-Sims College of Medicine, St. Louis, 1891; formerly instructor in ophthalmology, associate professor of ophthalmology and professor of ophthalmology, St. Louis College of Physicians and Surgeons, and instructor in clinical ophthalmology, National University of Arts and Sciences Medical Department, St. Louis; aged 67; died, September 26, in the Deaconess Hospital, of pneumonia.

Philip Henry Stewart, Paducah, Ky.; University of Louisville School of Medicine, 1890; president of McCracken County Medical Society; member and past president of the Kentucky State Medical Association; past president of the Walnut Log Medical Society; fellow of the American College of Surgeons; served during the World War; aged 66; on the staffs of the Illinois Central Hospital and the Riverside Hospital, where he died, October 8, of brain tumor.

Earle Stanley Green * Muncie, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; past president of the Delaware-Blackford Counties Medical Society; served during the World War; at one time secretary of the city board of health; for many years on the staff of the Home Hospital, now known as the Ball Memorial Hospital; aged 51; died suddenly, October 11, of coronary occlusion.

William Walling Van Dolsen * Philadelphia; Atlantic Medical College, Baltimore, 1909; Medico-Chirurgical College of Philadelphia, 1914; served during the World War; on the staffs of the Graduate, Germantown, Jewish, Mount Sinai and St. Agnes hospitals and the West Philadelphia Hospital for Women; aged 47; died, October 3, of heart disease.

Seldom Burden Overlock * Pomfret, Conn.; Bellevue Hospital Medical College, New York, 1889; member of the New England Surgical Society; fellow of the American College of Surgeons; at one time councilor of Windham County; surgeon in chief to the Day Kimball Hospital, Putnam; aged 74; died, October 8, of heart disease.

David Irvine Christopher, Colorado Springs, Colo.; Bellevue Hospital Medical College, New York, 1874; member of the Colorado State Medical Society; aged 88; on the staffs of the Union Printers' Home and Tuberculosis Sanatorium and St. Francis Hospital, where he died, September 30, of carcinoma of the tongue.

Friend Bennett Gilpin, Cranford, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1901; member of the Medical Society of New Jersey; veteran of the Spanish-American and World wars; aged 57; on the staff of the Elizabeth (N. J.) General Hospital, where he died, October 2, of heart disease.

Charles Daniel Easton * New York; Harvard University Medical School, Boston, 1904; member of the Rhode Island Medical Society; served during the World War; formerly on the staff of the Newport (R. I.) Hospital; aged 58; died, October 4, in the New York Hospital, of carcinoma of the rectum.

John C. Furlong, Spring Grove, Ill.; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; past president of McHenry County Medical Society; aged 71; died, October 8, in the Mercy Hospital, Janesville, Wis., of injuries and shock following an automobile accident.

W. Bean Moulton * Portland, Maine; Johns Hopkins University School of Medicine, Baltimore, 1903; fellow of the American College of Surgeons; on the staffs of the Maine General Hospital and the Children's Hospital, Portland, and the Webber Hospital, Biddeford; aged 57; died, September 14.

Harry Franklin Coffman * Keyser, W. Va.; College of Physicians and Surgeons, Baltimore, 1913; formerly secretary of the Grant-Hampshire-Hardy-Mineral Counties Medical Society; aged 51; died, October 9, in the Memorial Hospital, Cumberland, Md., of septicemia following an infected tooth.

Calvin Rhea, Thayer, Mo.; Missouri Medical College, St. Louis, 1882; member of the Missouri State Medical Association; past president of the Oregon County Medical Society; aged 72; died, September 29, in the Baptist Hospital, Springfield, of coronary thrombosis.

George Perry Campbell, Nacogdoches, Texas; University of Texas School of Medicine, Galveston, 1911; member of the State Medical Association of Texas; aged 46; on the staff of the City Memorial Hospital, where he died, September 27, of typhus fever and pneumonia.

Charles Radcliffe Johnson * Batavia, N. Y.; Columbian University Medical Department, Washington, D. C., 1897; on the staff of the Veterans' Administration Facility; aged 62; died, September 24, of arteriosclerosis, cerebral hemorrhage and bronchopneumonia.

Charles Howard McDevitt * Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1900; lecturer on orthopedics, Temple University School of Medicine; aged 58; clinical assistant at the Temple University Hospital, where he died, September 11.

James Warren Hamilton, Mount Vernon, Ill.; Barnes Medical College, St. Louis, 1895; member of the House of Delegates of the American Medical Association, 1914-1915; member of the Illinois State Medical Association; aged 63; died, August 24.

George Hayward Nichols, Providence, R. I.; University of the City of New York Medical Department, 1886; aged 76; died, July 31, in the Jane Brown Memorial Hospital, of carcinoma of the large bowel, cardiorenal disease and intestinal obstruction.

Arthur Gilbert Harrison, Searcy, Ark.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Arkansas Medical Society; past president of the White County Medical Society; aged 59; died, October 5, in the Baptist Hospital, Memphis.

Harvey Samuel Cook, Valparaiso, Ind.; Chicago College of Medicine and Surgery, 1913; member of the Indiana State Medical Association; city health officer; member of the city council; served during the World War; aged 46; died, September 1.

Gilman Osgood * Rockland, Mass.; Bellevue Hospital Medical College, New York, 1886; member of the House of Delegates of the American Medical Association, 1915-1916, 1918 and 1920; aged 71; died, September 8, of milary tuberculosis.

William A. Ellison, Augusta, Ga.; Maryland Medical College, Baltimore, 1904; member of the American Psychiatric Association; clinical director of the Veterans' Administration Facility; aged 51; died, September 22, of carcinoma of the kidney.

Herman Earhart Almes * Chicago; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1889; Western Pennsylvania Medical College, Pittsburgh, 1890; aged 66; died, October 13, of carcinoma.

Robert Hardy Trammell, Excelsior Springs, Mo.; Medical College of Alabama, Mobile, 1887; served during the World War; aged 71; died, October 2, in the Veterans' Administration Facility, of cardiorenal disease and arteriosclerosis.

William Walton Lowe, Gillett, Ark.; St. Louis University School of Medicine, 1903; member of the Arkansas Medical Society; for many years president of the school board; aged 58; died, September 23, of heart disease.

Flora Adams * Hackensack, N. J.; Cornell University Medical College, New York, 1920; aged 42; on the staff of the Hackensack Hospital, where she died, October 20, of injuries received in an automobile accident.

Boris Margulis, Newark, N. J.; Universität Bern Medizinische Fakultät, Bern, Switzerland, 1916; aged 47; died, August 7, in the Beth Israel Hospital, of myocarditis and cardiovascular renal disease.

Leon Joseph Witkowski * Chicago; Northwestern University Medical School, Chicago, 1907; on the staff of the Englewood Hospital; aged 51; died, October 14, of cerebral emboli and renal calculus.

Thomas Herbert Allen * Lake Mahopac, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1875; aged 80; died, September 22, of carcinoma of the liver.

Irving Jewell Fisher * Newton, Mass.; Harvard University Medical School, Boston, 1900; on the staff of the Newton Hospital; aged 56; died, August 30, in Liverpool, England, of intestinal obstruction.

George F. Darraeott, Houston, Miss.; Memphis (Tenn.) Hospital Medical College, 1906; member of the Mississippi State Medical Association; aged 55; died, September 17, of coronary thrombosis.

William Orlando Martin, Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; member of the Medical Society of the State of Pennsylvania; aged 64; died, October 3, of edema of the lungs.

Solon C. B. Fogel, Allentown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1874; member of the Medical Society of the State of Pennsylvania; aged 84; died, August 26.

Ernest Albert Creighton * Red Cloud, Neb.; Western University Faculty of Medicine, London, Ont., Canada, 1898; president of the Webster County Medical Society; aged 63; died, August 7.

Joseph James Harrison Jr., Loudon, Tenn.; Chattanooga (Tenn.) Medical College, 1899; medical director of a sanatorium bearing his name; aged 57; died, October 7, of cerebral hemorrhage.

Arthur Seymour Alderson, Thayer, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; aged 64; died, October 3, in St. John's Hospital, Springfield, of cerebral hemorrhage.

Don C. Hughes * Findlay, Ohio; College of Physicians and Surgeons, Baltimore, 1893; aged 63; on the staff of the Home and Hospital, where he died, September 25, of cerebral hemorrhage.

Amzi Wolfe Hon, Los Angeles; University of Louisville (Ky.) School of Medicine, 1892; served during the World War; aged 66; died, September 29, of atrophic cirrhosis of the liver.

G. I. Jackson, Harrison, Ark. (licensed in Arkansas in 1903); member of the Arkansas Medical Society; aged 57; died, September 13, in Everton, of pneumonia and angina pectoris.

Don A. Barnhart, Huntsville, Mo.; Marion-Sims College of Medicine, St. Louis, 1895; member of the Missouri State Medical Association; aged 67; died, September 19, of heart disease.

John Joseph Murphy, Sioux City, Iowa; John A. Creighton Medical College, Omaha, 1911; member of the Iowa State Medical Society; aged 48; died, September 20, of erysipelas.

Joseph Austin Kilbourn @ Hartford, Conn.; College of Physicians and Surgeons, Baltimore, 1897; aged 73; died, October 13, of a hemorrhage from a ruptured esophageal varix.

Joseph Milton Weaver @ Allentown, Pa.; Medico-Chirurgical College of Philadelphia, 1906; for many years on the staff of the Allentown Hospital; aged 52; died, October 6.

James F. McDougal, Forrest City, Ark. (licensed in Arkansas in 1903); aged 74; died, September 11, in the Gartly-Ramsay Hospital, Memphis, Tenn., of heart disease.

William George Jacobs, Cincinnati; Miami Medical College, Cincinnati, 1903; served during the World War; aged 55; died suddenly, September 26, of cerebral hemorrhage.

William B. Kreider, Goshen, Ind.; Chicago Homeopathic Medical College, 1879; past president of the Elkhart County Medical Society; aged 85; died suddenly, August 28.

Percy Scott Richardson @ New Rochelle, N. Y.; Howard University College of Medicine, Washington, D. C., 1923; aged 35; died suddenly, October 3, of heart disease.

George R. Bowers, Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1915; aged 52; died, September 27, of a self inflicted bullet wound.

John Carlos Hick, Eldorado, Ill.; Barnes Medical College, St. Louis, 1903; member of the Illinois State Medical Society; aged 59; died, October 3, of cerebral hemorrhage.

Alexander W. Davidson, Poplar Bluff, Mo.; American Medical College, St. Louis, 1876; formerly mayor of Poplar Bluff; aged 81; died, September 14, of nephritis.

David A. McEwen, Ogdensburg, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., 1895; aged 71; died suddenly, August 25, of cerebral hemorrhage.

Francesco Carlucci @ New York; Regia Università di Napoli, Facoltà di Medicina e Chirurgia, 1889; aged 70; died suddenly, October 1, of coronary thrombosis.

Herbert Charles Haskins, Manitou Beach, Mich.; Toledo Medical College, 1896; aged 80; died, September 16, of acute nephritis, aortic stenosis and endocarditis.

Archibald A. Booth, Jackson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1875; formerly county health officer; aged 83; died, August 17.

Clarence Maris, Columbus, Ohio; Starling Medical College, Columbus, 1881; aged 81; died, September 27, in St. Anthony's Hospital, of heart disease.

Thomas William Causey, Lakeland, Fla.; College of Physicians and Surgeons, Baltimore, 1909; aged 57; died, September 18, of coronary occlusion.

Ernest Wolfgang Hammes, St. Paul; Rush Medical College, Chicago, 1882; aged 79; died, in October, at St. Joseph's Hospital of cerebral arteriosclerosis.

James W. Overpeck, Hamilton, Ohio; Pulte Medical College, Cincinnati, 1882; aged 83; died, October 8, of carcinoma with metastasis and arteriosclerosis.

William H. Hamersly, Wilkes-Barre, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1883; aged 72; died, September 22, of appendicitis.

Willis Jay Redfield, Omaha; John A. Creighton Medical College, Omaha, 1900; aged 57; died, September 22, of hypertension and cerebral hemorrhage.

Erneste Augustus Johansen @ San Francisco; Jefferson Medical College of Philadelphia, 1892; aged 68; died, September 9, of coronary occlusion.

Leonard B. Bean, Hartford, Ky.; Baltimore University School of Medicine, 1904; aged 79; died, September 23, of arteriosclerosis and pericarditis.

Albert O. Hollie, Chicago; Chicago College of Medicine and Surgery, 1911; aged 53; died, October 14, of gastric ulcer and hemorrhage and nephritis.

Albert Llewellyn Tilton @ Los Angeles; University Medical College of Kansas City, Mo., 1899; aged 63; died, August 31, of angina pectoris.

Richard Calvin Bromley, Flat Woods, Tenn.; University of Nashville Medical Department, 1902; aged 63; died, October 4, of cerebral hemorrhage.

Edmond Lewis Wyman, Manchester Center, Vt.; New York Homeopathic Medical College, 1875; bank president; aged 91; died, September 27.

Roy H. McKnight, Kansas, Ill.; Dearborn Medical College, Chicago, 1906; aged 52; was found dead, October 1, of a self inflicted bullet wound.

Thomas Smith Pitt, Oxford, Mass.; Baltimore University School of Medicine, 1887; aged 70; died, August 10, of gastric hemorrhage and carcinoma.

James Hancher Hawkins, White Pine, Tenn.; Vanderbilt University School of Medicine, Nashville, 1888; aged 68; died, September 22, of uremia.

T. Chalmers Fulton @ Philadelphia; Jefferson Medical College of Philadelphia, 1880; died suddenly, September 27, of coronary thrombosis.

Herbert Leighton Fossey, Miami, Fla.; University of Tennessee College of Medicine, Memphis, 1920; aged 41; was found dead, August 17.

Marcus De Lafayette Jordan, Velasco, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; aged 64; died, August 15.

Charles Elias Frain, Haliburton, Ont., Canada; University of Toronto Faculty of Medicine, 1916; aged 40; was drowned, August 14.

John J. Plumer, Hailey, Idaho; Starling Medical College, Columbus, 1882; formerly bank president; aged 74; died, October 4, of nephritis.

Cornelius Thomas Hurley, Boston; College of physicians and Surgeons, Boston, 1905; aged 52; died, September 24, of coronary sclerosis.

Homer Mantz Steifer, Chico, Calif.; Baltimore University School of Medicine, 1895; aged 79; died, August 5, of cerebral hemorrhage.

William L. Bandy, Sedalia, Mo.; American Medical College, St. Louis, 1884; aged 77; died, September 30, of cerebral hemorrhage.

Anna Louisa Kuhn, Baltimore; Baltimore Medical College, 1883; aged 74; was found dead, October 7, of cerebral hemorrhage.

Elmer Edgar Grable, Chicago; National Medical University, Chicago, 1909; aged 73; died, October 17, of carcinoma of the liver.

Lewis Sutton Aspey, Scottsdale, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1899; aged 64; died, September 14.

William C. Bryant, Atlanta, Ga.; Southern Medical College, Atlanta, 1889; aged 67; died, September 13, of coronary occlusion.

Elwood Eugene Arnold, Los Angeles; Starling Medical College, Columbus, 1895; aged 67; died, October 3, of coronary sclerosis.

Josephus Myers, Alton, Ind.; Kentucky School of Medicine, Louisville, 1877; aged 83; died, September 12, of myocarditis.

Charles Harrell, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1904; aged 60; died, October 1, of heart disease.

Arthur R. Hill, Interlaken, N. Y.; Eclectic Medical Institute, Cincinnati, 1879; aged 80; died, October 16, of heart disease.

R. H. Cowan, Wytheville, Va.; Medical College of Virginia, Richmond, 1876; died, September 16, of organic heart disease.

William Paul McCulloch @ Cheswick, Pa.; Kentucky School of Medicine, Louisville, 1891; aged 71; died, September 17.

Frank Ernest Howard @ Olean, N. Y.; Trinity Medical College, Toronto, 1894; aged 63; died, July 3, of heart disease.

Edward Francis Scanlon, Scranton, Pa.; College of Physicians and Surgeons, Baltimore, 1890; aged 78; died, August 21.

Leonidas Forrest Moore, Stonewall, Okla.; Hospital College of Medicine, Louisville, 1907; aged 66; died, September 2.

William August Shafer, Chattanooga, Tenn.; Chattanooga Medical College, 1893; aged 63; died, August 30.

Bureau of Investigation

DAVID INGRAM

A Swindler Who Has Long Worked in the Medical Field Goes to Jail

Each of two young colored women of Chicago who answered a classified advertisement for a "registered nurse" that was run in the *Chicago Tribune* August 1, 2 and 3 has been awarded \$50 by the *Tribune* for helping to bring to justice a swindler who used the want-advertisement columns to obtain money under false pretenses.

The swindler in question is David Ingram, a colored man, who for some years has been posing as a physician. Ingram advertised in the *Tribune* that he wanted a registered nurse in connection with a proposed clinic to be opened in Chicago. Each of the two young colored women who received the *Tribune* award answered the advertisement and were engaged by Ingram for the position. Ingram required each to put up \$25 cash bond "to cover possible breakage of delicate instruments." One of the young women later became suspicious and notified the police, who issued a warrant for Ingram, charging him with obtaining money fraudulently. Ingram disappeared, but was arrested on August 13 at the instance of the other young colored woman who had put up a bond. Ingram was sent to the Psychopathic Hospital, but was declared sane, and on August 31 Municipal Judge N. J. Bonelli found this swindler guilty and sentenced him to the county jail for one year.

The Bureau of Investigation of the American Medical Association has long had a record of Ingram. In May, 1924, Ingram was arrested, convicted and sentenced to six months' imprisonment in Detroit for practicing medicine without a license. The Department of Health of the City of Detroit at that time sent the American Medical Association some voluminous extracts of testimony taken during the trial of Ingram. At that trial Ingram testified that he was a graduate of the National University of Argentina. As a matter of fact, he is not a graduate in medicine at all, and is grossly ignorant of all things medical. The latter fact was brought out at the trial just mentioned when, on cross-examination made for the purpose of testing his knowledge of medicine, he declared that streptococci was a foreign remedy that went into medicines; that the position of the fallopian tubes depends on "what you were making an examination for"; that the period of gestation "logically depends on the diagnosis of the general system," and that seminal vesicles could be found in females. As a result of this cross-examination, Ingram's own attorney at the time told the court that he had advised Ingram to change his plea from "Not Guilty" to "Guilty." He changed it and was sent to prison for six months.

In December, 1928, the Connecticut State Department of Health at Hartford telegraphed the Bureau of Investigation for all information available on Ingram. This was sent. It was then reported by that Department that Ingram was at that time located in Waterbury, Conn., where he had rented a house and bought certain equipment on the installment plan, that he was also mixed up in some sort of "health institute" and was believed to be attempting to sell shares. The man had claimed that he had also practiced medicine in Camden, N. J., and in Philadelphia, as well as in Chicago. In the Connecticut case Ingram again pleaded guilty and was fined \$100 and costs and given a thirty-day jail sentence.

In January, 1930, the Rochester Chamber of Commerce wrote to the Bureau of Investigation for information on Ingram, who was described as a colored man, "President and Treasurer of the People's Medical Laboratory" at New Brunswick, N. J. Ingram, it appeared, had turned up in Rochester for the alleged purpose of starting a branch of his business in that city. At that time Ingram claimed that his permanent address was in Chicago, although he was hazy about the details. The Rochester, N. Y., officials reported further that Ingram could neither read nor write English, could not spell the name of the street on which he claimed to have lived for five years in Chicago, did not know the name of the university in South America where he claimed to have had his training,

and was working the following racket: He would get the privilege from various pastors of colored churches to give an "educational" talk to the congregation. In these talks Ingram would discuss various diseases and tell the audience that the medicines he put up would cure them of such diseases. He would then go to a retail druggist and attempt to get the druggist to carry his line.

The next report received about Ingram was in April, 1930, from a Williamsport, Pa., physician, who reported that Ingram was in his town, having come there about two months previously and started to practice medicine. The Williamsport physician, who was a trustee and district councilor of the Medical Society of the State of Pennsylvania, notified the local police that the man was not licensed to practice medicine in Pennsylvania. The doctor also called on Ingram, who displayed a government license for alcohol, but no diplomas or licenses to practice.

In December, 1930, the Scranton (Pa.) Better Business Bureau reported that Ingram had been working his scheme in that city. He carried an advertisement in the classified pages of the local newspapers, calling for a "competent stenographer and bookkeeper." Girls who answered the advertisement were offered the position at \$30 a week, but were told that before they would be given the position, they would have to post a cash bond of \$150 to show their good intentions. Ingram was reported to have offered the same position to dozens of girls under the same terms. The Scranton Better Business Bureau further reported that Ingram, who also used the aliases "William Hillis" and "Dr. William Hill," was arrested by the Scranton police on three charges of issuing worthless checks. The Better Business Bureau reported that Ingram had been bound over to the Lackawanna County grand jury for arraignment in the January (1931) sessions. We have no record of the outcome of this case.

It is obvious from what has been written that Ingram is a confirmed swindler. For some months to come he presumably will be where his activities will be restricted. Presumably, also, as soon as he gets out of jail he will be up to his old tricks.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DELIVERY AFTER CESAREAN SECTION

To the Editor:—A woman, aged 40, has five children, 18, 16, 14, 9 and 3½ years of age. The weight of four was 10½, 11½, 9 and 10½ pounds at birth; all were normal deliveries except the last, when because of an hour-glass contraction of the uterus a cesarean section was done. The patient had never had any trouble during pregnancy before, except difficult labor at term. At present the patient is three months pregnant but is in very good health otherwise. What are the chances for having a normal delivery or would another cesarean section be indicated? Would therapeutic abortion be justifiable? Please omit name and address.

M.D., Texas.

ANSWER:—There is some difference of opinion as to whether or not delivery through the vagina should be permitted after a cesarean section. Some individuals believe that if a woman has had a cesarean section she should always be delivered by a cesarean section, chiefly because of the fear of rupture of the uterus during labor. On the other hand, most obstetricians are not of this opinion. Of course, if the reason for a cesarean section is a markedly contracted pelvis, all deliveries will have to be accomplished in the same way for full term babies. If, however, the indication for an abdominal operation was a temporary one, such as toxemia, contraction ring or some other complication, and this abnormality is not present at the time of subsequent confinements, it is not necessary to perform repeated cesarean section. This is especially true if the cesarean section was a low cervical one, because the incidence of rupture in a subsequent pregnancy or labor is very small. However, the incidence of rupture of the uterus after a classic operation is fairly high, especially if the patient is permitted to go into labor. Furthermore, many ruptures of the uterus after classic operations occur during pregnancy when the patient is unaware of danger and certainly not under the immediate observation of a physician. Since the incidence of uterine

rupture is far greater after classic operations than after the cervical operation, there is some justification for the dictum "Once a cesarean section always a cesarean section" for patients who have had classic cesarean sections. Regardless of which type of operation has been performed, if a woman is to be given a test of labor after one of these operations she should be in a hospital under close supervision from the onset of labor, but preferably for a few days before term. In the case cited there need be no fear of a recurrence of the hour glass contraction. More important factors to be considered are the type of cesarean section performed, the course of the convalescence, the height and duration of fever, and any complications that may have followed the operation. A febrile convalescence often means an improper healing of the uterine wound; but a normal, uncomplicated convalescence does not necessarily imply perfect union of the uterine incision. Therapeutic abortion is definitely not indicated simply on the basis of a previous cesarean section. If this woman had a classic cesarean section, the physician should seriously consider performing another cesarean operation and sterilizing the patient a few days before term. Elderly multiparas who have had more than five children have a relatively high mortality and morbidity when delivered vaginally even when they do not have the added factor of a uterine scar.

LATE CONGENITAL SYPHILIS

To the Editor—A boy, aged 7 years, presents the following conditions. The frontal bosses are prominent, he has typical Hutchinsonian teeth, there is complete optic atrophy of the left eye, and in the right eye there is choked disk of $1\frac{1}{2}$ diopters. Roentgen examination of the skull shows increased intracranial pressure, slight separation of the frontolambdoid suture, a shallow sella turcica and complete absence of the anterior clinoid process. Hearing in both ears is normal but there is some impediment of speech. The heart is apparently normal, the spleen is just palpable, the knee jerks are slightly exaggerated and there is some unsteadiness of gait. The Kolmer and Kline reactions are 4 plus. Spinal fluid examination was not permitted. Will you kindly outline a standard of treatment and also give the status of the use of stovarsol in this type of case. Please omit name.

M. D., Oklahoma.

ANSWER.—Although there can be no doubt from the presence of various stigmas and the positive serologic reactions that this child has congenital syphilis, it is not so certain that he has neurosyphilis. The physical and roentgen changes in the skull are compatible instead with the diagnosis of intracranial tumor. Every effort should be made to arrive at the correct differential diagnosis before starting on treatment for syphilis. Consultation with a neurosurgeon, serologic examination of the spinal fluid and ventriculography would seem to be essential. If the child has a brain tumor, it is unlikely to be gumma in spite of the fact that he is known to have syphilis. Brain gumma large enough to produce these signs of increased intracranial pressure is unusual in either the congenital or the acquired infection. If the necessary diagnostic procedures are refused, it would of course be highly desirable to treat the child for syphilis since there is at least some chance that central nervous system syphilis may be the correct diagnosis. No improvement of course is to be expected in the optic atrophy. If the choked disk is due to syphilis it should recede promptly within a few weeks of the institution of antisyphilitic treatment with the arsphenamines and potassium iodide. If it does not do so it may be assumed that the intracranial process is probably not syphilitic and the intervention of a neurosurgeon is imperative.

If, on further study, the lesion proves to be syphilis or if it is necessary to institute antisyphilitic treatment without further study, it would be preferable to begin with arsphenamine 0.2 Gm. or with silver arsphenamine 0.1 Gm. at intervals of five to seven days, combined with potassium iodide by mouth in a dosage of 1.3 to 2 Gm. three times daily. Six or eight weeks of this sort of treatment will serve as a therapeutic test. Therapeutic shock and the Herxheimer reaction need not be feared. If the lesion proves on examination or therapeutic testing to be due to syphilis, it would probably be desirable to consider the prompt institution of fever therapy with malaria, though a definite pronouncement cannot be made as to this without further information. Whether with or without induced malaria, treatment should be continued for a minimum of two years with alternating courses of an arsphenamine, preferably arsphenamine or silver arsphenamine, and a bismuth compound. The bismuth preparation should be an insoluble salt, preferably the salicylate, given for a child of this age in a dosage of 0.1 Gm. weekly.

The status of stovarsol in this type of case is not as yet determined. The use of this drug in the treatment of congenital syphilis is in the experimental stage and at present is not recommended.

PREGNANCY, VASOMOTOR RHINITIS AND ALLERGY

To the Editor—A married woman of 24 with a questionable allergic family history has been complaining of sneezing, watery nasal discharge and nasal congestion, without itching or congestion of the eye or palate, for nine months. A somewhat similar attack occurred in childhood, at which time she was told of a deviated septum and improved rapidly with local nonoperative treatment and has been symptom free to the present time. The patient is now four months pregnant and has noted a general aggravation of symptoms in the past four months. She is now being treated by a rhinologist, who finds a deviated septum and two small polyps, with some objective improvement in the nasal mucous membranes but with little subjective improvement except for slight decrease in sneezing. I would appreciate a discussion and references to the literature, especially on the following points: Relation of symptoms to pregnancy; would you consider the aggravation of symptoms by pregnancy in favor of an allergic basis? Advisability and dangers of skin testing and specific treatment during pregnancy. Kindly omit name.

M. D., New York.

ANSWER.—The symptoms described in this case suggest the diagnosis of vasomotor rhinitis, or, as it is also known, hyperesthetic rhinitis, hypersensitive rhinitis or perennial hay fever. If definitely allergic, a better title would be allergic rhinitis.

The following observations, if present, would be diagnostic of allergy: (1) a history of some other allergic condition in the patient, e. g., urticaria, asthma, migraine, or gastrointestinal upsets due to specific foods, (2) a history of one or other allergic conditions in the family, especially the parents; (3) eosinophilia in the nasal secretion, from 25 to 100 per cent of the cells in allergic individuals are commonly found to be eosinophilic leukocytes (4) presence of a blood eosinophilia in many cases, i. e., over 4 per cent; (5) relief of symptoms from instillation of ephedrine or epinephrine, and (6) positive skin tests corroborated clinically. These skin tests are important and should be carried out completely with all antigens with which the patient comes in contact, such as pollens, epidermals, foods and miscellaneous substances, including orris root, house dust and cottonseed. The more the foregoing are positive, the surer is the diagnosis of allergy.

There seems to be no special reference in the literature regarding the relationship of pregnancy and vasomotor rhinitis. However, much work has been done on the relationship of pregnancy to bronchial asthma and hay fever, and as these belong to the same group as do most cases of vasomotor rhinitis, what follows will almost certainly apply to all three conditions.

The fact that the symptoms in this case have been aggravated by pregnancy would not be helpful at all in diagnosing an allergic basis. All evidence points to the fact that there is a definite relationship between allergic conditions, especially bronchial asthma, and pregnancy, but in most of the reported cases the patient is either better during pregnancy or entirely free from symptoms during this time, with a return of attacks after delivery. Occasionally the attacks of asthma occur during pregnancy. The latter would seem to be definitely related to sensitivity to some sex hormone. Bradford Green (Bronchial Asthma as a Complication of Pregnancy, *THE JOURNAL*, Feb. 3, 1934, p. 360) reports two cases of pregnancy complicated by asthma, one ending fatally during a severe paroxysm. He concludes that there are two groups of cases: (1) asthma due to pollens, proteins or some focus of infection, in which there was preexisting asthma with aggravation of attacks during pregnancy or in which attacks were first noted during pregnancy but continued after parturition, and (2) asthma due to sexual cycle disturbance, with subdivisions into cases in which attacks occurred at each menstrual period and were relieved during pregnancy and lactation and those in which attacks occurred only during pregnancy, with freedom from attacks when not pregnant. In Green's article there is an extensive bibliography.

Coca (in Asthma and Hay Fever, by Coca, Walzer and Thommen, Springfield, Ill., C. C. Thomas, 1931, pp. 189, 190, 203, 204, 341, 342) devotes considerable space to the relationship of pregnancy and menstruation to allergy and points out that most asthmatic women are worse just before and during menstruation and that most of these patients are better during pregnancy, though an occasional one will be worse or have symptoms only during pregnancy.

Fishberg (Ovarian Substance and Corpus Luteum in Asthma, *Med. & Surg.* 2:26 [Jan.] 1918) reported favorably on the giving of ovarian substance and corpus luteum in thirty cases of asthma. He notes that a common characteristic of this type of patient is a tendency to adiposity and scanty menstruation. Other investigators have not been able to obtain equally good results by such treatment in similar cases.

The question as to the dangers of skin tests in allergic patients who are pregnant may be answered simply: Cuta-

nous tests can be done quite safely in all cases. Intracutaneous tests can be done safely if previous negative cutaneous (scratch) tests have been carried out. It would seem inadvisable to start with intracutaneous tests in the presence of pregnancy. While unlikely, it is possible that a constitutional reaction might follow an intracutaneous test; such a reaction might involve a contraction of the smooth muscle of the uterus with termination of pregnancy. For this reason it is likewise advisable to inject antigens, e. g., pollen extracts, in pregnant women with the greatest of caution. It is far better to underdose than to overdose. Some clinicians treat pregnant hay fever and asthma patients by repeated skin tests of the offending protein or pollen instead of injecting extracts. This procedure is a good one, gives excellent results and is to be recommended.

INFECTION OF MOUTH AFTER INJECTION OF LOCAL ANESTHETIC

To the Editor.—A boy, aged 9 years 11 months, healthy, in good physical condition, somewhat overweight, of a family in good circumstances, had the lower left second temporary molar extracted, Jan. 29, 1934, a procaine infiltration about the root and mandibular nerve block being done. Two or three weeks later the family noticed a swelling in the left side of the face. The dentist admitted that he had four similar cases after extractions the same week. The dentist had had cultures taken of his stock Ringer's solution, which was used at the time, and a rich mycelium growth resembling *Epidermophyton eruris* was obtained. Also the first of these cases to present itself had been treated by lancing and the packing showed the same fungous growth. About six weeks later the boy's mother returned from a prolonged absence and became alarmed with the situation. She brought him to me, April 16. At that time he seemed in good condition and showed no signs except locally, not even the regional lymphatics being involved. There was a firm mass, possibly cystic, the size of a hickory nut, in the gum tissue on the outer side of the jaw below the missing tooth, and one of similar size in the left cheek just in front of the angle of the jaw. There was no tenderness, edema or redness. I advised no treatment until more could be found out. I checked the story with the dentist and the laboratory man. The other cases are proving baffling to other physicians consulted. The dentist informs me that the incised mass in the one case was not benefited, that heat and massage seemed to aggravate another, and that two cases seemed to be gradually improving under no treatment. I have not observed these cases and therefore cannot judge this statement. Meanwhile a dentist, unknown to me, sent the boy to another dentist, who gave him daily treatments, locally, with a water-cooled ultraviolet machine. The boy was given seven daily treatments when the family again consulted me, and I advised stopping this treatment. There was no appreciable difference in the size of the masses, the skin of the cheek showed considerable erythema, and the boy was in a highly irate frame of mind. I understand on inquiry from an older dentist of great prestige in this community that the ultraviolet treatments are unjustified, as they have no authoritative standing as standard treatment. Are cases like this common? What is the probable condition, and what is the best treatment and management? What is the likelihood of these masses completing reabsorbing in time? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—Fungous infections of the mouth are not uncommon, although most of them are superficial. Infections deep in the soft tissues are quite rare and usually are caused by organisms of the actinomyces group. However, Hardgrove (*J. Am. Dent. A.* 19:483 [March] 1932) reported a case of monilia infection carried, in his opinion, into the tissues from the mouth by the needle used in making the anesthetic injection for the extraction of a single tooth. This infection ran a long and involved clinical course; large doses of potassium iodide, from 0.65 to 2 Gm. daily, were followed by improvement, but complete relief was obtained only after the use of neoarsphenamine. It was thought that a high protein diet contributed to this end. Castellani (*Fungi and Fungous Diseases*) states that fungi may attack any organ and system of the human body, the integumentary system being the most frequently and the nervous system the most rarely affected. The exact identification of the infecting organism is desirable in planning treatment; since the *epidermophyton* type mentioned is generally limited to infections of the external skin, the correctness of the diagnosis in this case must be questioned. However, such drugs as potassium iodide in large doses are commonly used. Vaccines made of the organisms isolated from the infected regions have been found beneficial in many cases. Surgical incision is without benefit, though excision may be successful, and ultraviolet radiation futile. Sterilized physiologic solution of sodium chloride and Ringer's solution and even distilled water, unless rigidly protected by aseptic methods, may contain noteworthy amounts of bacteria and kindred organisms after a few days. Best anesthetic practice implies daily sterilization of anesthetic solutions or sterilization in containers holding only one day's supply and discarded at the close of one day's use. As this is not an average practice in dental offices, it is a debatable matter whether the method used in these cases should be considered malpractice. Some of the milder infections of this character heal spontaneously.

SILICOSIS OR PULMONARY FIBROSIS

To the Editor.—In an industrial plant large quantities of the following formula were ground up and mixed by hand with shovels:

No. 1.	Calcium magnesium chloride	99 pounds
	Chromate of sodium	½ pound
	Liquor pitch	½ pound
No. 2.	Sodium chloride	49 pounds
	Calcium magnesium chloride	46 pounds
	Liquor pitch	5 pounds

Could workmen inhaling this dust contract a chronic poisoning or condition that might be called "calcicosis" or anything simulating the disease silicosis, affecting the air passages and lungs? Kindly explain results, if any, of such exposure, giving the effect of these chemicals on the mucous membrane. Please omit name.

M.D., West Virginia.

ANSWER.—Neither this dusty mixture nor any of its constituents will produce any characteristic dusty lung disease such as silicosis. Only silica (SiO_2) is capable of inducing silicosis, but any other mineral dust under conditions of prolonged and gross exposure may cause some increase in pulmonary fibrosis. If the relative potential harm of silica is rated as 100, these other nontoxic mineral dusts may be rated only on the order of 5 or 10. Moreover, the fibrosis is in itself not pathognomonic, since many other dusts, alkalis, acids or vapors may induce somewhat similar if not identical x-ray markings. However, it is recognized that harm other than pneumoconiosis may be brought by either or both calcium chloride and sodium chromate. The former, owing to its avidity for water, sometimes causes erosions of the mucous membranes. Septal perforations are well known as frequent. Through similar action, chemical dermatitis may arise. The chromium salt, while much more of an irritant, is here used in so much smaller quantities as to make a practical hazard doubtful. Septal perforations are the characteristic response to the presence of chromate dust along the nasal membranes. To a minor extent, sodium chloride dust may lead to low grade irritation of the nasal tissues.

TREATMENT OF PHLEBITIS

To the Editor.—Twenty months ago I treated a man, aged 23, for phlebitis of the left femoral and popliteal veins. Now he has a milder form of the condition and states that his recovery from the first attack was not complete, since on standing a considerable time he experiences a feeling of tiredness in his ankle; soon a painful sensation of tightness develops, which extends to the knee and later becomes a deep bursting sensation. He is then compelled to resort to a recumbent position, which gives relief though at times he has some cramping of the leg and thigh muscles at night. The present attack was caused by standing at his work six or seven hours a day for four weeks. The described symptoms and signs are accentuated. The tenderness is experienced only in a small area over the femoral vein about an inch below Poupart's ligament. The only superficial veins involved are those below the knee, and the dilatation is moderate. Measurement of the affected limb half way between the ankle and the knee and half way between Poupart's ligament and the knee showed it to be three eighths inch larger than its fellow. The degree of swelling would be somewhat less than the figures indicate because the left leg is normally slightly larger than the right. The pain and discomfort are greater than the swelling of the involved limb seems to warrant. The patient is otherwise in vigorous health. The Kahn reaction on the blood was negative. The treatment has included iodine therapy, rest and elevation of the limb. Where is the site of the insufficiency in the return circulation and what is its cause and treatment? Please omit name.

M.D., Illinois.

ANSWER.—The successful treatment of deep phlebitis of the lower extremities requires a great deal of patience on the part of both physician and patient. There are no data to show whether the thrombosis of the femoral vein occurred during or following an infectious disease, an operation or an injury. Assuming, however, that the patient had an elevated temperature during the first and perhaps during the second attack, a careful search for the source of infection should be made. An inflamed tonsil, a dental root infection or a chronic prostatitis may be important, not necessarily as the etiologic factor, but as superimposed infection, which maintains or reactivates the thrombophlebitis. Should a focus of infection be found, it should not be eliminated until the attack of phlebitis has subsided; an arbitrary period of three months may be necessary before it is safe to eliminate infective foci without the danger of reactivating the thrombophlebitis. A tonsillectomy undertaken during the course of a subacute phlebitis may give rise to a renewed massive thrombosis followed by pulmonary embolism. The temperature, pulse and white cell count are fairly good indicators as to the activity of the clot. The sedimentation test of red cells is most sensitive in the detection of latent infection but it is not always available. It is customary to keep such patients in bed about ten days after the evening pulse has returned to normal. The swelling of the leg can be reduced by elevation, continuous heat, 15 grains (1 Gm.) of ammonium nitrate three times a day and intravenous injections of salyrgan in doses of from 0.5 to 2 cc. at three day intervals. Others

prefer calcium gluconate (10 cc. of a 10 per cent solution) or sodium thiosulphate in the same amount. While the calcium prevents the formation of edema by an action on capillary permeability, the sodium thiosulphate is claimed to prevent further thrombosis by interfering with clotting factors. The salyrgan has been most satisfactory.

In the diet one should aim at a moderate dehydration, limiting the fluid intake to a quart of water, avoiding much salt and sugar and providing for a regular daily bowel movement. When the patient gets out of bed an adequate elastic support must be supplied, reaching to the groin. Soreness of the femoral vein or a neuritis, which often accompanies a pelvic phlebitis, may be alleviated by roentgen therapy in small doses (from 90 to 100 roentgens at intervals of ten days).

The venous block, if the edema is unilateral, is generally in the femoral and external iliac veins. Nothing is known that will safely prevent embolism except that after four to six weeks the clot is usually so firmly organized that it is not apt to break loose.

NEO-PROBILIN

To the Editor:—What may be said concerning the use of Neo-Probilin (Schering and Glatz, Inc.) in the correction of "biliousness" due to, as stated in the enclosed advertising folder, "dietetic errors, too much rich food, excess of coffee, tea, alcohol, exposure to cold and wet, overwork, great mental strain"?
M.D., Connecticut.

ANSWER.—A number of bile salt compounds have been actively promoted for a variety of disease conditions in recent years, of which Neo-Probilin, with the following formula, is typical:

Bile Salts Combined.....	1½ gr.
Sodium Salicylate.....	¼ gr.
Phenolphthalein	½ gr.
Menthol	⅓ gr.

The recommended dose is two tablets, twice a day. "Bilious" is a "term popularly applied to disorders supposed to arise from a too free secretion of bile." In the "Actions and Uses" section of New and Nonofficial Remedies dealing with bile salt compounds it is stated that "they stimulate the secretory activity of the liver, increasing both the fluids and solids of the bile." From these observations it would appear contrary to good therapeutics to administer bile salts for "biliousness," lest the condition be considerably aggravated. The mixture has another inconsistency however, according to a leading professor of therapeutics, who has written that "a dose of ½ gr. of sodium salicylate twice daily is a joke"; and so it would appear to be in view of the recommended U. S. P. dosage of 1 Gm., or 15 grains (or thirty times the amount of salicylate exhibited in a single dose of Neo-Probilin). The menthol is present in the similarly modest concentration of two fifths of the U. S. P. dose (0.06 Gm., or 1 grain). The same consultant has further stated that "¾ gr. of phenolphthalein twice a day will move any one's bowels."

Neo-Probilin, like many similar mixtures promoted under proprietary and noninformative, or therapeutically suggestive, names represents from a therapeutic point of view a combination of bile salts and phenolphthalein. That phenolphthalein is a valuable cathartic in cases in which no sensitivity exists cannot be doubted, but the possible occurrence, though relatively rare, of the hemorrhagic macular eruption that it occasionally produces should be borne in mind. Equally valuable in given conditions are the bile salt preparations, per se. There is, however, no pharmacologic justification for the joint administration of the two drugs, nor, of course, for the addition of sodium salicylate or menthol, particularly in such small concentration, and the medical profession is imposed on when it is asked to prescribe such a mixture under a proprietary name.

ALOPECIA AREATA

To the Editor:—A young woman has lost nearly all of the hair on her head, including the eyebrows. The Wassermann reaction is negative and I can find no cause for the trouble. I know there has been some work done in the realm of glandular therapy along this line and am asking you for any advice you may be able to give me. She is much worried over the matter, as she is practically bald. She has never had any serious sickness.
H. K. OWENS, M.D., Elkins, W. Va.

ANSWER.—The case referred to is apparently one of alopecia areata, which is a disease characterized by loss of hair in circumscribed, rounded patches and may involve the scalp alone, the scalp and other areas such as the eyebrows and beard, and rarely the entire integument, in which case the term alopecia totalis is used. The etiology cannot always be determined, but credence is given chiefly to neuropathic, parasitic and toxic origins. In alopecia areata spontaneous regrowth of hair may

occur in months or years; because of this fact it is difficult to evaluate treatment, and erroneous deductions may follow the introduction of new therapeutic measures. In recent years, claims have been made of successful treatment for alopecia areata by the administration of anterior pituitary orally and hypodermically and by subcutaneous implantation or oral administration of fresh whole anterior pituitary gland. Adequate scientific confirmation of such results following pituitary therapy appears to be lacking. Thyroid extract has been prescribed in alopecia areata and its use in cases exhibiting a low basal metabolism rate may be rational. Likewise, in certain instances, other forms of glandular therapy may be indicated for symptomatic treatment, though an etiologic relationship between glandular dysfunction and alopecia areata has not been definitely established.

While alopecia areata may occur in a syphilitic patient, in which case antisyphilitic treatment should be considered part of the management of the case, true syphilitic alopecia is more irregular or "moth eaten" in its appearance and usually occurs in early stages of the disease, in which case it is likely to be associated with other manifestations or history of syphilis and the Wassermann reaction is usually positive.

The accepted treatment of alopecia areata includes consideration of the local application of stimulating and parasitic lotions or ointments, ultraviolet ray exposures to produce active hyperemia, general tonic medication and symptomatic treatment, search for foci of infection, and attention to general hygiene and to the condition of the nervous system.

DENTAL CARIES OF MOTHER AND PROSPECTIVE CHILD

To the Editor:—Can you outline for me a reasonable program of medicine which, in addition to a reasonable diet, might be calculated to reduce the chances of dental caries in a woman, aged 30, now two months along in her second pregnancy? What hope may be held that such a program of diet and medicine might also insure the child against future dental caries? Is there any information now available which suggests that calcium, phosphorus and vitamins might have any adverse effect on either mother or fetus? Please omit name.
M.D., New York.

ANSWER.—During pregnancy there is an insufficiency of calcium and phosphorus in the maternal tissues, resulting from the demands of the growing fetus. Likewise during lactation the formation of milk reduces the calcium and phosphorus content of the maternal body. Hence these minerals must be supplied in sufficient quantities during pregnancy and lactation to cope with the demands of the fetus in utero and the nursing baby. If these minerals are not supplied in the food or as medicinal preparations, the mother suffers. Among the chief symptoms and signs of lack of calcium and phosphorus are dental caries, puffiness of the hands and face, tingling and numbness of the fingers and toes, and evidences of tetany such as muscle contractures, which produce severe pain, muscle weakness and exhaustion. The chief foods that contain calcium are milk, vegetables and prepared cereals. Eggs contain large amounts of phosphorus.

It is not only necessary to have abundant calcium in the diet but it is essential that the body be able to absorb and utilize this mineral. Absorption depends on the presence of ergosterol, which is normally present in the skin and which acts only in the presence of natural or artificial sunlight. Activated ergosterol (viosterol) helps in the absorption of calcium from the gastro-intestinal tract and in deposition of the calcium in the bones. The utilization of calcium by the body is dependent on the proper functioning of the parathyroid glands. From the foregoing it is apparent that a pregnant woman should include in her diet throughout pregnancy an abundance of milk, eggs, vegetables, fruits, butter, whole grain cereals and cod liver oil, haliver oil or viosterol. If the patient cannot drink three or four glasses of milk a day, calcium and phosphorus should be prescribed in tablet form. During the summer months the sunshine aids in the utilization of the calcium in the diet but in the winter months, in climates where sunshine is at a minimum, it is most important that a pregnant woman take viosterol or haliver oil every day. These preparations and a proper diet help the mother's teeth and also the teeth of the unborn child. The simplest way in which to administer viosterol is to prescribe capsules containing 3 minims of halibut liver oil with viosterol 250 D. These capsules, which have in them both vitamins A and D, are taken three times a day during the days with little sunshine and twice a day at other times. Calcium, phosphorus and vitamins even when given in fairly large amounts do not have any deleterious effects on the mother or baby. In addition to protecting the mother's teeth by diet and medication, it is important that a pregnant woman see a dentist at least twice during her pregnancy both

for the purpose of having the teeth properly cleaned and for the detection of early caries, cavities or brittleness.

Any advice given as to the diet of the expectant mother should be applied to the individual with discretion and should be definitely related to all the specific problems in the management of the case. In general the diet calculated to provide liberally for the bone needs of the growing child is also the best for adequate tooth development in the child and the prevention of decay in the mother. Mineral-containing foods, such as milk and milk products, should be used liberally. It is extremely difficult to supply enough calcium and phosphorus in any other way. Adequate, even generous, allowance should be made for vitamins, especially D. The energy-supplying foods, especially carbohydrates, should be reduced nearly to the minimum. It is most important to consult one's dentist during pregnancy for early diagnosis of tooth decay and prompt filling of the cavities while they are small. There are no specific indications for any form of medical treatment during this period and there is no reason to believe that the ingestion of calcium, phosphorus and vitamins within the foregoing limit can harm the mother or child. Such a program may have some effect in insuring the child against future dental caries, although it is of relatively little significance as compared with factors that are brought to bear on the child after birth and probably to a less degree with those that have to do with the hereditary background. High individual immunity to dental decay is probably no different in origin than the same kind of immunity to other diseases.

TREATMENT OF WASP STING

To the Editor:—I live in a community in which wasp and hornet stings are a common occurrence. I have used spirit of ammonia but find it unsatisfactory. Can you suggest a routine of treatment that will ease the sting without taking something by mouth? My patients see no connection in a wasp sting on the leg and a dose of bitter medicine by mouth. Please omit name.

M.D., Texas.

ANSWER.—The sting should be removed by lifting it out with the blade of a knife, not by grasping it to pull, for this may force more poison into the wound. Then the application of ammonia water will ease the pain. If the person is very susceptible and is stung on a limb, a constrictor should be placed proximal to the sting in order to prevent rapid absorption of the toxin.

Epinephrine may be injected locally in small amount. If a general reaction has already begun, larger doses, from 0.3 to 1 cc. of the 1:1,000 solution, may be given intramuscularly. Intravenous administration may be called for in severe cases, but the drug should be well diluted with physiologic solution of sodium chloride and given very slowly.

USE OF X-RAYS FOR ACNE

To the Editor:—Kindly give me the best method of treating acne of the face and back with x-rays. Is this a good method: distance 20 inches, time four minutes, 4 amperes, 100 kilovolts. Filter?

F. M. SANOIFER, M.D., Greenwood, Miss.

ANSWER.—X-rays should not be used therapeutically either for acne or for any other skin disorder until the apparatus has been carefully standardized and the factors for the erythema dose determined either by ionization or by visible skin effects. The erythema or skin unit dose that is the equivalent in modern terminology of 300 roentgens should be determined on the flexor surface of a young and fair-skinned individual. The various factors, such as anode skin distance, milliamperage, voltage and time, may be changed only if the operator is familiar with the arithmetical method of computing dosage and the biologic laws that apply to roentgen rays. MacKee advises as a practical unfiltered technic for the beginner the use of the following constants: 2 milliamperes of current, 100 kilovolts, a distance of 8 inches, and an exposure of three minutes to produce an erythema dose or 300 roentgens. In the treatment of acne an erythema dose should never be administered. The average dose should be one-fourth skin unit, forty-five seconds with the foregoing factors, once weekly. Some dermatologists even use one-eighth skin unit once a week. The number of treatments will depend on the severity of the acne and from eight to twelve treatments are usually necessary to obtain results. The skin should be carefully watched for signs of excessive dryness, wrinkling or erythema. Furthermore, x-rays should not be used in every form of acne and great care must be employed to avoid the use of irritating topical applications during the treatment. The average patient is better off if he can be cured of the acne without the use of x-rays. Also the average practitioner before he uses x-rays in the treatment of

cosmetic conditions should be well aware of the medicolegal aspects of the situation and should hesitate to do so without the proper training. MacKee's book on "X-Rays and Radium in the Treatment of Diseases of the Skin" should be consulted.

VASOMOTOR NEUROSIS OF MAMILLA

To the Editor:—In a recent issue of THE JOURNAL mention is made of "vasomotor neurosis of mamilla and cancer." Please let me know what mamillary vasomotor neurosis is and how it is recognized. What is its significance, if any, to other gynecologic problems? Omit name, please.

M.D., California.

ANSWER.—The vasomotor neurosis of the mamilla has been repeatedly described in the German literature of recent years. Zimmermann described the condition in 1920 under the term of spasm of the mamilla. It was later described by several others, and Colin (*Med. Klin.* 22:1988 [Dec. 24] 1926) designated the condition as vasomotor neurosis of the mamilla.

Zimmermann, Beck and Rodecourt made further reports on the condition in 1929 and 1931. Attention was called to Rodecourt's report by a brief abstract in THE JOURNAL, Jan. 9, 1932, page 183.

In Zimmermann's report (*Deutsche med. Wchnschr.* 55:1418 [Aug. 23] 1929) it is stated that the patients have attacks of pains of a spasm-like and cutting type, accompanied by paling, erection and hardening of the mamilla. Some reports mention a radiation of the pains to the axilla.

Most of the observers point out that exposure to cold is an eliciting factor. The vasomotor neurosis of the mamilla has been observed during pregnancy and during lactation, but also in virgins.

Most of the women in whom it develops have a neuropathic constitution, but it has also been observed in women who are entirely free from nervous irritability. A connection with the menstrual period has not been noted.

Beck has taken particular notice of the vasomotor neurosis of the mamilla in the last few years and has called attention to the possibility of a connection with tumors of the heart.

LOOSENESS OF SKIN OF NECK

To the Editor:—Will you please inform me if there is any worthwhile local treatment that can be prescribed for looseness of the tissues of the neck in a woman, aged 40? There is not any double chin and the patient is of medium weight, but the skin and neck tissue seem to sag more than usual. This does not follow any strenuous dieting with loss of weight but has occurred in a patient who has always been careful of her diet for fear that her weight might increase. Please omit name.

M.D., Ohio.

ANSWER.—Exercises to strengthen the neck muscles will improve the tone of the neck and reduce the laxness of the skin. These exercises are those of rotating, nodding and general body exercises such as swimming to strengthen the neck.

The skin and neck should be massaged and a good skin cream applied at night. In the morning after massage the neck should be douched with cold water.

This condition may be inherited and is often more marked in women who have had children.

In case the skin is very redundant, a plastic operation may be done but should be undertaken by a well trained surgeon only after other measures have failed.

INCONTINENCE OF URINE

To the Editor:—Would you be kind enough to tell me which is the best treatment for incontinence of urine in women? This is in reference to the case of a woman operated on for renal tuberculosis four years ago, who had very intense cystitis before the operation, cystitis which improved extraordinarily after the extirpation of the kidney. Now she has an incontinence of urine for which I desire to know the best treatment.

J. E. CAVELIER, M.D., Bogota, Colombia.

ANSWER.—In order to outline the best treatment, one must know a good deal more about the patient than the statement that she has an incontinence of urine.

Incontinence of urine in this patient may be due to tuberculosis of the bladder following tuberculosis of the kidney. On the other hand, what appears to be an incontinence may be due to the presence of infection in the other kidney. Before advising the best form of treatment, therefore, it will be necessary to examine the patient with a cystoscope to determine whether or not she has active tuberculosis in the bladder at this time and also to examine the remaining kidney with a ureteral catheter to determine the presence or absence of infection there. And, finally, a careful examination of her pelvis should be made to rule out disease in the pelvis. In other words, a patient with this symptom and this history needs a complete urologic study.

CELLULITIS OF PELVIC TISSUES

To the Editor.—A woman about 35 years of age has had one child, now 4 or 5 years old. At the time of this pregnancy she had a large fibroid tumor of the uterus. About two years ago she developed a pain in the right inguinopubic region and a fluid mass, which was operated on by another doctor, under local anesthesia. During the operation the sac broke and, according to the patient, nothing was removed, so I imagine that this was a hydrocele of Nuck. The pain continued the same after the operation. About three months ago I performed a supravaginal hysterectomy on account of the fibroid tumor, which weighed 6 pounds (2.7 Kg.) and filled the entire fundus uteri, and also removed the appendix. At the time of the operation I examined the right inguinal region internally and intramurally and could find nothing grossly pathologic that might be responsible for this pain. The pain still continues and is quite severe at times; it is not a steady pain; it seems to let up when the patient is sitting or standing and becomes worse when she lies down; it does not seem to make much difference what position she is lying in. Kindly suggest diagnosis and treatment. Please omit name.

M.D., Illinois.

ANSWER.—The most common cause of pain in cases of this character is cellulitis of the pelvic tissues with associated nerve involvement. The Elliott treatment, Priessnitz dressings, and other forms of hydrotherapy merit a trial. Codeine and acetyl-salicylic acid are preferable to morphine for relief of the pain. Further surgical intervention might well be considered if the distress continues.

ALCOHOLIC SOLUTION OF PHENOBARBITAL

To the Editor.—In reviewing your answer to the inquiry regarding "breast pain during menstruation" in *THE JOURNAL*, Sept. 30, 1933, page 1097, I notice your suggestion of alcoholic solution of phenobarbital or other sedatives. Please advise me why you suggest the use of alcoholic solution of phenobarbital instead of the powder or tablet form of phenobarbital. Please omit name.

M.D., South Carolina.

ANSWER.—The alcoholic solution of phenobarbital, commonly known as elixir of luminal or elixir of phenobarbital, is a widely used sedative which contains only one-fourth grain of the drug in each teaspoonful. It is preferable to the powder or tablet form chiefly because the dosage is smaller than is commonly available in solid form and because the amount administered may be readily increased or decreased to meet requirements.

SERUM SENSITIZATION

To the Editor.—I am treating a boy for a severe attack of scarlet fever. About two years ago he had an illness which another doctor diagnosed as scarlet fever and gave him a therapeutic dose of antitoxin. If I should give the boy antitoxin now is there any danger of anaphylaxis due to previous treatment? How long is sensitization generally supposed to last? Some years ago in a laboratory in Chicago I injected serum into the ear vein of a rabbit that had a similar treatment some weeks before. The rabbit died almost immediately, so since that time I have had a wholesome respect for serum sensitization.

F. J. HACKNEY, M.D., Centralia, Wash.

ANSWER.—There is danger of anaphylaxis. Sensitization may last indefinitely. It is possible to test for sensitization to horse serum by intradermal injection of a dilute solution of the antitoxin.

ASCITES WITH OVARIAN CARCINOMA

To the Editor.—I have an elderly patient with an ovarian carcinoma. On two occasions I have withdrawn 7 quarts of fluid from the abdominal cavity. Is it good surgery and safe to tie in a catheter the next time, if the dressings are aseptically changed? If not, why? If so, why can't it be done in any form of ascites?

M.D., Connecticut.

ANSWER.—It is not good surgery to leave a catheter in the peritoneal cavity for drainage of ascites. Regardless of the asepsis in changing the dressings it is impossible to avoid the development of infection around the catheter or any foreign body passing through the skin. There is little danger from repeated aspirations if reasonable care is used.

CALCIUM AS ANTIDOTE TO RESPIRATORY DEPRESSION

To the Editor.—For the respiratory depression following the intraspinal injection of magnesium sulphate, calcium chloride is used intravenously as an antidote. What is the physiologic chemistry involved in this antidotal effect? Has calcium chloride been used to overcome the respiratory depression of spinal anesthesia? In what respect would the use of calcium chloride vary in the two cases? Please omit name.

M.D., Nebraska.

ANSWER.—The essential nature of the antagonism is not understood. All that is known is that several electrolytes are required, in a certain ratio, in order that cells may perform their functions. The antagonism is strictly quantitative, excess

of calcium also acting as a depressant to nerve and muscle. Calcium chloride has probably not been used in attempts to overcome the respiratory depression in spinal anesthesia and it would be most surprising if it should be found of value, because this depression is due to the ascent of the anesthetic and intraspinal blockage of the nerve roots that supply the muscles of respiration. There is no evidence that calcium antagonizes the effect of local anesthetics on the substance of nerves.

RELIEF OF SCIATIC PAIN

To the Editor.—With focal infection eliminated so far as is possible, what is the best procedure for the relief of sciatic pain? What is the technic for injection of the sciatic nerve? What is the best solution for injection? Is this an office procedure? What internal medication is recommended? Please omit name.

M.D., Massachusetts.

ANSWER.—The treatment of symptomatic sciatic pain depends on the etiologic diagnosis. In this connection the recent work of Yeoman and of Freiberg and Vinke on the importance of the piriformis should be considered. The work of Danforth and Wilson should also be consulted.

For the symptomatic relief of pain one should consider caudal epidural injection, using 0.5 per cent solution of procaine hydrochloride, a pelvic belt, manipulation under anesthesia, and fusion operation.

Internal medication with 3 Gm. of sodium salicylate in tap water, by rectum, can be repeated at infrequent intervals to relieve pain.

DETERIORATION OF DIGITALIS

To the Editor.—Given a reliable preparation of digitalis leaves, will it retain most of its potency for six months when put up in "sealed" gelatin capsules? Please omit name.

M.D., New Jersey.

ANSWER.—It will.

MUSCLE CRAMPS DURING SLEEP

To the Editor.—I have been interested in the recent remarks on muscle cramps during sleep appearing in *Queries and Minor Notes*, first by a New York physician inquiring as to a possible cause, and in the issue of September 29 by Dr. C. A. Mills of the University of Cincinnati, who states that he has observed almost complete and very prompt relief by the administration of dilute hydrochloric acid. In line with this treatment is the advice by *THE JOURNAL* to the New York physician to give an acid salt such as ammonium nitrate.

I began a study of this common clinical condition about six months ago at the San Francisco Relief Clinic. I have studied to date fifteen patients. Thirteen of them had complete relief with calcium administered two to three times daily before meals. Calcium gluconate was used exclusively in all but one case. In this case calcium chloride was given and the gluconate substituted later. The two worked equally well. It is doubtful whether one of the two patients who failed to get relief should have been included in this study, since he had cramps not only in the legs but also in the hands and during the day as well as the night. He probably will be shown to have one of the better recognized types of tetany. The other failure was a man seen first about a week ago, who after one week had no relief whatever. He has not been thoroughly studied as yet. In addition to these fifteen patients, I have given calcium to perhaps eight other persons who complained of this condition, all of whom had equally prompt and good relief. These were friends and relatives who were not closely studied.

I have done fasting serum calcium determinations on three of this group with readings of 12, 12.2 and 13 mg. per hundred cubic centimeters. I am now engaged in estimating the diffusible-nondiffusible ratios in some of these patients. Estimation of the diffused calcium would undoubtedly be of greater value than that of the diffusible, but I am unwilling to do spinal punctures in the clinic, and so far I have not been fortunate enough to get any patients with this condition in the hospital. No phosphorus determinations have been done, but in view of the calcium readings they will probably be normal. Clot retraction has been normal in three cases studied.

The condition is common. It seems to be preponderately present in middle life and older age. Nearly all the patients have varicose veins. Diabetes has not been present in any of the fifteen studied. Several of the patients volunteered the information that they were much more apt to have cramps during a night following a day when they were on their feet an unusual lot or when they had an unusually hard day's work.

It was the usual thing to have a patient say he had relief after two or three doses.

Further studies done on these patients have included complete histories, physical examinations, urinalyses, blood Wassermann and Kahn tests, and particularly a careful examination of the peripheral circulation. A rather large percentage of the patients also had a symptomatic purpura, noted by the patients simply as a tendency to bruise. With the exception of this and the varicose veins, no condition was found with any undue frequency in the group.

In view of the equally good results obtained with calcium and acid salts, I have wondered whether the basic physiologic disturbance might not be a disturbance in the ionization of calcium.

This study is being enlarged and completed for publication at a later date.

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Assistant in Medicine, University of California Medical School.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 12; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 13. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: *Basic Science.* Tucson, Dec. 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Regular.* Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, Nov. 13. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock. *Homeopathic.* Fayetteville, Nov. 13. Sec., Dr. Allison A. Pringle, Eureka Springs.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 5. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 13-14. *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

KANSAS: Topeka, Dec. 11-12. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 4-6. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 11-14. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 3. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Reciprocity.* Oklahoma City, Dec. 11. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

OREGON: *Basic Science.* Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Galveston, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 12-14. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 15. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Connecticut July Examinations

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held in Hartford, July 10-11, 1934. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Twenty-eight candidates were examined, 25 of whom passed and 3 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine.....(1932)	79.7, 82.6, 83.5		79.3
George Washington University School of Medicine....(1933)			77
Georgetown University School of Medicine.....(1933)	76.5, 76.8, 80.2*		75.3
Howard University College of Medicine.....(1933)			76.4
Loyola University School of Medicine.....(1934)			75
Univ. of Md. School of Med. and College of P. & S.....(1934)			75*
Boston University School of Medicine.....(1933)			77.5
Harvard University Medical School.....(1928) 82.9, (1931)			79.6
Tufts College Medical School.....(1914) 75, (1934)			77.5
University of Michigan Medical School.....(1932)			75
Columbia University College of P. & S.....(1933)			80.9*
Cornell University Medical College.....(1933)			85.7*
Temple University School of Medicine.....(1932)			81.5
Queen's University Faculty of Medicine.....(1924)			75
University of Toronto Faculty of Medicine.....(1932)			84
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau, Germany.....(1932)†			82.3
Osteopath ‡			

School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine.....(1932)			66.6
Johns Hopkins University School of Medicine.....(1932)			69.2
Creighton University School of Medicine.....(1933)			72.7

Twenty-one physicians were successful in the oral examination for endorsement held in Hartford, July 24. The following schools were represented:

School	PASSED	Year Endorsement of
Yale University School of Medicine.....(1930) New York, (1930)* (1932, 2), (1933, 2) N. B. M. Ex.		
State University of Iowa College of Medicine.....(1929)		Iowa
Johns Hopkins University School of Medicine.....(1923)* N.B.M. Ex.		
University of Maryland School of Medicine and College of Physicians and Surgeons.....(1932) N.B.M. Ex.		
Harvard University Med. School... (1926) New York, (1932) N.B.M. Ex.		
Tufts College Medical School.....(1931) N.B.M. Ex.		
University of Michigan Medical School.....(1919)* New York		
University Medical College of Kansas City, Mo.....(1913) New Jersey		
Washington University School of Medicine.....(1927)		Illinois
Columbia Univ. College of Physicians and Surgeons.....(1896) New York		
Cornell University Med. College... (1930) New Jersey, (1933)* N.B.M. Ex.		
Long Island College of Medicine.....(1931)* N.B.M. Ex.		
University of Rochester School of Medicine.....(1931)* N.B.M. Ex.		
University of Toronto Faculty of Medicine.....(1924)		R. Island

* License has not been issued.

† Verification of graduation in process.

‡ No average grade reported. Examined in medicine and surgery. License has not been issued.

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports 7 physicians licensed by reciprocity and 1 physician licensed by endorsement during August 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists.....(1934)			Kansas
Northwestern University Medical School.....(1933)			Illinois
Creighton Univ. School of Med.... (1929) Nebraska, (1931)			Ohio
University of Nebraska College of Medicine... (1924), (1931)			Nebraska
University of Wisconsin Medical School.....(1931)			Wisconsin

School	LICENSED BY ENDORESEMENT	Year Endorsement of
University of Illinois College of Medicine.....(1929) N. B. M. Ex.		

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, June 30:

Hospitals Approved for Intern Training

St. Joseph Hospital, San Francisco.
St. Francis Hospital and Sanatorium, Colorado Springs, Colo.
St. Mary's General Hospital, Lewiston, Me.
Burbank Hospital, Fitchburg, Mass.
Providence Hospital, Holyoke, Mass.
Mercy Hospital, Springfield, Mass.
Bryan Memorial Hospital, Lincoln, Neb.
St. Joseph's Hospital, Yonkers, N. Y.
Valley Hospital, Sewickley, Pa.

Hospitals Approved for Residencies in Specialties

Denver General Hospital, Denver. Medicine and pathology.
Elgin State Hospital, Elgin, Ill. Psychiatry.
Spring Grove State Hospital, Catonsville, Md. Psychiatry.
Belchertown State School, Belchertown, Mass. Mental deficiencies.
Danvers State Hospital, Hathorne, Mass. Psychiatry.
Hastings State Hospital, Ingleside, Neb. Psychiatry.
Atlantic City Hospital, Atlantic City, N. J. Medicine-pediatrics and surgery-gynecology.
White Haven Sanatorium, White Haven, Pa. Tuberculosis.
Baroness Erlanger Hospital, Chattanooga, Tenn. Surgery.
Hopemont Sanitarium, Hopemont, W. Va. Tuberculosis.
Milwaukee County Hospital for Mental Diseases, Wauwatosa, Wis. Psychiatry.

Hospitals Approved for Additional Residencies

Gallinger Municipal Hospital, Washington, D. C. Ophthalmology-otolaryngology.
University Hospital, Ann Arbor, Mich. Urology, orthopedics, neurosurgery, thoracic surgery and tuberculosis.
New York Post-Graduate Medical School and Hospital, New York City. Ophthalmology, otolaryngology, pathology and radiology.
Good Samaritan Hospital, Cincinnati. Pediatrics.
City Hospital, Cleveland. Thoracic surgery, obstetrics, otolaryngology, ophthalmology and communicable diseases.
Pennsylvania Hospital, Philadelphia. Cardiology, medicine, pathology, radiology, surgery and urology.
Memphis General Hospital, Memphis, Tenn. Gynecology.
State of Wisconsin General Hospital, Madison, Wis. Neurology and urology.

Book Notices

The Ancestry of the Long-Lived. By Raymond Pearl and Ruth DeWitt Pearl. Cloth. Price, \$3. Pp. 168, with 21 illustrations. Baltimore: The Johns Hopkins Press; London: Oxford University Press, 1934.

This book brings together the products of an extensive statistical genetic study of longevity, most of which has been previously published in various numbers of *Human Biology* during the past four years. Chapters IV and IX contain largely new material. The method employed is that of comparing two groups of living persons (*propositi*), the longevous group and a more or less ordinary group, selected from the family history records gathered for other purposes by the department of biology. For convenience the latter group is called the FHR series. The two groups have one feature in common: all six immediate ancestors of the individuals in both series are dead, a necessity of the case if complete ages are to be known. The longevous group is made up of sibships containing at least one person 90 years of age or over and still living.

A new concept is introduced; namely, the total immediate ancestral longevity (called TIAL). This consists of the sum of the completed ages of the six immediate ancestors. The TIALS of the two groups—long series and FHR series—are compared with regard to the mean TIAL and in many other ways, with illuminating results.

The book contains many tabulations and a great deal of statistical procedure. It is not an easy book to read in detail, but the general results are reasonably easy to comprehend. The chief results of the study are in part:

"The mean and median TIALS of the nonagenarians and centenarians are over 60 years, 16 per cent higher than those of the FHR series, indicating statistically the importance of ancestral longevity of the individual." Thus heredity is one important factor in longevity. The author recognizes other factors than heredity. He does not believe that longevity is inherited according to any known mendelian mechanism.

The study of the effects of moderate and excessive use of alcohol revealed the facts that 41.4 per cent of the longevous individuals were moderate drinkers, 4.1 per cent more than was found among the random sample of general population; that 3.7 per cent of the longevous males were heavy drinkers; and more than half (56.6 per cent) of the longevous individuals were total abstainers. In general, "the evidence from this study clearly indicates that the moderate use of alcoholic beverages throughout life is not incompatible with the attainment of great longevity."

This admirable piece of statistical work reveals nothing distinctly new or startling but puts on a sound basis much that had been believed to be true on the basis of casual observation and the study of isolated pedigrees.

Vital Cardiology: A New Outlook on the Prevention of Heart Failure. By Bruce Williamson, M.D., M.R.C.P., Physician Royal Northern Hospital, London. Cloth. Price, \$5. Pp. 344, with illustrations. Baltimore: William Wood & Company, 1934.

"The object of this treatise is to present clinical cardiology as a primary study of the two essentials which govern the cardiac output; namely, rate and force." With these words the author begins the preface. The opening chapters concern themselves with a discourse on the general ineffectiveness of modern medical practice and the fallacy of neglecting rate and force for murmurs and electrocardiograms in the study of heart disease. We are told (in italics) that "the heart has no intelligence"; that the new outlook on the prevention of heart failure should rest on the principle of "the prevention of involuntary wasteful living." The vagus and sympathetic nerves "are constantly on the watch for weakness in each other." The author's "apnea test" is said to distinguish "psychic tachycardia from all other types, whether physiological or pathological." On page 68 we read that "a mild degree of tachycardia is not an infrequent accompaniment of old age." On page 86 it is stated that "bradycardia is frequently met with in old age, especially in men." In part II are given discussions of various disturbances in rate and rhythm, of valvular defects and of the "myocardial potential." Part III concerns itself with symptoms, including precordial pain. Part IV deals with treatment.

In the therapy of coronary thrombosis, epinephrine is considered as a drug of great value, "given in 10 minim doses hypodermically four-hourly during the first few days, when the blood pressure is low, whether heart block is present or not." In the application of "preventive treatment" it is stated that "rate and force are the only factors which can possibly affect the efficiency of the heart and all other abnormalities must be interpreted in terms of their influence on these two essentials." Morphine may be safely used "in adults who still retain 60 per cent or more of active lung tissue estimated by auscultation; i. e., dry vesicular breathing is present in the major portion of the total lung field." Prolonged rest for young people after rheumatic endocarditis is believed to be "a definite factor in the high incidence of mitral stenosis we see today," for "stasis and stenosis are firm allies." "In cyanosis of purely cardiac origin, oxygen therapy is valueless." A half ounce of brandy or whisky in hot milk given at 2 a. m., when cerebral thrombosis has already occurred, "undoubtedly helps recovery and tends to prevent further thrombosis." "If the sole action of digitalis—and there is ample evidence in support of this—is stimulation of the vagus, which slows the heart, it follows that the sole indication for the use of this drug is tachycardia." According to this concept, other signs or symptoms of myocardial insufficiency are of no importance.

In the preface, the author predicts that "critics will find much material to discuss. A new view in medicine, to be worthy of discussion, must be based on adequate factual evidence. Dr. Williamson is quite evidently a physician with a considerable clinical experience. But in his book a majority of the ideas set forth, as well as the inferences drawn from the observation of patients, are unsupported by specific data. Only two references to the literature are cited in the entire work. In seeking advocates for such unorthodox views, it is essential to set forth fully the facts on which they are based. The volume, therefore, cannot be recommended, for the theories advanced are unproved, the deductions based on clinical observation are often fallacious and many of the principles of therapy outlined are, in the light of current knowledge, unsound.

Tratamientos de la intoxicación cianhídrica: Sus mecanismos fisiológicos. Por Enrique Hug, profesor de farmacología, Facultad de ciencias médicas, Rosario. Paper. Pp. 151. Buenos Aires: El Ateneo, 1934.

Professor Hug presents the results of his researches on cyanide poisoning carried out during the last four years. The tables and charts and most of the text have appeared previously in South American (Spanish) and French journals. An extensive review of the literature makes this a complete contribution. A work such as this has the advantage of presenting in collected form the important results and conclusions of an expert and authority. Hug includes a complete discussion of the work of North American authors. The first part discusses the toxicity of hydrocyanic acid and its salts and the mechanism of the poisoning. The second part takes up the antidotes according to the newer classification, namely, hyposulphite and colloidal sulphur, reducing sugars, methemoglobinizing substances, other antidotes and combined antidotes. Chapter VIII discusses results in man. The monograph ends up with general conclusions, a bibliography and an index. The author naturally devotes considerable space to a discussion of the methemoglobinizing agents. He must be credited with having recognized the great practical possibilities of methemoglobin formers in the treatment of cyanide poisoning. As a result of his studies, he introduced the use of sodium nitrite, which greatly exceeds in effectiveness all previously tried antidotes, including methylene blue. Hug was among the first to recognize that the antidotal actions of nitrite and methylene blue rest on a common basis, namely, on methemoglobin formation, which results in the formation of the nontoxic cyanmethemoglobin. He presents extensive chemical and pharmacologic data on the antidotal action of methemoglobin and admirably proves his case for it. As for the choice of an antidote in human cases of cyanide poisoning, Hug, like all other students of this subject, proceeds from experimental results on injected animals and cites cases successfully treated. Apparently he is not certain which antidote should be regarded as the best. He recognizes the value of methylene blue but is inclined to favor sodium nitrite, possibly combined with sodium thiosulphate. In South America the nitrite and thiosulphate have been tried successfully and safely. Probably most North

American physicians and pharmacologists would not yet be ready to adopt nitrite as the first choice, in view of the recent successes with methylene blue without attendant difficulties or serious consequences. It may be some time before the final choice of antidote is settled, as the present uncertainties lie on the clinical side and not on the experimental. Surely this monograph will prove valuable and profitable to all those handling cyanide and treating, or likely to treat, emergency cases of poisoning. No medical library, and no researcher who has failed to keep abreast of recent contributions on poisoning, can afford to be without a copy.

L'intoxication par les somnifères (Intoxication barbiturique). Par Charles Flandin, médecin de l'Hôpital Bichat, Jean Bernard, Interne des hôpitaux de Paris, et François Joly, Interne des hôpitaux de Paris. Paper. Price, 20 francs. Pp. 116, with 6 illustrations. Paris: G. Dolin & Cie, 1934.

Until recently, opiates were the favorite poisons for suicide; within the last decade, and most especially the last two or three years, barbiturates have taken first place. This, no doubt, is due to the fact that there are severe restrictions to the sale of opiates, while any one, anywhere, can obtain any quantity of poison of the barbituric acid series, enough to produce death. Until this condition is rectified by restrictive legislation, studies such as this are greatly needed. Flandin has had the opportunity of studying, in collaboration with two interns at the Bichat Hospital, sixty-two cases of this form of poisoning within the last eighteen months in one general medical service. This number of cases in a rather short span of time may serve to show the frequency of the occurrence of this condition as well as the relatively high degree of authority with which Flandin and his assistants speak on the subject.

This work is the most thorough presentation of barbiturate poisoning yet available, as may be gathered from the fact that it contains chapters on the chemistry and experimental physiopathology of the barbiturates, the methods of identification, the pathologic anatomy, the clinical etiology, the symptomatology, and the diagnosis, prognosis, treatment and prophylaxis, besides a bibliography covering more than twelve pages.

The prognosis, it is pointed out, cannot be based on the depth of the coma, because a complete coma is frequent in perfectly curable cases, while an agitated sleep may end in death. The presence of the corneal reflex is favorable, as is mydriasis, while miosis is unfavorable. The dose ingested and still more the time since it was taken before treatment is instituted are directly proportionate to unfavorableness of prognosis. The only true sign of improvement is recovery of consciousness. Even though the patient may again become unconscious, his recovery is imminent. While the reappearance of reflexes is a favorable sign, such reactions may be merely temporary in a grave case. While calm, regular respiration is favorable, irregular respiration is unfavorable. While the signs of pulmonary atelectasis do not modify the prognosis, those of secondary pulmonary complications, such as a pneumonia, greatly increase the gravity of the case. Enfeeblement of circulation is often absent: when it is present, the prognosis is grave. Anuria is part of the clinical picture of certain fatal forms. A normal secretion of urine is a favorable sign, provided it is well sustained. If the temperature does not exceed 104 F. and if it falls to normal within twenty-four hours, the case is likely to be favorable. If it exceeds 104 or is continuous, or if hypothermia prevails, death is likely to ensue. If the leukocyte formula is approximately normal, it constitutes an index of great gravity, no matter what the temperature. If, on the other hand, a leukocytosis appears in connection with a normal temperature or a temperature falling to the normal, it is likely to be a favorable omen. If the leukocytosis accompanies hyperthermia, it does not have the same favorable significance, provided it is possible to eliminate a visceral localization.

In the treatment, the principal factor is constant and unremitting care. Gastric lavage is, of course, essential if the patient is seen early; but, if the patient is first seen late, the indication for lavage may be disputable, as the poison is usually not found at that time in the stomach and lavage is not without danger of causing aspiration pneumonia. Abstraction of from 500 to 600 cc. of blood may be of some value, especially if followed by transfusion of from 500 to 800 cc. of blood, which if

repeated would secure a veritable washing of the blood. Dextrose saline solution should be administered continuously either by rectum or, in serious cases, intravenously. It is indeed the single most important therapeutic agent against barbiturate poisoning. The patient should be kept in the half sitting posture to prevent pulmonary complications. Oil is recommended for purgation. In case of heart failure, strophanthin (0.25 mg.) intravenously and camphor as well as epinephrine may be of use. But the most important antagonist is strychnine in enormous doses, even in doses exceeding the minimum fatal dose (0.03 Gm.) for normal individuals. In moderately severe cases, one should give intravenous injections of 0.01 Gm. of strychnine hourly; in very severe cases one should start with 0.05 Gm. (given very slowly) by intravenous injection and repeat this dose hourly or alternate the larger with the smaller dose hourly. The indications for letting up on the dosage of strychnine are either amelioration of the coma or signs of strychnine poisoning, indicated by the return of the reflexes, Chvostek's sign or more rarely by rigidity of the lower extremity. These come on rapidly, within two to ten minutes, often while the needle is still in the vein. The author accepts the theory of phylaxis, advanced by Billard, according to which strychnine, of value in preventing union of the depressant poison with the nerve centers, unfortunately is powerless to displace that which has become fixed in the nerve centers. If strychnine fails, one might try picrotoxin in doses of possibly 0.6 mg. given hypodermically. Coramine may be given in doses of from 3 to 10 cc. of the commercial solution in the twenty-four hours. Against respiratory depression, caffeine is the auxiliary remedy of choice. Inhalation of oxygen with the addition of carbon dioxide should be resorted to as soon as respiration seems to become insufficient, with artificial respiration reserved for final recourse if death seems imminent. It should be stated here that the safety and efficiency of these huge doses of strychnine advocated by the authors is by no means generally accepted or admitted.

The prevention of this form of poisoning must be accomplished by legal enactment by the addition of the barbiturates to the list of poisons covered by the antinarcotic law.

Die Haut- und Geschlechtskrankheiten: Eine zusammenfassende Darstellung für die Praxis. Herausgegeben von Prof. Dr. Leopold Arzt und Prof. Dr. Karl Zieler. Lieferung 17, Band V. Tripper der Mundschleimhaut, der Nase, der Ohren, des Mastdarms, des Auges, Allgemeinkrankheiten bei Tripper. Von Prof. Dr. Leo Hauck. Welcher Schanker (Ulcus molle). Von Prof. Dr. Otto Grütz. Lymphogranulomatosis inguinale. Von Prof. Dr. W. Frei. Venereisches Granulom. Von Prof. Dr. W. Frei. Paper. Price, 9.40 marks. Pp. 347-524, with 26 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1934.

This portion of the fifth volume of this system of skin and venereal diseases is devoted in the first place to gonorrhea of the mouth, nose, ears, rectum, eyes, lymph channels, blood vessels, skin, heart, joints, muscles and tendons, discussed by Professor Hauck of Erlangen. Then soft chancre (ulcus molle) is considered by Professor Grütz of Wuppertal-Elberfeld. Thirdly, a venereal disease much in the limelight today, lymphogranuloma inguinale, is discussed from different angles by Professor Frei of Berlin, the deviser of the "Frei reaction," now so widely used in diagnosis and differential diagnosis of this disease. Professor Frei also devotes a few pages to granuloma inguinale. The physician desirous of a general survey of these diseases will find them, on the whole, clearly discussed in this small volume, at least, as far as gonorrhea, soft chancre and lymphogranuloma inguinale are concerned. Granuloma inguinale, on the other hand, is a rarity in Germany, and Professor Frei offers nothing new.

All the articles present a complete knowledge of the latest literature on the subjects, and while complete reference lists are not furnished, owing to lack of space, the reader is told where he can find them. The portions devoted to gonorrhea of the skin and mucous membranes, to soft chancre and to lymphogranuloma inguinale seem to be particularly well done. In handling the treatment of chancroidal bubo, the author has made no note of the injection treatment of the bubo; e. g., with Mercière's solution. Professor Frei feels more strongly than ever that inflammatory strictures of the rectum are due to lymphogranuloma inguinale.

The subvolume in boards is well printed, on excellent paper, and has twenty-four illustrations and two colored plates. All

of them are good except the representation of a case of granuloma inguinale. As is usual in most foreign books, there is no index, though the reader will find a tolerable division of the contents at the beginning of each section.

L'infarctus du myocarde: Etude expérimentale électrocardiographique et clinique. Par Eduardo Coelho, professeur à la Faculté de médecine. Lisbonne. Paper. Price, 35 francs. Pp. 212, with 103 illustrations. Paris: Masson & Cie, 1934.

Professor Coelho has produced a good monograph on the experimental, electrocardiographic and clinical aspects of myocardial infarction. Included in this work is a brief but excellent survey of the literature with a bibliography of 209 titles. He has presented animal experimental work of his own, consisting of ligation of the coronary vessels in the dog, and he also reports twenty-eight personal cases in medical practice. In summarizing the medical records of his patients Coelho has reported that twenty-seven showed the characteristic chest pain of coronary thrombosis. Only one failed to complain of pain and that one suffered from dyspnea instead. Twenty of the cases showed a considerable drop in arterial blood pressure, twenty-three a definite elevation in temperature, six a pericardial friction rub, and four acute pulmonary edema. Five of his twenty-eight patients died, three in the course of a second crisis of coronary thrombosis and two with acute pulmonary edema. The other twenty-three patients are "clinically cured," some for more than four and one-half years. Electrocardiographic study of these twenty-eight cases showed thirteen of the so-called T_1 type (probably indicative of thrombosis of the anterior descending branch of the left coronary artery with infarction near the apex of the left ventricle), ten of the T_2 type (with probable thrombosis of the right coronary artery and infarction at the base of the left ventricle posteriorly), two of both types, one with bundle branch block, and two with paroxysmal ventricular tachycardia (both these patients died). Two cases showed auriculoventricular block. The monograph ends rather abruptly without any discussion of treatment. It would be well worth while for the author to include a section on treatment and a further discussion on prognosis if a second edition is published.

Handbuch der inneren Medizin. Herausgegeben von G. v. Bergmann und R. Stachelin. Unter Mitwirkung von V. Sallé. Begründet von L. Mohr und R. Stachelin. Band I: Infektionskrankheiten. Bearbeitet von R. Doerr, A. Eckstein und anderen. Third edition. Cloth. Price, 96 marks. Pp. 1,299, with illustrations. Berlin: Julius Springer, 1934.

This is the first volume of the third edition of a system comprising the entire field of internal medicine. In accord with the custom prevailing, each chapter has been written by a different author who by his special inclination and research work seemed to be particularly competent to attend to the task allotted to him. In this way, following a general discussion of pathogenic micro-organisms and the reactions of the carriers, are in detail described all the infectious diseases occurring in human beings. While on account of financial conditions the volume of the preceding editions had to be cut down somewhat, this was not done at the expense of information offered but simply resulted in a more concise presentation. This publication takes first place as a text and reference book. The world's literature is extensively considered and properly indexed; 395 illustrations promote the understanding of the text.

The Operative Treatment of Collum Femoris Fractures. By Sven Johansson, M.D., Surgeon-in-Chief, "Allmänna och saligrenska sjukhuset." Göteborg, Sweden. Paper. Pp. 148, with 157 illustrations. Copenhagen: Levin & Munksgaards Forlag, 1934.

The author presents a method of treatment which he has found successful. Of a series of 3,635 patients admitted with a total of 3,940 fractures and dislocations, 390, or about 10 per cent, had fractures of the neck of the femur. Seventy-five per cent of the patients were over 60 years of age. The author quotes Radasch, who described the "medullary index": that is, the relation between the compacta and the bone marrow changes with increasing age, the medullary cavity growing wider while the cortex becomes thinner. He emphasizes the importance of taking roentgenograms, not only in the ventral-dorsal but also in the lateral projection. He advises an additional lateral roentgenogram of the unaffected hip. Johansson believes that interposition of tissue delays but does not necessarily prevent

complete osseous union. In his 390 cases there was a primary mortality of about 14 per cent. He states that the so-called Whitman method should be called the Whitman-Lorenz-Löfberg method, because each of the three worked the method out independently of the other two. He advises against inward rotation before one has obtained maximal abduction and extension. He believes in Cotton's artificial impaction.

Johansson's method is as follows: After carefully replacing the fracture he drills a fine, stiff, metal wire in the axis of the neck from a point slightly below the trochanter. After the position of the wire has been controlled both ventral-dorsally and laterally, it is used as a guide for the introduction of a metal nail of the same shape as that employed by Smith-Petersen but with the modification that it is provided with a central canal so that it can be threaded on the wire. No plaster cast is applied. The patient may be put in a Braun splint or with one sand bag on each side as support. After two weeks, active movements are begun cautiously and electrotherapy is instituted. The average confinement to bed has been thirty-one days. The average stay in the hospital was about eighty days. He has operated on about fifty patients and in only one did he fail to obtain satisfactory position and fixation by his method. He usually employs spinal anesthesia.

Medicolegal

Medical Practice Acts: Massage to Alleviate Pain as Constituting Treatment of Disease.—Thompson gave massages to two persons, one of whom had a pain in her shoulder and the other had a pain in the neck. He was convicted in the circuit court, Montgomery County, of treating diseases of human beings without a license. He appealed to the court of appeals, Alabama, where the judgment of conviction was reversed. *Thompson v. State*, 153 So. 469. The state then applied to the Supreme Court of Alabama for a writ of certiorari to review the decision of the court of appeals.

The medical practice act of Alabama provides, in part, as follows:

Any person who treats, or offers to treat diseases of human beings . . . without . . . a certificate of qualification from the state board of medical examiners, shall be guilty of a misdemeanor. . . .

In this case, said the Supreme Court, in order to warrant a conviction of Thompson, the state must show that he treated or offered to treat diseases of human beings. This the state failed to do. The term "disease," continued the court, means more than a mere temporary pain or disorder. In *Merriam v. Hamilton*, 64 Or. 476, 130 P. 406, cited and followed by the Alabama court, it was held that a complaint charging that the plaintiff had a backache was not sufficient as a charge that she had a disease, the court in that case observing:

True enough, the plaintiff says she had a backache, but pain is not a disease; it is only the symptom of some disorder of the body which in turn may not amount to disease or trauma.

To adopt the state's contention in the present case, said the court, would render any good Samaritan a lawbreaker who tried to ease or alleviate a pain by rubbing, or a bruise or temporary swelling or soreness with a poultice or hot water bottle. The record, in the opinion of the court, disclosed no violation of the medical practice act. The petition to review the decision of the court of appeals was therefore denied.—*Thompson v. State (Ala.)*, 153 So. 470.

Insanity: Irresistible Impulse and Criminal Responsibility.—Eatman was indicted for burglary. He pleaded that at the time of the commission of the alleged offense he was insane. At the close of all the evidence, the trial court instructed the jury to disregard all the testimony offered with reference to the insanity of Eatman. A conviction followed and Eatman appealed to the Supreme Court of Mississippi.

The sole question on appeal, said the Supreme Court, was whether the testimony relative to the insanity of the accused should have been submitted to the jury. Every lay witness except one was without doubt as to the sanity of the accused. Two witnesses testified concerning some peculiarities in the

conduct of the accused noted on isolated occasions, but, the court said, peculiarities of conduct on occasions do not amount to proof of insanity, else, in the judgment of many people, most of the people, other than themselves, would be insane. All the expert witnesses testified that the accused was a psychopathic delinquent without psychosis, that he had the capacity or ability to distinguish right and wrong but was deficient in inhibitory powers. The test of criminal responsibility, continued the court, is the ability of the accused, at the time he committed the act, to realize and appreciate the nature and quality thereof—his ability to distinguish right and wrong. The defense of irresistible or uncontrollable impulse is not available unless the uncontrollable impulse springs from a mental disease existing to such a degree as to overwhelm the reason, judgment and conscience. The reasons for the general rejection of the defense of uncontrollable impulse, in Mississippi, were set forth as follows in *Smith v. State*, 95 Miss. 786, 49 So. 945, 27 L. R. A. (N. S.) 461, Ann. Cas 1912A, 23:

It is known among medical writers as lesion of the will. Its peculiarity is said to be that, while the mental perception is unimpaired, the mind is powerless to control the will; that while its unhappy subject knows the right, and desires to pursue it, some mysterious and uncontrollable impulse compels him to commit the wrong. This kind of insanity, if insanity it can be called, though sometimes recognized by respectable courts, and still oftener, perhaps, by juries seeking an excuse to evade the stern dictates of the law, is properly rejected by the authorities generally. The possibility of the existence of such a mental condition is too doubtful, the theory is too problematical, and too incapable of a practical solution, to afford a safe basis of legal adjudication. It may serve as a meta-physical or psychological problem to interest and amuse the speculative philosopher, but it must be discarded by the jurist and the lawgiver in the practical affairs of life.

An expert witness in the present case testified that there was no practical or dependable way to tell whether the accused was in fact unable to resist the criminal impulses. The evidence, concluded the court, established the fact that the accused had the capacity to distinguish between right and wrong. The action of the trial court, therefore, in instructing the jury to disregard the testimony with reference to the insanity of the accused, was affirmed.—*Eatman v. State* (Miss.), 153 So. 381.

Workmen's Compensation Acts: Total and Permanent Disability Attributed to Traumatic Neurosis.—Duotwal was struck on the head by a 28-pound radiator, which fell several feet from its stacked position. Two fellow workers assisted him to the office of the company doctor, about 600 feet away. The company doctor treated a scalp wound and had the injured employee removed to a hospital. After the third day at the hospital, the scalp wound having healed, the injured workman was given permission to go home but he at first refused to leave the hospital. He acted and talked strangely, contending that he should stay at the hospital for at least two months because, as he said, he had no clothes. Later in the day, however, he did leave the hospital but owing to his nervous condition he was returned in about two weeks for a second stay of ten days. He complained of dizziness and headaches but otherwise appeared well nourished and not acutely ill. In a proceeding under the workmen's compensation act of Illinois, it was claimed on behalf of Duotwal that, following the blow on his head, a striking personality change took place. The injured employee, it was claimed, was rendered useless for remunerative employment; that the injury to his head had affected his mind, resulting in abnormal suspicion, distrust and hostility. Prior to the accident, the evidence showed, the employee had been a steady and reliable worker and had been regarded as jovial and optimistic. His family physician testified that his condition after the injury was distinctly different from his condition prior thereto. After the injury, according to the testimony of this physician, Duotwal was highly nervous and irritable and would become startled at any noise. He could not walk in a straight line, had a wild stare from bulging eyes, lacked coordination in speech, became discouraged and depressed, and had no interest in himself or his surroundings. An expert in mental diseases testified that Duotwal was a paranoiac and that he would get worse, not better, and that he could not carry on any work except simple tasks under supervision. Another expert witness testified that Duotwal was suffering from traumatic neurosis. An arbitrator of the industrial commission awarded compensation for total and permanent disability, which award was sustained, on review, first by the industrial com-

mission and subsequently by the circuit court of Cook county. The employers thereupon brought the case before the Supreme Court of Illinois for review.

The causal connection between the accident and Duotwal's incapacity for remunerative labor, said the Supreme Court, was established by the evidence. There was testimony showing that Duotwal was suffering from neurosis of traumatic origin which incapacitated him from doing anything of a remunerative nature. We have held, continued the court, that an employee is totally and permanently disabled when he is unable to make some contribution to industry sufficient to justify payment to him of wages. That there may be a later improvement in Duotwal's condition, said the court, does not defeat the award. If there is such improvement the employer has his remedy by appearing and asking for a modification of the award. The court thereupon affirmed the judgment of the circuit court in favor of the injured employee.—*Ford Motor Co. v. Industrial Commission* (Ill.), 189 N. E. 498.

Workmen's Compensation Acts: Refusal to Undergo Operation for Hernia.—An employee suffering from an operable hernia, said the Supreme Court of Oklahoma, must accept a tendered operation before he can claim compensation for total permanent disability. The employee may not, however, be compelled to take a risk of life, however slight, in order that the pecuniary obligation created by law against his employer may be minimized. This rule arises out of the high respect which the law has for human life. In the present case, the employee had worked for the United Service Street Car Company for fifteen years. During that time he had on two occasions, prior to the instant case, developed a hernia. The condition was corrected in each case by operation. On Jan. 27, 1933, the employee developed a third hernia from a strain. An operation tendered by the employer was performed but was unsuccessful. A second operation was offered, which the employee refused to undergo, basing his refusal on the advice of his physician that, owing to the presence of scar tissue in the vicinity of the hernia and other physical conditions, it would be practically impossible to perform a successful operation and that such an additional operation would be extremely dangerous. The state industrial commission awarded compensation for total and permanent disability, and the employer appealed to the Supreme Court of Oklahoma.

The burden of proving that the tendered operation was simple, safe and reasonably certain to effect a cure, said the Supreme Court, was on the employer. Where conflicting evidence is introduced concerning the safety of a tendered operation and the probability that a cure would be effected thereby, the reasonableness of the refusal of the injured employee to accept such operation resolves itself into a question of fact to be determined from the evidence. The evidence in the present case, as viewed by the Supreme Court, supported the finding of the industrial commission that the employee was permanently and totally disabled, that the tendered operation was useless and dangerous, and that therefore the employee's refusal to undergo the operation was reasonable. The award of the commission was consequently affirmed, with certain modifications.—*United Service Street Car Co. v. McCarter* (Okla.), 30 P. (2d) 456.

Society Proceedings

COMING MEETINGS

- American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.
- Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
- Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
- Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

1: 425-536 (Sept.) 1934

- Natural Chemical Factors Governing Gastric Motility. J. P. Quigley, Cleveland.—p. 425.
- Chronic Inflammatory Lesions of Small Intestine (Regional Enteritis). P. W. Brown, J. A. Bargen and H. M. Weber, Rochester, Minn.—p. 426.
- Role of Gastro-Intestinal Tract in Conditioning Deficiency Disease: Significance of Digestion and Absorption in Pernicious Anemia, Pellagra, "Alcoholic" and Other Forms of Polyneuritis. M. B. Strauss, Boston.—p. 431.
- Cinchophen Poisoning: Report of Seven Cases, with Especial Reference to Rare Instance Complicated by Multiple Gastric Ulcers. L. Bloch and D. H. Rosenberg, Chicago.—p. 433.
- *Some Metabolic and Nutritional Aspects of Chronic Arthritis. R. Pemberton, Philadelphia.—p. 438.
- Pancreatitis, with Especial Reference to Its Nonsurgical Treatment. V. C. Rowland, Cleveland.—p. 441.
- Résumé of Newer Physiology of Pancreas. A. C. Clasen, Kansas City, Mo.—p. 445.
- *Diabetes Mellitus, Its Physiologic Essence and Rational Treatment. W. N. Boldyreff, Battle Creek, Mich.—p. 453.
- Pathogenic Protozoa in the United States. R. Hegner, Baltimore.—p. 456.
- Report of Committee "on Survey of Enzyme Tests, as Performed by Members of the American Gastro-Enterological Association." A. H. Aaron, Buffalo; H. L. Bockus, Philadelphia, and A. C. Ivy, Chicago.—p. 462.
- Bacteriologic, Roentgenologic and Clinical Study of Ulcerative Colitis. T. T. Mackie, New York.—p. 466.
- Experimental Study of Lower End of Esophagus: I. Effect of Diaphragm on Esophagus and Cardio-Esophageal Orifice in Normal and Bilaterally Phrenicectomized Animal. II. Physiologic Studies. M. Feldman and S. Morrison, Baltimore.—p. 471.
- Lowering the Mortality from Appendicitis. J. R. Verbrycke Jr., Washington, D. C.—p. 477.
- Importance to Gastro-Enterologist of Inheritance in Disease. Madge Thurlow Macklin, London, Ont.—p. 480.
- Diagnosis and Treatment of Amebiasis. S. Simon, New Orleans.—p. 486.
- History of Gallbladder Disease: Résumé of Symptoms. M. E. Rehfuss, Philadelphia.—p. 488.
- Studies on Alterations of Function in Biliary Tract Disease. I. S. Ravidin, Philadelphia.—p. 496.
- Diseases of Portal Vein: Review of One Hundred and Twenty-Seven Instances. J. F. Weir and D. C. Beaver, Rochester, Minn.—p. 498.
- Clinical Use of Tests of Hepatic Function. C. H. Greene and H. F. Shattuck, New York.—p. 505.
- Significance of Alkalosis in Treatment of Peptic Ulcer. S. A. Wilkinson and Sara M. Jordan, Boston.—p. 509.
- *Aluminum Hydroxide in Treatment of Peptic Ulcer. I. H. Einsel, W. L. Adams and V. C. Myers, Cleveland.—p. 513.
- Niche as Criterion in Healing of Peptic Ulcer. J. Buckstein, New York.—p. 516.
- Treatment of Peptic Ulcer Based on One Thousand Four Hundred and Thirty-Five Cases. E. S. Emery Jr., Boston.—p. 520.
- Rationale for Treatment of Peptic Ulcer. A. B. Rivers and T. J. Dry, Rochester, Minn.—p. 522.
- Incidence of Gastrojejunal Ulcer Following Gastro-Enterostomy. J. W. Hinton and R. E. Church, New York.—p. 526.

Metabolic and Nutritional Aspects of Chronic Arthritis.—Pemberton stresses the importance of a restricted but balanced diet in arthritis, with the curtailment of that fraction which affords most of the calories in the ordinary American diet: the carbohydrates. A diet of this nature, while valuable in a restricted sense to all arthritic patients, can have intensive application only to those cases that have been found on study to be suitable for it. In many sufferers from arthritis and in a great majority of all advanced cases, the gastro-intestinal tract presents certain dysfunctions and anatomic configurations. The most obvious evidences of this are atony, enteroptosis, often masked stasis, dilatation and elongation of the large intestine and frequently hypochlorhydria. This picture is, of course, not pathognomonic for arthritis. Under suitable dietetic control the

gastro-intestinal tract so dysfunctioning and deformed may be made to approach or even reach a picture of normality, more or less coincidentally with the restoration of health in general. Fletcher believes that an unappreciated vitamin deficiency plays a determining part in this sequence of events in arthritis. In suitable cases restoration toward normal with relief from the arthritis will follow short periods of low calory feeding from which all vitamins are excluded definitely. A diet relatively low in carbohydrate and relatively high in protein has, as a necessary physiologic consequence, a depletion of the water reserves of the body and under this influence the edema can be observed to disappear. For every drachm of carbohydrate stored 3.6 Gm. of water is retained, and an obvious therapeutic corollary to this is the avoidance of such storage and of such water retention. This subsidence of swelling to be observed under these conditions is accompanied by a constant loss of weight and the establishment of a negative water balance and usually by clear-cut diminution of pain. The several major systems of the body are intimately interdependent one on the other. Conditions that tend to restore gravitational and other equilibrium in the vascular system, meaning chiefly the finer distribution of it, promote subsidence of the excess tissue fluids. At least part of the stiffness and pain experienced in arthritis is referable to excess fluids confined within the limiting membranes of various types of structures, such as the tendon sheaths. Other tissues, and even cellular units, could be expected to be affected comparably. These observations emphasize that arthritis is a systemic disease and that only a wide-angled outlook on it can hope to have successful consequences in the treatment of any considerable number of sufferers from it. A coordination of several lines of therapy, based on sound physiologic premises, should control definitely the disease in about 80 per cent of all cases.

Diabetes Mellitus.—Boldyreff states that, if the small pancreatic duct is ligated in a dog and the large duct is used for a fistula, all the pancreatic juice will flow outside (this operation is functionally identical to a complete pancreatectomy, although much easier of execution). In twenty-four hours this dog becomes diabetic, although his so-called internal pancreatic secretion is as before. Such dogs develop not only glycosuria and azoturia but also lipemia (the carbohydrate, fat and protein metabolism is affected). All the diabetic symptoms are present in a severe degree in such dogs. If the ligature from the small pancreatic duct is removed, severe diabetic symptoms decrease at once. But if the fistula of the larger pancreatic duct is closed the animal gradually recovers completely. Therefore, removal from the animal or human body of the external pancreatic secretion leads to diabetes. Hence the direct conclusion to treat diabetes by introduction of pancreatic juice. When administered by mouth, both digestion and metabolism are improved. Diabetes is a disease of the digestive organs (mainly of the pancreas) and therefore diabetic patients should have their digestion in proper order. First of all, the digestive work should be minimized; then anything capable of hindering digestion or irritating digestive organs should be avoided. The effect of insulin is not direct, but it is actually accomplished through the secretion of the gastric, pancreatic and intestinal juices caused by insulin. Since insulin is toxic and its effect is fleeting, a more suitable and rational medicine should be found. As such a medicine, the pancreatic juice is recommended, in which case, imitating nature, diabetic patients should be treated by introduction of the natural pancreatic juice into the duodenum.

Aluminum Hydroxide in Treatment of Peptic Ulcer.—Einsel and his associates observed that in the treatment of ulcer with aluminum hydroxide a large proportion of patients became symptom free in from two to seven days, even if they had had a recurrence lasting for several months. The 110 patients were treated from one month or less to three years. There were nine patients in whom symptoms remained or who had recurrences. The failures were due to the fact that the patients would follow no diet because of not having the food or because they would not cooperate. The patients were put on a modified Sippy convalescent diet, consisting of six feedings a day, followed by from 1 to 3 drachms (4 to 12 cc.) of gelatinous aluminum hydroxide from half an hour to one hour

after the ingestion of food. Constipation was controlled by agar and liquid petrolatum. Phenolphthalein was added when necessary. The patients after the first two or three weeks were allowed to work if the work was not too strenuous. They were cooperative because they did not have so many things to do in following the directions of the treatment. The free acidity of the stomach is lowered after treatment with aluminum hydroxide but returns to the initial level after the medication is discontinued. Although aluminum hydroxide serves obviously as a gastric antacid, it is possible that its efficacy in the treatment of peptic ulcer may be dependent in part at least on its slight astringent and demulcent properties and the fact that it appears to increase the secretion of mucin. No contraindications for aluminum hydroxide therapy have been observed. Determinations of the total base, chloride, carbon dioxide content and p_n of the blood failed to disclose any disturbance in the acid-base balance that could be ascribed to this therapy.

American Journal of Diseases of Children, Chicago

48: 481-712 (Sept.) 1934

- *Human Convalescent Serum in Treatment of Preparalytic Poliomyelitis: Comparison of Four Hundred and Forty-Seven Treated and One Hundred and Two Control Patients in New York City in 1931. A. E. Fischer, New York.—p. 481.
- Contour of Chest in Children: I. According to Age. S. A. Weisman, Minneapolis.—p. 502.
- Fate of Children of Tuberculous Families, Including Those Treated and Those Not Treated with BCG. Camille Kereszturi, W. H. Park, P. Vogel and M. Levine, New York.—p. 507.
- *Cerebral Injury in the New-Born: Its Relation to Constitution and Tetany Syndrome. W. R. Shannon, St. Paul.—p. 517.
- Glossoposis Due to Alergia and Hypotrophy of Mandible. P. Robin, Paris, France.—p. 541.
- Acetarsone in Treatment of Osseous Lesions of Early Congenital Syphilis. C. F. Friedman, Brooklyn.—p. 548.
- Anatomy and Physiology of Gallbladder in Children: Cholecystographic Study. E. A. Boyden and Alice H. Fuller, Minneapolis.—p. 565.

Convalescent Serum in Treatment of Poliomyelitis.—

In determining the value of convalescent serum in preparalytic poliomyelitis, Fischer observed that the outcome for the treated patients was no better than that for the untreated ones, if as good; while the controls were probably somewhat milder, he feels that no advantage was shown by the other group of 579 patients with poliomyelitis seen early in the course of the disease, of whom 477 were treated by injection of convalescent serum. A sufficient number of control cases should be obtained, as the author's present study has demonstrated that there is no proof that a physician is depriving his patient of an equal chance for complete recovery by not administering convalescent serum. Lacking a substitute therapeutic procedure, it would seem fair in subsequent epidemics to retest the value of potent serum in the preparalytic or meningitic stage of poliomyelitis, using, if possible, exactly parallel or alternate cases for control.

Cerebral Injury in the New-Born.—Shannon states that the syndrome consisting of tetany, generalized edema and edema of the brain in the new-born infant occurs as a result of some interference with the calcium metabolism which results in a lowered ionic calcium content of the blood and tissues. The possible causes of this deficiency in ionic calcium are the same as those that might be responsible at any age—excess of sodium or potassium, calcium starvation, parathyroid deficiency and alkalosis—and they may and probably do work in combination in bringing on the symptoms. Since the syndrome is constitutional, it follows that the symptoms commonly attributed to cerebral injury and to atelectasis may be of constitutional origin. Therefore the problems of cerebral involvement and of atelectasis and related conditions must be viewed from a more comprehensive angle than merely from that of the obstetric procedure, a factor that in the long run is probably less important than the other elements. Calcium therapy is specific for the syndrome. This is as true for the serious symptoms of cerebral edema as for the less serious ones of tetany and generalized edema. Since the symptoms of cerebral edema from calcium deficiency are indistinguishable from those commonly attributed to cerebral injury from other causes and are often indistinguishable from those usually credited to atelectasis, it follows logically that the hypothesis offers an extremely valuable additional method of therapeutic approach in such cases.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

32: 293-436 (Sept.) 1934

- Roentgen Treatment of Cervical Adenitis: Review of Three Hundred and Thirty-Three Consecutive Cases. G. E. Pfahler and P. J. Kapa, Philadelphia.—p. 293.
- Observations on Encephalography. C. Howard, New York.—p. 301.
- Encephalography. K. Kornblum and F. C. Grant, Philadelphia.—p. 311.
- Comparison of Roentgen-Ray Densities with Pulmonary Pathology. K. Dunham, Cincinnati.—p. 317.
- *Giant Excavation and Emphysematous Bulla Mistaken for Pneumothorax: Report of Two Cases. A. A. Karan and W. Haymaker, Wallum Lake, R. I.—p. 322.
- Roentgen Study of Chest in Two Hundred Patients with Goiter. S. J. Hawley, Danville, Pa.—p. 326.
- Superior Value of Expiratory Roentgenogram in Diagnosis of Incomplete Pneumothorax. S. Greenberg, Ray Brook, N. Y.—p. 330.
- Symphysis Pubis in the Female. J. M. Barnes, Buffalo.—p. 333.
- *Atypical Perthes' Disease: Case. E. Freund, Iowa City.—p. 353.
- Demonstration of Renal Lymphatic Vessels. H. A. Jarre, Detroit.—p. 358.
- Dangers of Roentgenoscopy and Methods of Protection Against Them: I. General Review of Problem. E. T. Luddy, E. L. L. Cilley and B. R. Kirklin, Rochester, Minn.—p. 360.
- Roentgen-Ray Diffraction Studies of Enamel and Dentin. W. F. Bale, H. C. Hodge and S. L. Warren, Rochester, N. Y.—p. 369.
- Studies on Effect of Roentgen Rays on Lymphomatosis of Mice. J. Furth, with assistance of H. Peterson, New York.—p. 377.
- Simple Method of Photometering Photographic Spectrums. A. Mutscheller, New York.—p. 384.

Giant Excavation and Emphysematous Bulla Mistaken for Pneumothorax.—Karan and Haymaker report two cases in which a mistaken diagnosis of pneumothorax was made: one a case of tuberculous vomica occupying almost an entire lung, the other a case of an immense emphysematous bulla. In both instances necropsy was performed. In the first case physical examination was of little aid in arriving at a correct diagnosis. It tended to confirm the presence of pneumothorax suggested by the roentgenogram. Iodized poppy-seed oil instillation might have been of value, for it would have shown the defects in the bronchial tree and would have collected entirely on the floor of the excavation. On the other hand, if the pathologic picture had been that of a tuberculous pneumothorax with bronchopleural fistula, the iodized oil would have passed through the fistula and settled on the floor of the pneumothorax cavity. The patient was too ill for bronchoscopic examination. Aspiration would have been of value if the condition had been that of closed pneumothorax. However, it could not have differentiated a giant cavity from a pneumothorax with bronchopleural fistula. The patient had no hemoptysis or even blood-tinged sputum throughout the course of the disease. In the second case, bronchoscopy with iodized poppy-seed oil instillation would have been of diagnostic value for the reason that a bronchial tree could have been demonstrated within the wall of the emphysematous sac. A view of the roentgenogram in retrospect does cast some doubt on the diagnosis, because there is no distinct demarcation between the area of decreased density and the pulmonary tissue. If the diagnosis had been doubted, roentgenograms taken in lateral and oblique positions might have been of diagnostic value. Bronchoscopy and instillation of the iodized oil should be used as a routine measure in doubtful cases of pneumothorax.

Atypical Perthes' Disease.—Freund presents a case of atypical Perthes' disease in which a distinct line of fracture in the subchondral zone was visible in the first roentgen studies of the hip joint. The patient was decisive about his trauma. The mechanism of the trauma is not clear but the author believes that a compression fracture occurred bringing about an aseptic necrosis of the bone. Not the entire femoral epiphysis was involved as is usually true in a definite case of Perthes' disease. Only the central portion of the epiphysis that lies just below the outer edge of the acetabulum was affected by aseptic necrosis. The compression fracture of the central portion of the epiphysis led to a decrease of the central portion of the head and a slight increase of the roentgen shadow. The roentgenologic changes of the hip joint (especially of the femoral head) are not pathologic by themselves, they are rather an expression of a reorganization; i. e., a healing process going on in the necrotic areas and sustained by the healthy tissue. The central portion, which was not yet invaded by the reorganizing fibrous bone marrow, assumed

more and more the wedge-shaped appearance of the sequestrum. An increased shadow, cast by the central portion, was due to the comparatively atrophic nature of the surrounding parts together with a filling out or plugging up of the marrow spaces by small bone fragments and bone detritus, which arose at the site of fracture. The fracture line itself disappeared rather early. This should not be interpreted as a complete healing of the fracture, because it is impossible for bony callus to be produced in the necrotic zone. Roentgenologically, the joint cartilage seemed as in the cases of Perthes' disease—uninvolved. The earlier roentgenograms showed even a widening of the joint space as compared with that of the normal side. The joint space itself showed more pronounced changes than are seen in the average case of Perthes' disease. The swelling of the hip region, the tenderness, the marked limitation of motion and the increase of temperature pointed to an infectious process, and drainage was considered. Two tuberculin tests were negative. In the early roentgenograms no changes in the epiphyseal plates or in the juxta-epiphyseal portion of the neck could be seen. There were no signs of a circumscribed or a diffuse osteoporosis. Later it did seem that the apex of the wedge-shaped area crossed the epiphyseal plate and reached the juxta-epiphyseal portion of the neck. This portion became resorbed quickly, but there followed disintegration of the epiphyseal plate between the head and neck and also of the epiphyseal plate of the greater trochanter. The disintegration of these plates led to a shortening of the limb of more than $1\frac{1}{2}$ inches. The osteoporosis alone suggested to the author that he was not dealing with a necrotic bone area undergoing dissection but rather with one that was previously necrotic and subsequently replaced by new bone tissue. For some reason, it has not yet become homogeneously fused with the surrounding cancellous bone.

American Review of Tuberculosis, New York

30: 375-518 (Oct.) 1934

- Relations Between Extrapulmonary and Pulmonary Tuberculosis. D. Reisner, New York.—p. 375.
- Management of Adhesions in Artificial Pneumothorax: Clinical Analysis of Two Hundred Consecutive Cases with Description of Technique and New Instruments. J. W. Cutler, Philadelphia.—p. 416.
- *Intra-Abdominal Pressure and Its Regulation. D. Salkin, Howell, Mich.—p. 436.
- Pulmonary Tuberculosis in Infancy, Childhood and Adolescence. J. P. Nalbant, Northville, Mich.—p. 458.
- Preparation of Seibert's Tuberculin Protein (T. P. T.) for Diagnostic Purposes. L. T. Clark, A. D. Emmett and O. D. Bird, Detroit.—p. 471.
- Comparative Testing with Seibert's Tuberculin Protein (T. P. T.): Note. J. M. Appel, B. H. Douglas, Detroit; Teckla Rosenbusch and H. S. Willis, Northville, Mich.—p. 478.
- *Comparison of Old Tuberculin with Tuberculin Protein T. P. T. J. B. Barnwell and H. M. Pollard, Ann Arbor, Mich.—p. 482.
- Blood Glutathione in Tuberculosis. R. N. Loomis and E. Bogen, Olive View, Calif.—p. 505.
- New Medium for Rapid Cultivation of Tubercle Bacilli. A. Guernon, St. Agathe, Que.—p. 510.
- Importance of Social Diagnosis in Treatment of Tuberculosis. Beulah Burhoe.—p. 514.

Regulation of Intra-Abdominal Pressure.—Salkin points out that there exists in the abdominal wall a process of adaptability which attempts to change intra-abdominal pressure. This process may be called "abdominal accommodation" and is of a high degree of efficiency. Abdominal accommodation is dependent on an intact neuromuscular system and may be regarded as a reflex mechanism in the conservation of the activity of the body. This mechanism has a direct clinical bearing on intra-peritoneal procedures and the functional coordination of pleural and peritoneal cavities. Such factors as posture, intra-abdominal fossae and visceral displacement are of secondary and negligible importance in accommodation. The muscle contributes its elasticity and the nervous system makes possible the activity and the changes in the tone of the process. Combined, they produce an adaptability of the abdomen to adjust itself to any condition that may change its optimal pressure.

Comparison of Old Tuberculin with Tuberculin Protein.—Barnwell and Pollard state that Seibert's tuberculin protein (T. P. T.) can be incorporated in dry powder in minute amounts (0.001 mg.) in tablets of dry lactose, with an accuracy comparable to that obtained by the dilution of old tuberculin by quantitative chemical methods. The lactose alone produces

no reaction in tuberculous patients. Among those reacting to either T. P. T. or old tuberculin, the proportion of severe and mild reactions is about the same when roughly comparable protein doses are used. Seibert's tuberculin protein, 0.0001 mg., is equivalent in potency to 0.1 cc. of 1:10,000 old tuberculin in terms of percentage reactions among students. Every student reacting to 0.0001 mg. of T. P. T. reacted to old tuberculin in some dilution up to 1:100. Every patient with proved tuberculosis (about 100), including skin tuberculosis, reacted to some dose of T. P. T. up to 1 mg. As the doses of old tuberculin and T. P. T. are increased in multiples of 10, many more students react to T. P. T. than to old tuberculin. Twelve persons who reacted to T. P. T. and not to old tuberculin presented evidence of previous tuberculous infection in the roentgenograms. One with such evidence gave a reaction to old tuberculin but not to T. P. T., and seven were negative to both tuberculins (T. P. T. 0.01 mg. and old tuberculin 1:100). The authors present evidence to show that sensitization does not account for the differences in the number of reactions between old tuberculin and T. P. T. They suggest that the comparison of the proportion of reactors in simultaneous tests on apparently healthy persons is a delicate method of standardization of an unknown against a known tuberculin. Seibert's tuberculin protein in the doses used suggests that tuberculinization in the authors' community is at a higher level than that indicated by old tuberculin 1:100.

Anatomical Record, Philadelphia

60: 125-250 (Sept. 25) 1934

- Studies on Physiology of Reproduction in Sheep: I. Ovulation Rate of the Ewe as Affected by Plane of Nutrition. R. T. Clark, Minneapolis.—p. 125.
- Id.: II. Cleavage Stages of Ovum. R. T. Clark, Minneapolis.—p. 135.
- Studies of Reaction Between Methylene Blue and Living Cells and Tissues in Transparent Moat Chamber Introduced into Rabbit's Ear. R. G. Abell, Philadelphia.—p. 161.
- Microscopic Observations of Structural Changes in Adrenal Gland of Living Frog Under Experimental Conditions. E. Singer and R. L. Zwemer, New York.—p. 183.
- Origin of Deep and Circumflex Femoral Group of Arteries. G. D. Williams, C. H. Martin and L. R. McIntire, St. Louis.—p. 189.
- Distribution and Drainage of Omental Lymphatics in Dog and Cat. P. H. Simer, Chicago.—p. 197.
- Cellular Cycle, Golgi Apparatus and Phenomenon of Reversal in Human Thyroid Parenchyma. J. Gillman, Johannesburg, South Africa.—p. 209.
- The Os Priapi: Study in Bone Development. E. B. Ruth, Rochester, N. Y.—p. 231.

Annals of Internal Medicine, Lancaster, Pa.

8: 243-382 (Sept.) 1934

- Pulmonary Tuberculosis as Part of Systemic Infection (Hematogenous Pulmonary Tuberculosis). J. A. Miller, New York.—p. 243.
- Blood Sedimentation Test: Its Use as Routine, Especially in Pulmonary Tuberculosis. P. H. Ringer and Mary Roach, Asheville, N. C.—p. 258.
- Surgical Treatment of Pulmonary Tuberculosis. R. C. Matson, Portland, Ore.—p. 268.
- *Observations on Diagnosis and Treatment of Peripheral Vascular Disease. E. M. Landis, Philadelphia.—p. 282.
- Etiology of Arterial Hypertension. Soma Weiss, Boston.—p. 296.
- Influential Factors in Recovery from Rheumatoid Arthritis. R. L. Cecil, New York.—p. 315.
- Cardiovascular Observations in Two Hundred and Fifteen Neurosyphilitics. C. T. Burnett and C. A. Rymer, Denver.—p. 327.
- Abdominal Pain: Its Significance and Diagnostic Value. T. R. Brown, Baltimore.—p. 343.
- Factors Influencing Operative Mortality in Exophthalmic Goiter. W. O. Thompson, S. G. Taylor 3d and K. A. Meyer, Chicago.—p. 350.
- Alternative to Revolution. G. Frank, Madison, Wis.—p. 360.

Peripheral Vascular Disease.—Landis maintains that in peripheral vascular disease, if the surface temperature fails to reach the normal level in a room at suitable temperature it can be concluded that the arteries supplying the part are unable to dilate owing to organic changes in their walls. The author induces vasodilatation of the peripheral vessels by immersing two extremities in warm water, verifying abnormal observations in most instances by anesthetizing the posterior tibial nerve. Patients with coldness, blueness or pain in the lower extremities who under suitable conditions show a normal elevation of skin temperature, 31.5 C. (88.7 F.) or more, are free from significant organic arterial obstruction. When the temperature of the skin fails to reach 31.5 C. but reaches 26 C.

(78.8 F.) or more, only a moderate grade of organic occlusion is present. In such patients benefit can be expected from contrast baths, local heat, diathermy, vasodilator drugs, the warm cradle or sympathetic ganglionectomy, all of which increase blood flow by dilating those vessels which are still capable of expansion. In the presence of rigid arteries incapable of dilatation, the total fall in pressure in the peripheral vascular system may be increased by elevating systemic blood pressure or by diminishing venous pressure. The author employed alternate periods of suction and pressure in sixteen patients with advanced peripheral vascular disease with the aid of an aluminum box large enough to accommodate the lower extremity to a point 6 inches above the knee where the thigh was surrounded by an air-tight rubber cuff. An air pump, valve, mercury manometer and relay were so arranged that the lower extremity was exposed alternately and automatically to a negative pressure of from 80 to 120 mm. of mercury for twenty-five seconds and a positive pressure of from 60 to 80 mm. of mercury for five seconds. In each instance the disease was of long standing; the patients suffered from thrombo-angiitis obliterans, simple arteriosclerosis or diabetes with arteriosclerosis. Eventually amputation was performed in all four patients with frank gangrene. Patients with indolent or slowly enlarging ulcers, but without frank gangrene, large sloughs or extending necrosis, often obtained striking relief from rest pain. Sleep ordinarily became possible without sedatives after a few days. The results in patients with intermittent claudication have been less striking, though in general slow improvement was observed. Alternate suction and pressure increase blood flow temporarily, even after organic vascular disease has diminished or abolished vasodilatation. Contraindications to the use of suction and pressure can be given. Active or acute infection may be influenced unfavorably by the procedure. Osteomyelitis, however slight, makes it unlikely that complete healing of cutaneous lesions can be obtained as long as drainage from beneath continues. When large masses of tissue are actually gangrenous or sloughing, only temporary relief has been observed so far.

Archives of Internal Medicine, Chicago

54: 315-482 (Sept.) 1934

- Hyperparathyroidism Due to Diffuse Hyperplasia of all Parathyroid Glands Rather Than Adenoma of One: Clinical Studies on Three Such Cases. F. Albright, Esther Bloomberg, B. Castleman and E. D. Churchill, Boston.—p. 315.
- *Hypoglycemia in Diabetes Associated with Obstruction of Pancreatic Duct. Isolda T. Zeckwer, Philadelphia.—p. 330.
- Interatrial Septal Defect. H. Roesler, Philadelphia.—p. 339.
- Effect of Toxemia on Tolerance for Dextrose and on Action of Insulin: II. J. Shirley Sweeney, N. Barshop, L. C. LoBello and R. S. Rosenthal, Dallas, Texas.—p. 381.
- Significance of Inorganic Sulphate Clearance in Renal Disease. J. W. Macy, Rochester, Minn.—p. 389.
- Cholesterol and Vitamin A Content of Liver in Man: Study of One Hundred and Six Livers Obtained at Autopsy. Gulli Lindh Muller and M. M. Suzman, Boston.—p. 405.
- *Essential Fructosuria: Report of Three Cases with Metabolic Studies. S. Silver and Miriam Reiner, New York.—p. 412.
- Effect of Thyroxine and Antithyroid Substances on Serum Lipase. M. H. Hoffmann, St. Paul.—p. 427.
- Thrombo-Angiitis Obliterans: IX. Cause of Death. S. H. Averbeck and S. Silbert, New York.—p. 436.
- Infection and Tolerance for Dextrose. E. G. Schmidt, J. S. Eastland and J. H. Burns, Baltimore.—p. 466.

Hypoglycemia in Diabetes and Obstruction of Pancreatic Duct.—Zeckwer discusses an unusual case of hypoglycemia. The patient had a history of diabetes but had been unwilling to cooperate and had not received insulin. He came to the hospital moribund and in a state of hypoglycemia. He had been eating little for a week before admission. Intravenous administrations of dextrose promptly brought him out of coma and mental confusion, but he relapsed several times into hypoglycemic shock. Necropsy revealed that pancreatic calculi and calcification had caused almost complete atrophy of the acinar and island cells of the pancreas. This amazing atrophy is the closest possible clinical parallel to experimental pancreatectomy in dogs. No pancreatic juice was available to this patient. The liver showed degenerative changes microscopically. The factor of undernutrition must be considered in the production of the hypoglycemia in this case but has less experimental basis than the effect of loss of external pancreatic secretions. In 10,300 necropsies, only four other instances of pancreatic calculi could

be found, none of which were associated with diabetes. The author suggests that when the liver is damaged through loss of the external secretions of the pancreas, especially if the condition is aggravated by undernutrition and tuberculosis, hypoglycemia may result in diabetes even in the absence of treatment with insulin.

Essential Fructosuria.—Silver and Reiner report three cases with metabolic studies of two and state that essential alimentary fructosuria is a specific, probably inborn, error of metabolism, characterized by the inability of the organism to utilize fructose normally and manifested clinically by a symptomless excretion of fructose. Fructose is passed in the urine only if fructose or substances capable of yielding it on digestion are ingested. All the reducing substances disappear from the urine if these foods are removed from the diet. The usual sources of fructose are cane sugar, honey and fruit. This disorder is not inconsistent with longevity and there is no reason to believe that it is a precursor of a diabetic state. Transition from fructosuria to glycosuria has never been observed. The tolerance and metabolism of all the other known carbohydrates are normal in this condition. Dextrose, taken orally by the patient whom the authors studied, gave only the expected rise in blood sugar and caused no glycosuria, and the hyperglycemia reached the fasting level by the fourth hour. Galactose was tolerated in a normal dose of 40 Gm. The relative insignificance of insulin and epinephrine in the metabolism of fructose compared with dextrose is pointed out and the possible intermediary metabolism of sorbitol is discussed.

Archives of Neurology and Psychiatry, Chicago

32: 465-680 (Sept.) 1934

- Olfactory Imagination and Olfactory Hallucinations: Experimental and Clinical Study of Sense of Smell in Normal and in Psychotic Persons. W. Bromberg and P. Schilder, New York.—p. 467.
- Spinal Concussion: Histologic Study of Two Cases. R. S. Baldwin, Chicago.—p. 493.
- *Chronic Manganese Poisoning: Report of Case, with Autopsy. Myrtille M. Canavan, S. Cobb and C. K. Drinker, Boston.—p. 501.
- New Method of Preserving Normal and Pathologic Brain Tissue. J. Rosett, New York.—p. 513.
- *Atopy as Cause of Epilepsy. J. Forman, Columbus, Ohio.—p. 517.
- Cerebrospinal Hydrodynamics: IV. Clinical Experimental Studies. J. H. Masserman, Baltimore.—p. 523.
- *Phytotoxic Index: I. Results of Studies with Sixty-Eight Male Schizophrenic Patients. W. Freeman and J. M. Looney, with technical assistance of Rose R. Small, Worcester, Mass.—p. 554.

Chronic Manganese Poisoning.—Canavan and her associates report the case of a man, aged 69, with manganese poisoning, evidenced by stiffness in the legs and gait, frequent falls, fatigability and sleepiness, who died of cardiorenal disease fourteen years after the onset of the symptoms due to the occupational hazard. The brain showed atrophy over the vertex and lateral aspects but not at its base. This atrophy was somewhat more pronounced than that usually present at that age. On frontal section the atrophy was conspicuous, and there was dilatation of the lateral ventricles with marked shrinking of the basal ganglions. Microscopic examination showed some diffuse cellular changes in the cerebral cortex and cerebellum, but the significant pathologic process was found in the basal ganglions, in which degeneration of nerve cells, satellitosis and gliosis were found. There was little difference of intensity in the process between the caudate nucleus, the putamen, the globus pallidus and the thalamus; in amount of gliosis, the optic thalamus led slightly, but marked focal scars were seen in the caudate nucleus and in the globus pallidus. The effect of the cellular damage noted in small sections was strikingly shown by the large total sections of the brain stained by the Weigert myelin sheath method. In those sections the shrinkage of the basal ganglions was measurable, distorting the anatomic outlines.

Atopy as Cause of Epilepsy.—Forman discusses five cases of epilepsy, which heretofore have been indistinguishable from other cases of essential or idiopathic epilepsy, occurring in persons with an inherited tendency to specific, abnormal reactions to certain inhalants, contactants and foodstuffs; that is, atopy. Since almost every other possible theory has been evoked to explain epilepsy, it is to be expected that the seizures would suggest a hypersensitiveness. Enough evidence has been brought forward to show that atopic phenomena are present in

a small proportion of epilepsy cases. Atopy can be only one of many causes of epilepsy. The essential criteria for the recognition of atopy are: (1) a familial and (2) a personal history of asthma, hay fever, vasomotor rhinitis, hives, eczema, migraine-like headaches and other allied conditions, (3) eosinophilia in the blood preceding and during the attacks and (4) positive reactions to cutaneous tests for sensitiveness to protein. If a family history of atopic manifestations or a personal history revealing other atopic reactions in the patient himself is not obtained, the patient is returned to the neurologist. But if such a history is obtained, the remaining criteria of eosinophilia and positive cutaneous reactions are sought. With these rigid requirements one may eliminate the instances (at least 25 per cent) of atopic persons whose family histories are negative for allergic manifestations and of patients who do not give positive cutaneous reactions. Later, when the thesis of this paper has been established, the allergist may assume the less rigid requirements demanded for pollen hay fever. Skin tests and clinical trial are the two methods of identifying the offending substances in atopy.

Phytotoxic Index in Schizophrenic Patients.—Freeman and Looney studied the inhibitory effects of 1 and 2 per cent solutions of defibrinated whole blood in a 50 per cent solution of nutrient Shive solutions on the growth of the roots of *Lupinus albus* seedlings. Male schizophrenic patients and normal male subjects, all free from any perceptible organic diseases, were used. A modification of Macht's original procedure was employed. No significant differences were found in the inhibitory action of whole blood in strengths of either 1 or 2 per cent between male schizophrenic patients and the normal male controls. Likewise no abnormal inhibitory action on the growth of these seedlings was demonstrable by using a 2 per cent solution of diluted urine. No inhibitory action was obtained with toluene in solutions four times as strong as that which had been used as a preservative. No existing correlation was found with the phytotoxic indexes of the solutions of blood or urine of the patients and their age, period of hospitalization or subtype of schizophrenia.

Archives of Ophthalmology, Chicago

12: 473-634 (Oct.) 1934

- Preliminary Report on Local Anesthesia of the Eye. C. Koller, Vienna, Austria.—p. 473.
- Influence of Fixation on Visual Acuity. F. H. Adler and M. Fliegelman, Philadelphia.—p. 475.
- Hemangioma-Endothelioma of Orbit: Removal Through Transcranial Approach. A. W. Adson and W. L. Benedict, Rochester, Minn.—p. 484.
- Repair and Restoration of the Eye Socket. G. B. O'Connor and G. W. Pierce, San Francisco.—p. 493.
- Unilateral Central and Annular Scotoma Produced by Callus from Fracture Extending into Optic Canal: Report of Two Cases. W. I. Lillie, Philadelphia, and A. W. Adson, Rochester, Minn.—p. 500.
- Alterations of Retina in Experimental Toxic Nephrosis. V. La Rocca, New York.—p. 509.
- Conjunctivoglandular Syndrome of Parinaud: Report of Case Showing Thread Mold in Sections. S. R. Gifford and E. E. Dillon, Chicago.—p. 518.
- Movements of Eyes Under Cover: Roentgenographic Study. F. H. Rodin and R. R. Newell, San Francisco.—p. 525.
- Experimental Endophthalmitis Phaco-Anaphylactica in Rabbits. E. L. Burky, Baltimore.—p. 536.
- Ocular Lesions Resulting from Thallium Acetate Poisoning as Determined by Experimental Research. C. M. Swab, Omaha.—p. 547.
- Foveal Projection During Ductions. R. H. Peckham, Philadelphia.—p. 562.
- Essential (Progressive) Atrophy of Iris: Report of Case. A. S. Barr, Ann Arbor, Mich.—p. 567.
- Some Factors Concerned in Correction of Aphakia. A. Cowan, Philadelphia.—p. 571.

Ocular Lesions from Thallium Acetate Poisoning.—The experiments of Swab indicate that thallium acetate is fatal to experimental animals when administered even in small doses. Rodents exhibited greater tolerance to the drug than dogs. Feeding experiments with rats failed to cause cataractous changes that could be detected even histologically. All experimental animals presented evidences of pathologic change in every part of the visual pathway, even including the cortex of the occipital lobe. The lens was the only structure of the eyeball that was not affected by the intoxication. Massive round cell infiltration was frequently encountered in the ciliary body as well as in the retrobulbar connective and muscle tissues.

Archives of Otolaryngology, Chicago

20: 297-446 (Sept.) 1934

- Malignant Disease of Larynx: Rare Types, Premalignant Conditions and Conditions Simulating Malignancy. J. E. MacKenty, edited by E. R. Faulkner, New York.—p. 297.
- Plasmocytoma and Rhabdomyoma of Paranasal Sinuses: Pathologic and Surgical Considerations: Report of Cases. K. G. Cooper, Denver.—p. 329.
- Mycotic Infections of Maxillary Sinuses. H. N. Stevenson, New Rochelle, N. Y.—p. 340.
- Sphenoid Sinus: Postoperative Observations Following Operation on Ethmoid Sinuses. F. T. Hill, Waterville, Maine.—p. 351.
- Supraglottic Tumors: Methods of Treatment and Illustrative Cases. F. A. Figi, Rochester, Minn.—p. 361.
- Adenoma of Bronchial Mucous Glands. B. M. Fried, New York.—p. 375.
- Recurrent Basal Cell Carcinoma of Nasal Septum: Histogenesis of So-Called Cylindromas. E. A. Bredlau, Chicago.—p. 382.
- Modification of Auditory Theory. H. Davis, A. J. Derbyshire and M. H. Lurie, Boston.—p. 390.
- Acute and Chronic Otitis Media, Sinus Thrombosis and Petrosal Pyramid Suppuration. S. J. Kopetzky, New York.—p. 396.

Archives of Pathology, Chicago

18: 293-458 (Sept.) 1934

- Digital Vascular System, with Reference to State of Glomus in Inflammation, Arteriosclerotic Gangrene, Diabetic Gangrene, Thrombo-Angiitis Obliterans and Supernumerary Digits in Man. N. W. Popoff, Rochester, N. Y.—p. 295.
- *Myocardial Changes in Hypertension. V. Levine, Chicago.—p. 331.
- *Bilateral Glioblastoma Multiforme: Report of Two Cases. F. W. Taylor, Indianapolis.—p. 347.
- Changes in Brain in Pernicious Anemia. Ruth Lebensart, Chicago.—p. 356.
- Extensive Generalized Torulosis in Chetah or Hunting Leopard (*Cynaelurus jubatus*). F. D. Weidman and H. L. Ratcliffe, Philadelphia.—p. 362.
- Influence of Drugs Used in Antisyphilitic Therapy on Reticulo-Endothelial System. Kathleen B. Muir and S. W. Becker, Chicago.—p. 370.

Myocardial Changes in Hypertension.—Levine made gross and microscopic examinations of twenty-seven hypertensive hearts. For the microscopic examination, blocks of tissue were taken from seven different locations in each heart. Six hearts were found to have marked sclerosis of the large coronary arteries and six had a marked sclerosis of the arterioles in one or more sections. Since one of the six with marked arteriosclerosis also had marked sclerosis of the large coronary arteries, there were eleven hearts that had marked organic changes in the arterial tree. The remaining sixteen hearts had changes in the arterial tree that were considered too slight to have seriously interfered with the supply of blood. In all the hearts, minute myocardial scars were observed in many areas. The most marked scarring was present in the hearts with marked alteration of the wall of the arteries and arterioles, but many hearts without organic arterial changes had marked interstitial fibrosis. No correlation could be found between age, sex, race, weight of the heart, blood pressure, the cause of death or the presence of syphilis and the amount of myocardial fibrosis. Many of the scars in the myocardium were observed to contain varying amounts of elastic tissue. This confirms the contention of Perkins and Miller that stress and strain can convert collagenic connective tissue into elastic tissue. Endocardial sclerosis was present in all the hearts, being as a rule most marked in the left auricle. It was due usually to an increase in smooth muscle cells and elastic fibers. In the sixteen hearts without organic changes in the arterial tree the functional changes undoubtedly acted over a long period and in a mild degree, leading only to myocardial fibrosis.

Bilateral Glioblastoma Multiforme.—Taylor reports two cases of bilateral glioblastoma multiforme. In the first case, tumors of the left temporal and right parietal lobes were found joined by a filamentous strand of tumor tissue. This passed from one hemisphere to the other just posterior to the splenium of the corpus callosum. It was thought that the left temporal tumor was primary and produced a similar lesion in the right parietal cortex by direct extension into the opposite hemisphere. In the other case the tumor was believed to be a bilateral glioblastoma multiforme of the frontal lobe of multicentric origin. No communication or extensions could be demonstrated. The possibility of metastasis from one frontal lobe to the other could not be ruled out entirely, since the pia-arachnoid bounded a small portion of each growth. There was, however, no other suggestion of metastasis in the brain.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 513-576 (Sept.) 1934

- Cancer of Head and Neck: Critical Analysis of Available Therapeutic Methods. F. L. Lederer, Chicago.—p. 517.
- Thermostatically Controlled Heating Hood in Vascular Diseases of Lower Extremities. W. Bierman, New York.—p. 530.
- *Obliteration of Hemorrhoids with Negative Galvanism. W. E. Keesey, Chicago.—p. 533.
- Effects of Hyperperistalsis on Electrocardiogram. I. H. Tumpeer, Chicago.—p. 541.
- Physical Therapeutic Methods in Modern Dermatology (Exclusive of X-Rays and Radium). G. M. MacKee, New York.—p. 543.
- Physical Therapy in Industrial Injuries. T. E. P. Gocher, San Francisco.—p. 547.
- Galvanic Current in Atrophic Rhinitis. J. S. Stovin, New York.—p. 551.
- Sodium Ricinoleate for Colonic Medication. C. A. Stimson, Lansing, Mich.—p. 553.
- Submucous Coagulation of Hemorrhoids. N. Zehir, Fort Wayne, Ind.—p. 556.

Obliteration of Hemorrhoids with Negative Galvanism.—Keesey believes that 90 per cent of all hemorrhoids are amenable to negative galvanic treatment. Although surgical treatment is the only method for external hemorrhoids, all cases of internal and most cases of mixed hemorrhoids can be obliterated permanently and safely with negative galvanism. The superiority of negative galvanism for internal and mixed hemorrhoids is based on simplicity of technic, safety of procedure and permanence of cure. Equipment embraces a generator that provides a smooth galvanic current and needle electrodes susceptible of flexible manipulation. A needle guide-holder eliminates the need of assistance. The advantages of negative galvanism, he says, far outweigh its minor inconveniences, chief of which is the time involved for each of a series of successful applications.

Delaware State Medical Journal, Wilmington

6: 199-220 (Sept.) 1934

- Impairment of Hepatic Carbohydrate Function Estimated by Levulose and Galactose. R. W. Tomlinson, Wilmington.—p. 199.

Johns Hopkins Hospital Bulletin, Baltimore

55: 171-244 (Sept.) 1934

- Leukocyte Picture of Blood in Cases of Pulmonary Tuberculosis, with Especial Study of Filament-Nonfilament Count. W. O. Kelley, Trudeau, N. Y.—p. 171.
- *Diabetes Mellitus and Hyperthyroidism: Report of Case. R. G. Hills, J. C. Sharpe and L. N. Gay, Baltimore.—p. 193.
- Thayer Memorial Exercises Held in Hurd Memorial Amphitheater, Feb. 24, 1934. J. S. Ames, J. M. T. Finney, S. Flexner, introductory remarks by H. D. Harlan, Baltimore.—p. 201.
- Glycogenetic Function of Liver in Experimental Hyperthyroidism. Mary V. Buell and Margaret B. Strauss, Baltimore.—p. 220.
- Eosin-Methylene Blue Technic for Rapid Tissue Diagnosis. E. S. Stafford, Baltimore.—p. 229.
- Treatment of So-Called Pseudo-Ménière's Disease. W. E. Dandy, Baltimore.—p. 232.
- Effects on Hearing After Subtotal Section of Cochlear Branch of Auditory Nerve. W. E. Dandy, Baltimore.—p. 240.

Diabetes Mellitus and Hyperthyroidism.—Hills and his associates report a case that presented the symptoms of mild diabetes and mild hyperthyroidism. The patient had had diabetes during the three previous years. The hyperthyroidism had come on apparently two months before. Twenty-four hours after the patient knew that she was to be operated on, hyperglycemia and ketonuria developed in spite of precisely the same regimen that had controlled the diabetes during the eight preceding months. Extreme fear had apparently precipitated an exacerbation of the hyperthyroidism, and this in turn had caused a decrease of sugar tolerance. After six days of preoperative treatment, marked hyperglycemia persisted. A subtotal thyroidectomy was performed. Following the operation, sugar tolerance was markedly decreased, necessitating the daily administration of from 200 to 890 units of insulin. Compound solution of iodine given for four days was without benefit. Irradiating the pituitary was considered, but a roentgenogram showed that the sella turcica was smooth in outline and only slightly larger than normal. The onset of bronchopneumonia and a urinary tract infection produced a marked ketosis, which necessitated 890 units of insulin in twenty-four hours. The intravenous injection of sodium bicarbonate brought about a subsidence of the acidosis. The sugar tolerance increased

rapidly following the resolution of the pneumonia. However, vascular collapse and repeated insulin shocks were followed by cerebral thrombosis with hemiplegia and aphasia. After this, the patient improved gradually. Contrary to the experience of John, Joslin and Lahey, who point out that thyroidectomy lowers total metabolism and consequently improves the carbohydrate tolerance, the patient showed no improvement. She was refractory to insulin before the removal of her thyroid, but not until after the emotional disturbance precipitated by her decision to undergo thyroidectomy. When she left the hospital, twice as much insulin was required to control the diabetes as had been necessary before the thyroidectomy. The cause of the ineffectiveness of insulin was not determined.

Journal of Allergy, St. Louis

5: 541-642 (Sept.) 1934

- *Treatment of Hay Fever and Asthma with Viosterol of High Potency. R. Z. Rappaport, C. I. Reed, Milicent L. Hathaway and H. C. Struck, Chicago.—p. 541.
- Experiments in Silk Hypersensitivity and Inhalation of Allergen in Atopic Dermatitis (Neurodermatitis Dissemminatus). Marion B. Sulzberger, New York, and W. T. Vaughan, Richmond, Va.—p. 554.
- Studies on Pollen and Pollen Extracts: XIII. Dextrose Pollen Extracts: Therapeutic Results in 1933. L. Unger and Marjorie B. Moore, Chicago.—p. 561.
- Experimental Study of Etiology of Dermatitis Venenata. H. W. Straus, Brooklyn.—p. 568.
- Percentage of Persons Susceptible to Poison Ivy and Poison Oak. W. C. Spain, J. M. Newell and Miriam G. Meeker, New York.—p. 571.
- Experimental Nickel Dermatitis. S. G. Stewart and F. E. Cormia, Philadelphia.—p. 575.
- *Sedimentation Rate in Hay Fever: Before and During Seasonal Exacerbation. H. H. Gelfand and G. Victor, New York.—p. 583.
- Perennial Hay Fever from Lycopodium: Case Report. G. L. Lambright and R. P. Albaugh, Cleveland.—p. 590.
- Early, Active, Virus Immunity, with Particular Reference to Vaccinia in New-Born Infants. H. H. Donnelly and Margaret M. Nicholson, Washington, D. C.—p. 592.
- Food Allergens: III. Lenkopenic Index: Preliminary Report. W. T. Vaughan, Richmond, Va.—p. 601.
- Report on Insulin Sensitivity with Attempt at Passive Transfer. J. A. Murphy, J. T. Beardwood and Merle M. Miller, Philadelphia.—p. 606.
- Inheritance of Allergy. C. S. Bucher, Champaign, Ill., and C. E. Keeler, Boston.—p. 611.

Viosterol for Hay Fever and Asthma.—Rappaport and his collaborators observed 212 patients suffering from seasonal hay fever and asthma. Of these, sixty-eight were treated with viosterol 10,000 X and 144 were treated with viosterol and pollen injections. Of the first group, 82.4 per cent experienced definite relief; 96.5 per cent of the second group had comparable degrees of relief. The combined treatment of viosterol and pollen injections is more effective than either one alone. The nature of the protective action of viosterol is as yet undetermined. It does not seem to be related to the calcium mobilizing power of viosterol. The optimal dose of 10,000 X viosterol along with pollen injection for pollen sensitivity is between 2 and 10 drops (0.12 and 0.66 cc.) daily, varying with the susceptibility of the patient rather than with the severity of the symptoms.

Sedimentation Rate in Hay Fever.—The study of Gelfand and Victor of sixty-three hay fever subjects revealed that only one showed a slow sedimentation rate. Of forty-two hay fever subjects observed before and during the season there were twenty-nine with normal rates. These had no disease complication whatever, in contradiction to the observations by Schulhof, who expressed the belief that a normal sedimentation rate in allergic persons is indicative of the presence of a more or less serious pathologic complication. There were twelve patients showing increased sedimentation rates, five of whom presented serious disease complications. The remainder had physiologic complicating conditions, such as pregnancy or menstruation. Only two of the sixty-one hay fever subjects investigated gave a slow sedimentation rate. The results of the authors' study seem to agree with those of Westcott and Spain in finding that a normal sedimentation rate is the rule in hay fever. The authors state that the rate remains normal during the hay fever season and that treatment with pollen extracts produces no effect. Therefore they believe that the sedimentation rate is of no diagnostic value in hay fever subjects and cannot be used as a test, for instance, to determine alteration, either a rise or fall, of the immunologic state of the hay fever patient.

Journal of Experimental Medicine, New York

60: 269-402 (Sept. 1) 1934

- Fate of Avirulent Streptococci Injected into Skin of Normal and Sensitized Rabbits: Local Fixation of Bacteria. D. M. Angevine, New York.—p. 269.
- Maternal Transmission of Vaccinal Immunity in Swine: II. Duration of Active Immunity in Sow and of Passive Immunity in the Young. J. B. Nelson, Princeton, N. J.—p. 287.
- Factor from Normal Tissues Inhibiting Tumor Growth. J. B. Murphy and E. Sturm, New York.—p. 293.
- Effect of Growth-Retarding Factor from Normal Tissues on Spontaneous Cancer of Mice. J. B. Murphy and E. Sturm, New York.—p. 305.
- Survival of Varieties of Typhus Virus in Mouse Passage, Particular Reference to Virus of Brill's Disease. S. R. Savor and R. Velasco, Boston.—p. 317.
- Effect of Antecedent Infection and Immunization with Streptococci on Reactivity of Rabbits to Horse Serum. M. P. Schultz and H. F. Swift, New York.—p. 323.
- Influence of Sexual Maturity on Reactivity of Rabbits to Horse Serum. M. P. Schultz, New York.—p. 339.
- Studies on Organogenesis: I. Ability of Isolated Blood Cells to Form Organized Vessels in Vitro. R. C. Parker, New York.—p. 351.
- Properties of Causative Agent of Chicken Tumor: IX. Effect of Aqueous Extracts of Chicken Tumor 1 on Yeast Nucleic Acid. D. A. MacFadyen, New York.—p. 361.
- Studies on Etiology of Spontaneous Conjunctival Folliculosis of Rabbits: II. Bacteriologic Investigations. P. K. Olitsky, J. T. Syvertson and J. R. Tyler, New York.—p. 375.
- Bacteriologic Studies on Epizootic of Intestinal Disease in Suckling and Newly Weaned Mice. J. T. Syvertson and P. K. Olitsky, New York.—p. 385.
- Metabolism of Copper and Iron in Splenectomized Rats Free from Bartonella Muris Infection. Marta Sandberg and D. Perla, New York.—p. 395.

Journal of Infectious Diseases, Chicago

55: 123-242 (Sept.-Oct.) 1934

- Attenuation and Toxin Production of Diphtheria Bacillus: IV. Infusion-Free Peptone Mediums: V. Synthetic Mediums. A. Wadsworth and Mary W. Wheeler, Albany, N. Y.—p. 123.
- Certain Properties of Virus of Equine Encephalomyelitis. Beatrice F. Howitt, San Francisco.—p. 138.
- Biologic Classification of Bacillus of Rhinoscleroma. M. C. Morris and L. A. Julianelle, St. Louis.—p. 150.
- Psittacosis Among Personnel of Hygienic Laboratory. G. W. McCoy, Washington, D. C.—p. 156.
- Iso-Antigenic Properties of Casein. J. H. Lewis, Chicago.—p. 168.
- *Ingestion of Staphylococcus Exotoxin by Human Volunteers, with Especial Reference to Staphylococcal Food Poisoning. C. E. Dolman, Toronto.—p. 172.
- Institutional and Occupational Undulant Fever in Colorado. I. C. Hall and R. Learmonth, Denver.—p. 184.
- *Use of Bacteriophage in Diagnosis of Bacillary Dysentery. R. F. Feemster, Boston.—p. 190.
- Selective Action of Dyes and of Other Disinfectants on Bacteriophages. A. Y. Wells and N. P. Sherwood, Lawrence, Kan.—p. 195.
- Examination of Children with Infection of Upper Respiratory Tract for Bacillus Pertussis by Cough Droplet Method. Harriet Leslie Wilcox, New York.—p. 199.
- Effect of Deamination on Antigenic Properties of Casein. J. H. Lewis, Chicago.—p. 203.
- Disimilation of Sucrose by Shigella Paradyseariae Variety Sonnei. H. Reynolds, C. S. McCleskey and C. H. Werkman, Ames, Iowa.—p. 207.
- Antigenic Relation of Gravis Strains of Diphtheria Bacilli as Compared with Park 8 Strain. S. Etris, Philadelphia.—p. 220.
- Outbreak of Food Poisoning Apparently Caused by New Serologic Type of Salmonella (S. Panama). E. O. Jordan, Chicago.—p. 224.
- Differentiation of Streptococcus Epidemicus. I. Pilot, Chicago.—p. 228.
- Studies on Herd Infected with Brucella Abortus: II. Incidence of Milk Contamination in Vaccinated Herd. Dorothy W. Caldwell, N. J. Parker and E. M. Medlar, Mount McGregor, N. Y.—p. 235.

Ingestion of Staphylococcus Exotoxin.—Dolman obtained bacteria-free filtrates containing staphylococcus exotoxin of specific pathogenic and antigenic properties from about 200 strains of staphylococci. Forty-two volunteers drank staphylococcus filtrates with impunity on 110 occasions, most of the filtrates containing highly potent exotoxin. One strain yielded a filtrate of which 2 cc. caused severe gastro-intestinal disturbance in three of nine volunteers and a lesser degree of disturbance in four others. Although under certain conditions a staphylococcus metabolite is produced which causes symptoms of gastro-enteritis in human beings, only occasional strains are able to produce this substance, the identity of which is distinct from the exotoxin. The actual incidence of staphylococcus food poisoning is therefore not likely to be high.

Bacteriophage in Bacillary Dysentery.—Feemster discusses the laboratory observations of an epidemic of 109 cases of ileocolitis, in which the Hiss-Y dysentery bacillus appears to have been the principal etiologic factor. The Hiss-Y dysen-

tery bacillus was isolated from only 5.6 per cent of the stools collected from sick patients. Bacteriophage for the Hiss-Y dysentery bacillus was found in 80 per cent of the stools taken during the second week after the onset and in 45 per cent of those collected during the third week. The longest time after the onset in which bacteriophage was demonstrable was sixty-three days. None was found in the stools of a control group who had not been ill or in specimens obtained six months after the attack from patients who had recovered. Detection in the stool of a bacteriophage active against the bacillus causing an outbreak of dysentery seems to be a supplemental and valuable procedure for determining the etiology of cases of diarrhea.

Journal of Lab. and Clinical Medicine, St. Louis

19: 1257-1376 (Sept.) 1934

- Studies in Bacteriophage: I. Behavior of Bacteriophage and Bacteria in Lesion After Treatment of Acute Staphylococcus Skin Infections with Bacteriophage. Helen Zaytzeff Jern, E. L. Howes and F. L. McIneny, New York.—p. 1257.
- Coronary Occlusion and Sudden Death: Study Based on Review of Three Hundred and Forty-Five Necropsies Performed at the Board of Health Laboratory, Ancon, Canal Zone, Between April 15, 1932, and April 15, 1933. E. DeCoursey, Ancon, C. Z.—p. 1272.
- Alpha Dinitrophenol and Its Influence on Metabolism. W. E. Robertson, Philadelphia.—p. 1280.
- Absorption of Dextrose from Human Gastro-Intestinal Tract. M. Wishnoffsky, Brooklyn.—p. 1286.
- Histochemical Studies of Organs of Tumor-Bearing Rats by Micro-Incineration Method. W. C. Hueper, Philadelphia.—p. 1293.
- *Significance of Streptococci That Resemble Diphtheroids Recovered from Blood Cultures in Subacute Bacterial Endocarditis. J. A. Ferguson, T. P. Murdoch and H. Welch, Hartford, Conn.—p. 1304.
- Use of Galactose in Differential Diagnosis of Jaundice: Preliminary Report. K. A. Owen, Cleveland.—p. 1311.

Streptococci That Resemble Diphtheroids in Subacute Endocarditis.—Ferguson and his co-workers describe two cases of subacute bacterial endocarditis in which diphtheroid appearing organisms were recovered repeatedly from blood cultures during life. In one case, Gram-Weigert stained sections from a vegetation on the aortic valve at necropsy showed both diphtheroid appearing forms and chains of streptococci in each section. Bacteriologic investigation in both cases showed that the streptococcus under study existed in two phases, a typical streptococcus phase and a diphtheroid phase. The organism isolated from blood cultures in the diphtheroid phase changed under suitable conditions into a green producing streptococcus, which is unquestionably of etiologic significance.

Journal of Pediatrics, St. Louis

5: 291-432 (Sept.) 1934

- Some Aspects of Tuberculous Meningitis and Possibility of Its Prevention. A. Wallgren, Gothenburg, Sweden.—p. 291.
- *Chronic Hypoglycemia in Childhood. B. Kramer, H. G. Grayzel and C. I. Solomon, Brooklyn.—p. 299.
- Statistical Analysis of Whooping Cough Cases. J. A. Toomey, Cleveland.—p. 323.
- Occurrence of Cataleptic Phenomena in Children. L. Kanuer, Baltimore.—p. 330.
- Low Calcium Tetany in the New-Born: Review of Literature and Report of Case. J. L. Rothstein, New York.—p. 341.
- Mongoloid Imbecility in Mongolian Races: Report of Two Cases in Chinese Children. L. K. Sweet, Peiping, China.—p. 352.
- Pseudohypertrophic Muscular Dystrophy: Further Observations of Therapeutic Effects of Glycine and Other Substances Used in Treatment of Fourteen Cases of Muscular Dystrophy. H. B. Mettel, Indianapolis.—p. 359.

Chronic Hypoglycemia in Childhood.—Kramer and his associates describe two cases of persistent chronic postabsorptive hypoglycemia in children. The first case presented a condition that is probably familial. The enlarged liver showed no glycogen but extensive fatty infiltration. There was sufficient hepatic tissue to perform its metabolic functions except that of glycogenesis. This primary failure to form glycogen from dextrose and the consequent absence of deposits of glycogen in the liver resulted in its secondary inability to mobilize the dextrose and maintain a normal blood sugar level. The authors advance a hypothesis for the presence of the fatty infiltration; e. g., the conversion of the dextrose into fat since the dextrose could not be transformed into glycogen. The nature of the hypoglycemia of the second child is still not known definitely. An associated organic condition of the central nervous system has raised the question as to whether this lesion is not respon-

sible for the hyperinsulinism rather than that the authors are dealing with a purely pancreatic hyperinsulinism due to neoplasia or hypertrophy and hyperplasia of the islands of Langerhans. They feel that, since up till now no definite case of hypoglycemia has been described due to a lesion of the central nervous system and since, on the other hand, there are a sufficient number of unquestionable cases of hyperinsulinism due to a pancreatic lesion, they are probably dealing with pancreatic hyperinsulinism and that the changes of the central nervous system are either secondary or independent of the primary condition.

Kansas Medical Society Journal, Topeka

35: 329-368 (Sept.) 1934

Some Recent Developments in Physical Diagnosis. O W. Bethica, New Orleans—p 329
The Insanity of Hamlet C F Menninger, Topeka—p 334.

Laryngoscope, St. Louis

44: 683-764 (Sept.) 1934

Acute Sinusitis in Children Associated with Orbital Complications: Conservative Treatment Report of Ten Cases. S D Greenfield, Brooklyn—p 683
Frontal Lobe Abscess (Multiple) Secondary to Frontal Sinusitis: Report of Case W Gordon, Philadelphia—p 717.
*Lateral Sinus Thrombosis Report of Case. L E. Wible, Pittsburgh, and H B Slotkin, Philadelphia—p 736
A Year's Work with Ionization in Treatment of Hay Fever. A. M. Alden, St Louis—p 741
Mixed Tumor of Pharynx Case Report J. Ono, Philadelphia—p 745
Metastatic Hypernephroma of Tonsil. L C Menger, Brooklyn, and I Arons, New York—p 748

Lateral Sinus Thrombosis.—Wible and Slotkin present a case, in a child of 6 years, that illustrates the problem of a masked sinus thrombosis in the presence of a complicating pneumonitis. When surgical intervention was finally resorted to, the true state of affairs was disclosed only when an aspirating needle in the lateral sinus drew forth pus. Thrombosis was present despite the fact that the tunica adventitia presented a normal appearance. An early diagnosis is of paramount importance. The Tobey-Ayer test was of no value in this case and may be misleading. Headache was not complained of. Papilledema, which was present, is seen more frequently with sinus thrombophlebitis than with either cerebellar or temporo-sphenoidal lobe abscesses. Metastatic arthritides were present and were represented by a subcutaneous abscess of the ankle and, later, by an arthritis of the sternoclavicular joint. The sternoclavicular joint is the one that is involved most frequently with lateral sinus thrombophlebitis. It rarely suppurates and has been referred to as a toxic arthritis.

Medical Annals of District of Columbia, Washington

3: 233 254 (Sept.) 1934

Sulphur and Cystine in Relation to Arthritis. M X. Sullivan, Washington—p 233
Consideration of Tissue Diagnosis. R M Choisser, Washington—p 236
Purposes and Value of Postmortem Examination G H Hansmann, Washington—p 240
Chemical Action of Nerves O. S Gibbs, Washington—p 244.

Medicine, Baltimore

13: 251-376 (Sept.) 1934

Emphysema. W B Kountz and H L Alexander, St Louis—p 251.
Observations on Etiology and Treatment of Anemia Associated with Hookworm Infection in Puerto Rico C. P Rhoads, New York; W. B. Castle, Boston, G C. Payne, San Juan, Puerto Rico, and H. A. Lawson, Providence, R I.—p 317.

Military Surgeon, Washington, D. C.

75: 197 276 (Oct.) 1934

Medical Progress and the War. W. N. Bispham—p 204.
Work of the Health Department of the Panama Canal During the Past Five Years D P. Curry—p 242.
Practical Value of Training Gained by Camp Surgeons on Duty with Civilian Conservation Corps H. R. Hennessy—p 249
*Stewart Treatment for Osteomyelitis: Preliminary Report. L B Kline—p 251.

Treatment for Osteomyelitis.—Kline employed in fourteen cases the trinitrophenol: calcium carbonate treatment for osteomyelitis described by Stewart. The trinitrophenol solution

was sprayed into the wound from an ordinary nasal spray. In large wounds it was poured in. When lesions were deep in the tissues and drained through fistulous tracts, a soft rubber catheter was used and the solution was injected by means of a 5 cc. Luer syringe. The calcium carbonate suspension was applied to the wound immediately following the application of the trinitrophenol solution. The author has observed that granulation tissue forms promptly, purulent exudate is reduced, healing is rapid, pain and discomfort are minimized and the residual scar is less marked. He encourages free exercise of the affected part. The almost complete absence of pain permits better cooperation. He has used these mixtures in the treatment of ordinary infected wounds with satisfactory results

Missouri State Medical Assn. Journal, St. Louis

31: 341-376 (Sept.) 1934

Carcinoma of Prostate. G H Ewell, Madison, Wis—p 341
*Coarctation of Aorta with Developmental Defect in Urinary Tract R M Hardaway and H. P. Sawyer, Denver—p 346
Ectopic Pregnancy: Diagnosis. E L. Dorsett, St Louis—p 353
Cancer of Cervix Iodine Reaction in Early Diagnosis. F. V. Emmert, St. Louis—p 355.
Fibromas of Small Intestine with Intussusception: Report of Two Cases W Smith and G. D Callaway, Springfield—p 358
Operative Treatment of Esophageal Diverticula. F. G. Thompson Jr, St. Joseph—p 361.
What Shall We Teach Regarding Chronic Appendicitis? B. L. Myers, Kansas City—p 363.
Cerebral Paralysis in Childhood. N. K. Pope, Marshall—p 368

Coarctation of Aorta.—Hardaway and Sawyer cite a case of coarctation of the aorta with a developmental defect in the urinary tract. The patient died before any detailed observations could be made. Death was distinctly cardiac with progressive edema of the lungs that did not respond to medication. The blood pressure registered 300 mm. of mercury. There was a distinct narrowing of the descending arch much like a ligature that had been tied around the aorta and there was almost a complete septum within the lumen of the vessel; this septum contained an aperture about the size of a small goose quill. The pressure encountered by the blood stream resulted in marked collateral circulation with enlargement of the intercostal vessels and definite erosion of the right fifth rib and the left fifth and seventh ribs, which was manifested by roentgenograms, which showed the erosion definitely. It seems evident to the authors that a case of coarctation has the following diagnostic points that should lead to a definite diagnosis during life: (1) high blood pressure in the upper extremities with a slight discrepancy between the two arms and a marked discrepancy between the upper and lower extremities, (2) hypertrophy of the heart, (3) marked increase in the collateral circulation, and (4) erosion of the ribs. Postmortem examination revealed atrophy of the left kidney (apparently congenital), atresia of the left ureter due to the atrophy of the kidney, and fetal type of hypoplasia of the right kidney (arrested development).

New England Journal of Medicine, Boston

211: 521-562 (Sept. 20) 1934

Physiology of Extreme Old Age. F. G. Benedict and H. F. Root, Boston—p 521.
Prevention of Reactions Due to Lumbar Spinal Puncture. P. G. Schube and F. LeDrew, Boston—p 537.
Antemortem and Postmortem Diagnoses H. O. Swartout, Los Angeles—p 539.
Puerperal Inversion of Uterus. Report of Case. B. E. Sachs, White Plains, N. Y.—p 542
Problems Before the Medical Profession D. Cheever, Boston—p 544.

New Jersey Medical Society Journal, Trenton

31: 497-552 (Sept.) 1934

Intrathoracic Anatomy from Roentgenologist's Standpoint. W. W. Maver, Jersey City—p 503
Problem of Silicosis. Practical Point of View. R. Pomeranz, Newark—p 508
Classification of Anemia R L. Haden, Cleveland—p 511.
Pneumonia in Childhood. W. B. Stewart, Atlantic City—p 515
Current Problems in School Health Work A G Ireland, Trenton—p 519
Arthritis Considered as Systemic Disease. R. Burbank, New York—p 522
Problem of Medical Practice J A. Hartwell, New York—p 526.
Dispensary Abuses L. W. Deichler, Philadelphia—p 532.
Are We Heading for the Last Round Up? F T Borzell, Philadelphia—p 538.

Ohio State Medical Journal, Columbus

30: 617-704 (Oct. 1) 1934

- Study of Pathogenesis of Some Ulcers of Colon. M. O. Boudry and J. A. Bagen, Rochester, Minn.—p. 636.
Toxemias of Later Months of Pregnancy. J. T. Smith, Cleveland.—p. 642.
Retardation of Incipient Senile Cataract. J. W. Wright, Columbus.—p. 645.
Frequency of Cancer of Female Organs. F. E. Deeds, Sandusky.—p. 646.

Pennsylvania Medical Journal, Harrisburg

37: 973-1136 (Sept.) 1934

- *Eruptions from Drugs and from External Medicaments. F. Wise and Marion B. Sulzberger, New York.—p. 973.
Clinical Treatment of Certain Bone Diseases Caused by Hyperfunction of Parathyroid Glands. G. Wagoner, Philadelphia.—p. 983.
Tuberculous and Nontuberculous Pulmonary Infections in Infancy and Childhood. F. M. McPheeran, Philadelphia.—p. 985.
Tuberculous Lesions in Children of School Age. H. W. Hetherington, Philadelphia.—p. 990.
Carbohydrate in Diabetes: Newer Conceptions of Its Use. F. D. W. Lukens, Philadelphia.—p. 992.
Duties of Otolaryngologist to the General Practitioner. M. S. Ersner, Philadelphia.—p. 995.
Gallbladder Disease: Medical Versus Surgical Treatment. T. G. Miller, Philadelphia.—p. 996.
Lesions of Esophagus: Roentgen-Ray Study. W. F. Manges, Philadelphia.—p. 1000.
An Address Before the Pennsylvania Tuberculosis Society. D. Guthrie, Sayre.—p. 1004.

Eruptions from Drugs.—Wise and Sulzberger state that increasing knowledge of immunobiologic and sensitization phenomena has led to more or less obliteration of what at one time was regarded as a sort of dividing line between dermatitis medicamentosa and dermatitis venenata. The authors use the term "drug eruptions" to indicate all cutaneous (and mucosal) manifestations in the subject, without regard to the path taken by the drug, whether by oral administration, by injection, by external contact or by combinations of these. Among the toxicodermas, the allergic, anaphylactic eruptions, all those based on a hypersensitivity, predominate. The character of the manifestation depends on the terminal organ on or in which the hypersensitivity reaction takes place. Consequently, the hypersensitivity manifests itself in different types of reaction, as asthma, in the bronchial form; through phenomena on the part of the digestive canal, in the gastro-intestinal form; as hay fever, in reactions of the conjunctiva and the nasal mucosa; and, finally, in the form of definite skin reactions. The origin of one specific hypersensitivity may facilitate polyvalent specific sensitizations for further substances. There are certain phenomena in cutaneous hypersensitivity that apparently oppose the accepted concept of anaphylaxis and allergy, at least so far as the preservation of specific or monovalent sensitization is concerned. The cardinal eruptions caused by drugs ingested or injected are: 1. Truly eczematous eruptions with erythema, vesiculation, weeping and scaling are due to quinine, procaine hydrochloride, ephedrine, mercurials and sometimes arsphenamines. 2. Urticarial eruptions may be caused by belladonna, atropine, the morphine group and phenolphthalein. 3. Scaly erythematous eruptions, purely erythematous or scarlatiniform, and morbilliform and dermatitis exfoliative-like conditions are induced by arsenic, arsphenamine, belladonna, balsams and the heavy metals. 4. Phenolphthalein, antipyrine and salicylates produce erythema multiforme-like eruptions. 5. Erythema nodosum-like eruptions are due to iodides and bromides. 6. The effect of acneiform, furunculoid and erysipelas-like eruptions is due to bromides, iodides, chlorine, oils, tars and so on. 7. The causal drugs in ulcerating and vegetating eruptions are bromides and iodides. 8. Purpuric eruptions may be due to iodides, arsphenamines, particularly sulpharsphenamine, and balsam. 9. Phenolphthalein, antipyrine and sometimes the arsphenamines induce fixed and circumscribed, erythematous or bullous and polychromatic pigmented eruptions. Eruptions due to external medicaments and other irritants include almost all well defined chemical substances, such as mercury, resorcin, butesin, butesin picrate, trinitrophenol, sulphur, chrysarobin, procaine hydrochloride, nupercaine and so on. There are many cases of eruptions in hypersensitive persons due to applications of medicinal salves, lotions, proprietary remedies and cases caused by skin contact during injection, but the overwhelming majority of the cases of eczematous dermatoses occur as industrial dermatoses.

Many eczematogenous substances can be eliminated and many cases of dermatitis avoided by the patch test. The patch test permits of the choice and employment of the least deleterious substances.

Tennessee State Medical Assn. Journal, Nashville

27: 331-378 (Sept.) 1934

- Management of Traumatic Wounds of Soft Parts. E. T. Newell, Chattanooga.—p. 331.
Management of Brain Injuries. E. F. Fincher Jr., Atlanta, Ga.—p. 335.
Fractures of Ankle Joint. D. Eve Jr., Nashville.—p. 341.
Fractures of Humerus. J. Penn, Knoxville.—p. 344.
Brain Abscess of Temporal Lobe Secondary to Aural Infection. S. H. Sanders, Memphis.—p. 357.
Perinephric Abscess. Report of Case. M. G. Spingarn, Memphis.—p. 364.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

42: 497-554 (Sept.) 1934

- Cretinism in the United States. Survey of Five Hundred and Twelve Cases. A. S. Jackson, Madison, Wis.—p. 497.
Psychoses of Hypothyroidism and Hyperthyroidism. L. J. Karnosh and G. H. Williams Jr., Cleveland.—p. 509.
Intrathoracic Gonorrhea: Case Report. C. J. Hunt, Kansas City, Mo.—p. 529.

West Virginia Medical Journal, Charleston

30: 433-480 (Oct.) 1934

- Psychoneuroses. A. L. Osterman, Wheeling.—p. 433.
Medical Service: Professional Service. O. West, Chicago.—p. 439.
Surgical Treatment of Benign and Malignant Lesions of Stomach and Duodenum. W. B. Morrison, Columbus, Ohio.—p. 444.
What of Our Code? A. H. Hoge, Bluefield.—p. 452.
Some Medical Aspects of Thyroid Disease. R. A. Ramsey, Columbus, Ohio.—p. 457.
*Progressive Pseudohypertrophic Muscular Dystrophy. A. R. Lutz, Huntington.—p. 463.
Urticaria Following Use of Dinitrophenol. L. G. Beinbauer, Pittsburgh.—p. 466.

Progressive Pseudohypertrophic Muscular Dystrophy.

—Lutz uses the epinephrine-pilocarpine treatment in practically all stages of progressive pseudohypertrophic muscular dystrophy. Administration has been by daily intramuscular injection of from 0.2 to 0.3 cc. of a solution containing one part of a 1 per cent solution of pilocarpine hydrochloride and two parts of a 0.1 per cent solution of epinephrine hydrochloride. He considers from six to eight weeks a "course of treatment." The patient is asked to return at monthly intervals for observation and is cautioned to continue the daily physical drill that was taught him during his stay in the hospital. Usually, after an interval of two or four months the disease starts to progress and the patient is admitted for another course of injections. The author has noted a definite clinical improvement in all his cases, and in two patients the improvement was so marked that they might have been classed as cured except for the fact that at the end of four months they returned with the disease again showing a slight progress. He believes that the glycine treatment sounds much more logical and has a much more scientific basis or excuse for its use than the epinephrine-pilocarpine method but lacks in clinical results. He considers the daily injection of pilocarpine and epinephrine a valuable treatment for pseudohypertrophic muscular dystrophy and that it will give symptomatic relief. Sufficient time has not elapsed to tell whether it will prolong life or alter the mortality rate, but it is fairly reasonable to assume that a child who is able to walk about stands a better chance than one who is not able to move from its bed.

Wisconsin Medical Journal, Madison

32: 645-720 (Sept.) 1934

- Injuries of Nerves and Tendons of Hand. S. L. Koch, Chicago.—p. 655.
Double Figure of Eight Bandage for Elbow. L. D. Smith, Milwaukee.—p. 661.
Congenital Absence of One Kidney with Associated Acute Postinfectious Hemorrhagic Nephritis, Anuria and Concomitant Uremia. S. M. Welsh and W. E. Bannen, LaCrosse.—p. 664.
Headaches of Infectious and Toxic Origin. S. E. Kohn, Milwaukee.—p. 668.
Endocrine Headaches. J. H. Sure, Milwaukee.—p. 671.
Headache in Cardiovascular Renal Diseases. B. J. Birk, Milwaukee.—p. 674.
Calcium in Treatment of Pulmonary Tuberculosis. T. Willett, West Allis.—p. 677.
Pathologic Findings in Three Hundred and Twenty-Five Roentgen Examinations of Kidney, Ureter and Bladder Regions. R. L. Troup, Green Bay.—p. 680.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

31: 167-252 (July-Sept.) 1934

- Story of Tracheotomy. E. W. Goodall.—p. 167.
 Analysis of Over Four Thousand Cases of Educational Deafness Studied During Past Twenty Five Years. M. Yearsley.—p. 177.
 Helminthiasis in Children. P. D. Davy.—p. 193.
 *Nocturnal Enuresis. C. J. C. Earl.—p. 205.
 Some Pediatric Eponyms. VI. Lestace Smith's Sign. W. R. Bett.—p. 215.

Nocturnal Enuresis.—Earl, in stressing the value of psychologic treatment in nocturnal enuresis, discusses the incidental, causative, psychologic, regressive, physical and psychiatric factors. Such treatment should be carried out by a children's psychiatrist, or at a child guidance clinic. For the simple case of enuresis uncomplicated by other behavior disorders, simple suggestion, superficial and symptomatic though it may be, is adequate and efficient. The exact manner of its application may be used quite formally, as in hypnosis, or disguised under the name of medical treatment or training, having only the suggestive power as its common basis. The author believes that enuresis belongs definitely to Babinski's pragmatic definition of "pithiatism" as overt symptoms which can be "caused by suggestion and cured by countersuggestion or by persuasion."

British Medical Journal, London

2: 455-498 (Sept. 8) 1934

- Bacillus Coli Infections. Etiology and Treatment. D. M. Lyon.—p. 455.
 Conditions Predisposing to Bacillus Coli Infection After Postoperative Retention. C. Dukes.—p. 458.
 Value of Radiology (Diagnosis and Treatment) as Aid to the General Practitioner. J. H. D. Webster.—p. 460.
 Radiology as Aid to the General Practitioner. E. Kaye Le Fleming.—p. 462.
 *Contribution to Comparative Study of Tuberculin Tests in Infants and Children. G. G. Kayne and B. Weill-Hallé.—p. 464.
 *Chloroform Hypocne Amnesia in Labor. J. Clark.—p. 468.

Comparative Study of Tuberculin Tests.—Kayne and Weill-Hallé believe that the Moro test is the least sensitive of the three tuberculin tests commonly employed. The Pirquet (pure tuberculin) and the Mantoux test (1:1,000) are about equally sensitive, the Mantoux (1:100) being definitely more sensitive. For use in infants and young children the Moro test has definite disadvantages as regards technique and interpretation of results. When employed, a control test with ether only should be carried out. The Pirquet test is, for infants and young children, the simplest and easiest test to perform and therefore should be employed first. If found to be negative, an intradermal test with a dilution of 1:100 should be carried out. In older children it is worth while to repeat the test, if still negative, with a dilution of 1:10. The Mantoux test in a dilution of 1:10 should be carried out with a control injection of the broth used for the preparation of tuberculin. A Pirquet test should be regarded as positive only if there is at least 1 mm. of erythema on each side of the scarified area. The minimum required for a positive Mantoux test with any dilution is an area of erythema 10 mm. in diameter, associated with some swelling to touch or a well defined erythema greater in area than this. Reactions showing an erythema 5 mm. in diameter or more should be regarded as doubtful and retested on the fourth day and, if they are still doubtful or negative, the test should be repeated with a stronger dilution. If a reaction obtained with a dilution of 1:10 is definitely more marked on the fourth day than the control test, but still under the limit of a positive reaction, it is advisable to regard the test as doubtful and repeat it either within ten days or three months. The authors suggest that, instead of maintaining the controversy as to the relative value of the Pirquet and Mantoux tests, physicians should combine the two, the Pirquet test being followed by the Mantoux test 1:100 and adopted as a routine under a different name—for example, "the combined tuberculin test" or "the cutaneous intradermal test."

Chloroform Scopolamine Amnesia in Labor.—Clark presents a modification of the scopolamine method of amnesia in labor that is suited for home treatment. In ten years he has

conducted eighty-four confinements in accordance with the following method: Treatment is commenced when the patient complains of pains that are regular and of moderate strength. The strength and duration of pains are gaged best by abdominal palpation. The patient is put to bed. One nurse is in attendance. An initial light anesthesia is induced by chloroform until the patient is quiet and sleeping between pains. A hypodermic injection of $\frac{1}{100}$ grain (0.00065 Gm.) of scopolamine is given as soon as the patient is lightly under. The scopolamine is repeated in doses of half this amount at intervals varying from half an hour to an hour. The ideal aimed at is that the patient should be drowsy and quiet between pains. Any indication of returning awareness can be controlled by immediate inhalations of chloroform and a subsequent injection of scopolamine. Chloroform controls any restlessness that scopolamine may produce. The initial administration of chloroform seems to have a subduing effect throughout. As labor progresses, the dose of scopolamine is diminished to $\frac{1}{500}$ or $\frac{1}{400}$ grain (0.0002 or 0.00015 Gm.) and the intervals of injection are lengthened or shortened according to the judgment of the practitioner. The author has always avoided giving any scopolamine during the hour immediately preceding delivery and administers light chloroform from the time that the anus assumes the D shape until the head is born. If labor is delayed, solution of pituitary may be used. The author states that in no case does the amnesia seem to affect the condition of the infant at birth. The delivery of the placenta is often delayed, but not unduly so. The mother sleeps or remains drowsy for some time. The amnesia lasts beyond delivery for a period that is directly proportionate to the extent of the amnesia induced during labor. The mother usually emerges from her amnesia with a strongly expressed disbelief that her baby has arrived.

Journal of Neurology and Psychopathology, London

15: 1-94 (July) 1934

- Acromegaly in One of Uniovular Twins. A. Lewis.—p. 1.
 Psychoses Associated with Pernicious Anemia. Report of Two Cases. D. N. Parfitt.—p. 12.
 Traumatic Encephalopathy (Punch Drunk) of Professional Pugilists. H. L. Parker.—p. 20.
 *Calcium in Epilepsy. G. W. Gwynne and M. Griffiths.—p. 29.
 Cholesterol Tumor (Craniopharyngioma) of Pituitary Body. F. P. Weber, C. Worster-Drought and W. E. C. Dickson.—p. 39.
 *The Hydrogen Ion Concentration and Lactic Acid Content of Cerebrospinal Fluid. I. Harris, E. W. Jones and C. N. Aldred.—p. 46.
 Colloid Cyst of Third Ventricle Associated with Congenital Cystic Kidneys. E. W. Jones and D. H. Collins.—p. 53.

Calcium in Epilepsy.—Griffiths made repeated observations of serum calcium on a group of forty-eight young epileptic patients who were living a normal school and outdoor life in an epileptic colony. Samples of blood were taken at various times of the day and at varying intervals over a prolonged period, in the hope of obtaining a sufficient number of observations so that the time of the fits could be correlated. Estimation of 433 serum calcium readings was obtained. It was observed that the average serum calcium falls within normal limits, though the range of values is wide and variable, for the group and for individuals alike. The average of values before a fit is found to be greater than that after a fit. The highest range of values is that obtained during a succession of fits, while low values are found after successive fits. In two cases that terminated fatally, estimations made during successive fits proved to have definitely low values. When cases of fits by day are contrasted with those by night, the averaged figures show that the behavior of the serum calcium in relation to the attacks varies inversely in the two groups. This inversion is confirmed in a striking manner in one particular case, which gives low values after day fits, high values after night fits and a persistent median value in intervals free from fits. Treatment with large doses of calcium may have beneficial results, while the diminution of serum calcium by sesquiphosphates is definitely detrimental. Serum phosphorus is found to be within normal limits, though with a wide range of variation. Its relation to the serum calcium is not always disturbed by fits, though abnormal ratios may be associated with attacks.

Hydrogen Ion Concentration of Cerebrospinal Fluid.—Harris and his co-workers maintain that the current teaching according to which the spinal fluid is more alkaline than blood

is erroneous. They believe that their figures are reliable, because they employed a method for the determination of p_{H} which is superior to those available to previous workers in the same field. So far as they are aware, none of these investigators used the glass electrode. The glass electrode was employed and was adapted for the use of blood and spinal fluid. To avoid loss of carbon dioxide, the method used was as follows: The ordinary cannula in use for cerebrospinal work was employed. Connected to it was a piece of fine rubber tubing of a narrow bore, about 3 inches in length. The distal end of the tubing was inserted in the inner chamber of the electrode. This chamber fills up with fluid and overflows, so that the fluid whose p_{H} was taken never came in contact with air. Twelve inpatients were investigated. Only once did the p_{H} exceed 7.4, all the others being below this figure. There was a definite relation between the p_{H} of spinal fluid and that of blood and the latter was more on the alkaline side than the former. It is impossible to establish absolute values for the p_{H} of the spinal fluid unless the acid balance of the blood also is determined. As is to be expected, there is no relationship between lactic acid and the p_{H} reading. The authors state that an explanation why the cerebrospinal fluid is more acid than blood may be found in the difference of behavior of carbon dioxide in these two fluids. The lactic acid contents of cerebrospinal fluid and blood are approximately the same, provided sufficient time is allowed for an equilibrium between the two fluids to be established.

Medical Journal of Australia, Sydney

2: 209-240 (Aug. 18) 1934

Present Need for Study of History of Medicine. St. C. Thomson.—p. 209.

Hormone Control of Female Reproductive System. R. M. Allan.—p. 212.

Local Anesthesia: Its Application to Reduction of Fractures of Long Bones and Dislocations of Joints. R. J. Stabback.—p. 220.

Pertussis Vaccine. Hilda Bull.—p. 223.

Radium Colpostat. Sylvia Bray.—p. 224.

2: 241-272 (Aug. 25) 1934

*Branchiogenic Cancers and Other Carcinomas of Neck of Cryptic Origin. J. B. Cleland and B. S. Hanson.—p. 241.

Venoms of the Broadheaded Snake (*Hoplocephalus Bungaroides*) and of the Yellow-Banded Snake (*Hoplocephalus Stephensi*). C. H. Kellaway.—p. 249.

Branchiogenic Cancers and Carcinomas of Neck.—Cleland and Hanson believe that a common explanation of the occurrence of at least some of the carcinomatous and squamous epithelioma growths of the neck is that they are derived from the epithelium of a branchial cleft. In the majority of cases the malignant growths in the neck are clearly secondary to recognizable primary growths in neighboring structures, or sometimes to those at a distance. Tumors of the carotid body have characteristics of their own. In or near the midline or close under the jaw growths may arise from remnants of the thyroglossal duct or from outlying portions of a duct of a salivary gland, but by the time treatment is sought the size of the growth precludes a recognition of such an origin. Occasionally cases of carcinoma in the neck may originate from remnants of the branchial epithelium; in fact, the total absence of such carcinomas would be remarkable. The occurrence of branchial cysts is an indication that the branchial clefts may be closed imperfectly. Apart from the formation of actual cysts, islands of epithelial cells may be left behind as the branchial cleft closes, and late in life these dormant cells may be stimulated into activity and be responsible for branchiogenic cancers. Dental cysts, lined by squamous epithelium and surrounded by plasma cells, are believed to originate from irritation, usually caused by infection, of groups of epithelial cells left behind by the enamel organ during development. A recent alternative theory is that the cysts are really the ends of sinuses lined by epithelium which has descended from the surface of the gum. A frank squamous epithelioma may develop rarely in the squamous epithelium lining a relatively innocent cyst. It is possible that a small and unrecognized branchial cyst of long duration may be responsible at times for a squamous epithelioma, the mass of growth soon obliterating the cavity and a solid growth of cryptic origin resulting. Some presumed branchiogenic cancers are cystic, probably from sec-

ondary degeneration. The possibility of the healing of small primary growths, some of whose cells may have escaped previously into the draining glands, is considered. Though it is perhaps possible for a small epitheliomatous ulcer to undergo healing from destruction of the malignant cells by fibrosis, the likelihood of this occurring must be small. In accessible sites, healing of malignant growths probably does occur from time to time. The possibility of the introduction of cells from the malpighian layer of the skin into the lymphatics as a result of trauma must be considered; for instance, puncture wounds by spicules of bone during eating. From time to time examples of inclusion or implantation cysts in the subcutaneous tissue are seen resulting either from nipping off of a little epithelial fragment during surgical operations or from pushing into the tissues, that is by the blunt end of a needle, of a little group of cells from the deeper layer of the surface epithelium. It is possible that such puncture wounds may sometimes carry epithelial cells into the lymph spaces, whence they may be carried to the draining glands and there grow.

Tubercle, London

15: 529-576 (Sept.) 1934

Prognosis of Pulmonary Tuberculosis Complicated by Cavitation. B. R. Clarke.—p. 529.

Institutional Treatment of Tuberculosis: Plea for Large Self-Contained Medical and Surgical District Units. J. Crockett.—p. 537.

*Allergy in Tuberculosis: Quantitative Use of the Mantoux Test. J. S. Westwater.—p. 543.

Mantoux Test in Assessing Allergy in Tuberculosis.

Westwater has used the Mantoux tuberculin test as a means of assessing allergy in tuberculosis. He emphasizes Zinsser's definition that the allergic state is "an increased capacity to react against an antigen released by the disintegration of the bacillus." This disintegration will require an active resistance to break through the lipid sheath of the bacillus and release the protein; it is the release of this protein which gives rise to the allergic reactions. The author regards allergy as the common property of infected persons; whether they are diseased or not depends on their resistance. From 80 to 90 per cent of the adult population are known to be allergic but have not tuberculous disease, so that in man successful resistance is not contingent on a lack of allergy. This allergic property, however, in its variations reflects the activity not of the infection but of the immunity response. From clinical results in children there is the suggestion that the higher degrees of allergy are found only with active resistance—with disintegration of the invading bacilli. When the immunity mechanism is not active, i. e., in the stage of quiescence and latency, allergy tends to wane, but the property is still there. The same interpretation can be placed on the results in adult phthisis—increased in allergy occurs only in cases responding to treatment—i. e., in cases showing active and to a varying degree successful resistance. On the other hand, when resistance is overcome and swamped, allergy wanes, as presumably the invading bacilli are not being broken up to the same extent. In tuberculosis then there are the three factors: infection, immunity and allergy or sensitivity. Infection is directly opposed to immunity; allergy is a property that may perhaps be inconvenient to the immunity mechanism. These results suggest that allergy or sensitivity to the tubercle protein is probably a minor factor in the pathology of tuberculosis.

Chinese Medical Journal, Peiping

48: 701-808 (Aug.) 1934

Outbreak of Pellagra in Nanking: Report of Thirty Cases. C. S. Yang and K. K. Huang.—p. 701.

Pellagra in Manchuria: Report of Three Cases. K. Y. Yu.—p. 724.

Traumatic Dislocation of Hip in Childhood: Report of Two Cases. C. M. Meng.—p. 736.

Estimation of Blood Calcium and Potassium in Parkinsonism. C. C. Lee.—p. 738.

Autogenous Serum Treatment for Opium Addicts. L. S. Huizenga.—p. 741.

Torsion of Pregnant Uterus. N. J. Eastman.—p. 745.

Pregnancy After Multiple Ligature with Section of Fallopian Tubes. J. P. Maxwell.—p. 748.

Incidence of Tuberculous Infection Among Chinese in Shanghai. D. G. Lai, C. L. Kao and P. N. Chien.—p. 750.

Incidence of Disease in Selected Hospitals in China for 1933: Chinese Medical Association Hospital Survey. H. S. Gear.—p. 758.

Archives des Maladies du Cœur, Paris

27: 517-579 (Sept.) 1934

- *Prognostic Significance of Inversion of T Wave in Lead 3 Associated with Right Heart Predominance in Lead 3. A. Clerc, R. Lévy and R. Lefebvre.—p. 517.
Study of Cardiac Mechanism (Double Integral Command). E. Géraudel.—p. 524.
Clinical Study of Gallop Sound (Tactile Presystolic Reduplication of First Sound). D. Routier and A. Van Bogaert.—p. 541.
Electrocardiogram in Case of Heart Wound. D. Routier and F. Joly.—p. 551.

Inversion of T Wave in Lead 3.—Clerc and his collaborators selected only those electrocardiograms which showed inversion of the T wave in lead 3 with so-called right axis deviation or the latter alone without other abnormalities. This group comprised twenty-six patients, fifteen with the combination and eleven with right axis deviation alone. These changes were found to correspond to cardiopathies based on mitral lesions, congenital cardiopathies, congenital or acquired lesions of the pulmonary artery, or secondary cardiopathies resulting from chronic pulmonary or thoracic alterations. In the first group of fifteen patients with negative T wave and right axis deviation there were six fatalities, while in the second group of eleven with right axis deviation alone there were no deaths. The authors therefore believe that there is a definitely poor prognostic significance attached to this type of electrocardiographic abnormality.

Presse Médicale, Paris

42: 1385-1400 (Sept. 5) 1934

- *Clinical and Therapeutic Contribution to Study of Paragangliomas and Crises of Epinephrine Hypertension. J. Bauer and R. Leriche.—p. 1385.
Intra-Arterial Pressure: Control of Indirect Methods. R. Giroux.—p. 1388.

Paragangliomas and Epinephrine hypertension.—Bauer and Leriche describe a case of paroxysmal hypertension in a man, aged 40. The crises began with epigastric malaise, mild nausea, pallor of the face and extremities, coldness to touch, pounding heart, ocular pulsations, sweating and often mild trembling of the fingers. They lasted from half an hour to an hour and a half, after which a heavy feeling in the head and marked lassitude persisted for several hours. They began in the mornings. Between the attacks the pulse was 72 to 88 and the pressure 160-180/115-125 mm. of mercury. During the crisis the systolic pressure rose more or less while the diastolic pressure remained the same or fell a few millimeters. The pulse did not change in mild attacks but was notably slowed in the severe ones. The authors believe that quite likely they were dealing with essential paroxysmal hypertension of suprarenal origin. Localization of the suspected tumor was not possible. Finally it was decided that operative investigation of this possibility was justifiable. After an unsuccessful attempt on the right side (the suprarenal appeared normal) a tumor was found in the left suprarenal. This was removed and found to have all the characteristics of a paraganglioma. The results of the procedure were good and the patient returned to a normal state. The authors state that the diagnosis is difficult but rests on the constant or lowered diastolic pressure during the attacks, a bradycardia, a paroxysmal and transitory hyperglycemia and perhaps also an increase in the leukocytes and erythrocytes. The advisable therapy is operative because of the poor prognosis when any other form of treatment is used. Removal of a normal suprarenal must be guarded against in these cases.

Revista Medica del Rosario, Rosario de Santa Fe

24: 743-876 (Aug.) 1934. Partial Index

- *Treatment of Trigeminal Neuralgia. T. Fracassi and F. L. Marelli.—p. 743.
Electrocardiogram in Complete Auriculoventricular Dissociation. D. Staffieri.—p. 760.
Hysterosalpingography in Diagnosis, Prognosis and Treatment of Sterility. P. E. Borras.—p. 769.
Treatment of Vulvovaginitis by Basic Aniline Fuchsin. E. A. Travella.—p. 809.
Immediate Action of Digitalis on Volume of Blood in Circulation. E. Levin.—p. 838.

Electroneurolysis in Therapy of Trigeminal Neuralgia.—Fracassi and Marelli treat essential trigeminal neuralgia by electroneurolysis with the following technic: The

patient lies on his back on a flat table with the head in such a position that the involved nerve forms the continuation of a vertical line with the needle introduced vertically. This position of the nerve in relation to that of the needle is obtained by the inclination or by the elevation of the patient's head without changing the position of his body and is controlled by the position of the foramen ovale and the foramen rotundum. To approach the inferior and superior alveolar nerves the patient's head is inclined in the first case and raised in the second case 15 degrees from a line horizontal to the axis of his body. The needle used is one of those commonly used for intramuscular injections, not exceeding 4 or 5 cm. in length. A fine insulated copper wire, which can easily pass through the eye of the needle, previously disinfected with alcohol, is used as a mandrin. The layer of insulating thread of the mandrin is removed at one end 3 or 5 cm., and a knot made in the mandrin as a mark to indicate the length which should be introduced in order to have its point pass the point of the needle. The other end of the wire is then connected with a galvanic current. A painful sensation of the patient, exteriorized by an involuntary gesticulation, indicates that the point of the mandrin is in contact with the involved nerve. The current is then stopped in order to perform the anesthetization of the nerve by infiltration of 1 cc. of a 2 per cent solution of procaine hydrochloride-cpinephrine. Four or five minutes later the isolated mandrin is introduced down to the mark previously made on it. The other end of the wire is then connected to a galvanic current and this current is permitted to pass in a slow and progressive form until 5 milliamperes has been given during three or five minutes at each pole. The positive pole should be applied before the negative one, because the former adheres to the nerve and it is detached from it only by the passage of a negative current. Because of the fineness of the mandrin, the galvanic current does not destroy the tissues of the nerve during the first application. A second application, given three or four days later with the same technic, results in the destruction of a new zone of the nerve and the complete disappearance of the pain. In the authors' cases the pain has not reappeared up to the present (six months after the treatment). They advise resorting to alcoholization of the nerve with 2 or 3 per cent phenolated alcohol in cases in which the galvanization is impracticable. Phenolated alcohol is more efficient than absolute alcohol in these cases.

Archiv für Gynäkologie, Berlin

157: 429-621 (Aug. 18) 1934. Partial Index

- Surgical Sterilization of Women. A. Döderlein.—p. 429.
Pregnancy During Existence of Rectocervical Endometriosis and Tar Cysts. O. von Franqué.—p. 446.
Sterilization of Women According to Menge. K. Kayser.—p. 452.
New Method for Automatic Continuous Registration of Uterine Contractions. W. Rech.—p. 458.
*Genesis of Hyperemesis of Pregnancy. F. Schultze-Rhönhof.—p. 462.
*Heating Deeper Parts of Human Organism in Short Wave Field. F. Schultze-Rhönhof and W. Rech.—p. 468.
Carbohydrate Metabolism in Various Obstetric and Gynecologic Conditions Including Diabetes and Pregnancy. E. W. Winter.—p. 509.
Congenital Atresia of Esophagus with Esophagotracheal Fistula in Severe Hydramnion of Mother. V. Deppisch.—p. 521.
Spontaneous Change of Frontal Presentation into Occipital Presentation During Period of Expulsion. T. Heynemann.—p. 529.

Genesis of Hyperemesis of Pregnancy.—Schultze-Rhönhof points out that some investigators assume a purely psychic while others assume a purely organic cause of hyperemesis of pregnancy. He believes that as a rule both factors are involved but considers the psychic factor the more important. That organic factors are involved is proved by the fact that vomiting is a rather frequent occurrence in pregnancy, and hyperemesis is really only an exacerbation of this vomiting. Many women are subject to nausea before they are aware that they are pregnant. This early nausea is no doubt the result of the presence of toxic substances that sensitize the center of vomiting and the vagus and thus reduce the threshold of irritation so that psychic influences lead to vomiting more readily. The predominating importance of the psychic component in hyperemesis is indicated by the fact that as a rule hyperemesis does not become manifest until the woman is aware that she is pregnant. The author noted also that hyperemesis is comparatively rare in unmarried pregnant women. He thinks that the greater incidence in married women is due

to the fact that married women get more attention and sympathy from their environment, particularly the husband. The motivating factors may differ, the woman may want to call her husband's attention to the great sacrifice on her part, or she may have a desire to get even and make her husband share in her discomfort. The woman is of course rarely conscious of such desires. One of the most important factors in the development of hyperemesis is that she is given attention by her environment if she gets severe attacks of vomiting. Taking her out of her environment often results in cure within a comparatively short time, while a visit from the family often results in a relapse. In some cases the hyperemesis may be a defense mechanism, the manifestation of an aversion against intercourse, which develops in some pregnant women. An escape into illness makes it possible for the married woman to reject the intercourse. The greater incidence of hyperemesis during the first pregnancy is a further proof of the significance of the psychic factor, for the woman usually has to overcome greater psychic conflicts. Moreover, hyperemesis is rare in psychically well balanced women. The author admits that his theory does not necessarily apply to all cases, and he does not exclude the possibility of a different pathogenesis for some cases.

Heating of Deeper Parts in Short Wave Field.—Schultze-Rhonhof and Rech report observations which indicate that the application of a 30 meter wave in the short wave field does not produce a measurable heating of the deeper layers of the tissues. Such an effect had been demonstrated in preliminary experiments on bread. The fact that this is not the case in human tissues proves the great significance of the heat regulators of the human organism. This lack of heat action on the deeper layers in short wave therapy of abdominal organs concerns of course only the mechanism of the therapy and does not involve a criticism of the efficacy of the treatment, which is often quite clear. The authors' experiments provided only a certain insight into the thermo-electric but not into the electrochemical actions of the short wave therapy.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

97: 253-316 (Aug.) 1934

*Renal Function in Pregnancy Toxicoses and Eclampsia. K. de Snoo.—p. 253.

Innervation of Uterine Tubes. V. Conill.—p. 266.

Treatment of Menopausal Hemorrhages by Means of Vaporization. K. Holzapfel.—p. 269.

Histopathogenesis of Tar Cysts and Pathology of Vulvovaginal Gland. J. Cżyżak.—p. 274.

Focal Disorders in Toxicoses of Pregnancy. G. von Bud.—p. 285.

Renal Function in Toxicoses of Pregnancy and Eclampsia.—On the basis of his studies de Snoo reaches the conclusion that for clinical purposes the bromide lye method is entirely satisfactory for the determination of urea in the blood. This was determined in comparison with the urease method. The author observed that in simple toxicoses the disturbances of the renal function are rarely severe and that in chronic hypertension, even in cases presenting severe uremic disturbances, the renal function is as a rule only slightly or not at all impaired, but that in women who have passed through an eclampsia the renal function is in general severely impaired as to the elimination of water and the secretion of urea. In the latter group of women, the urea content generally increases up to the second, third or fourth day, and after that it decreases again, irrespective of whether the women have been delivered or not. The secretion of urine becomes normal sooner than the elimination of the urea. The author thinks that the increase in the urea content of the blood is not dangerous and that the prognosis is dependent to a greater extent on the diuresis than on the urea content. He found also that in many cases of eclampsia the renal function may be entirely normal before the onset of the convulsions and that the convulsions exert no specific influence on the kidneys, but that the same functional disturbances may occur without convulsions. He thinks that renal disturbances may be caused by vasomotor disorders, particularly vascular spasms, and that the parenchymatous organs of pregnant women with toxicosis are especially susceptible to such vasomotor disorders. He shows further that disorders of the kidney may develop as the result of thirst and vomiting and in the absence of a urea retention, and that the urea content of the blood is a valuable aid in estimating the seriousness of hyperemesis of pregnancy.

Monatsschrift für Kinderheilkunde, Berlin

60: 321-400 (Aug. 3) 1934

*Eosinophile Cells in Healthy and Tuberculous Children Following

Epinephrine Tolerance Test. T. von Krompaszky.—p. 321.

Specific Therapy of Whooping Cough. O. Bäuml.—p. 330.

*Tetany After Feeding with Fruit Juices as Substitute for Milk. O.

Bäuml.—p. 336.

State of Health of Children Entering School in 1934. A. Keller.—

p. 343.

Relations of Lysozymes to Avitaminosis A. M. Frank.—p. 345.

Hematology of Avitaminosis A. M. Frank.—p. 350.

Gastric Diverticulum and Cascade Stomach in Children. W. Schwenk.

—p. 356.

Intake of Vitamin A by Hungarian School Children. K. Waltner.—

p. 361.

Eosinophils Following Epinephrine Tolerance Test.—Von Krompaszky decided to study the relation between the suprarenal system and the eosinophile cells, and particularly whether the epinephrine eosinophilia changes in the course of certain diseases. In healthy children it was found that the injection of epinephrine increases the number of eosinophils and that the number of leukocytes increases, as a rule, but not as regularly as does the number of eosinophils. Tests on children with tuberculosis revealed that in one group the effects of epinephrine were the same as in the healthy children, while in a second group an entirely different behavior obtained in that the epinephrine injection was followed by a decrease in eosinophils. It was found that the majority of the children belonging to the first group had a mild tuberculosis, while the majority of those belonging to the second group had a severe form of tuberculosis. In determining the causes of the effect of epinephrine on the eosinophils, the author points out that under the influence of epinephrine the bone marrow eliminates greater amounts of leukocytes, which becomes manifest in the appearance of an increasing number of young leukocytes. The fact that in severe forms of tuberculosis there is no increase in the number of eosinophils after injection of epinephrine is probably due to impairment of the leukopoietic apparatus.

Tetany After Feeding with Fruit Juices.—Bäuml compared the constituents of a fruit juice extract that had been recommended as a substitute for mother's milk with those of mother's milk. He found that the so-called fruit-milk is nearly equivalent to human milk as regards the nutritive substances, the calories and the minerals. It differs from human milk mainly in one factor, its calcium deficiency. Whether this mixture of fruit juices reaches the biologic value of human milk depends on three factors: (1) whether feeding with the fruit-milk results in the normal development of the nursing, (2) whether it can replace mother's milk in nurslings with nutritional disturbances and (3) whether it will prevent rickets and tetany. The author cites a case history which reveals that a nursing, who since the end of the second month of life had been fed with the fruit-milk, had a mild form of rickets and also manifested symptoms of tetany at the end of the fifth month. This indicates that the fruit-milk does not prevent rickets and tetany and thus does not have the biologic value of human milk.

Münchener medizinische Wochenschrift, Munich

81: 1261-1296 (Aug. 17) 1934. Partial Index

Increased Milk Secretion by Antithyroid Protective Substance. H. Küstner.—p. 1261.

Experiences with Iodine Therapy in Exophthalmic Goiter. H. Dennig and E. Schuelke.—p. 1263.

*Special Form of Funicular Spinal Disease and Its Therapy. E. Illing.—p. 1265.

Brucella Abortus Infection with Gastro-Intestinal Hemorrhages. L. Krohmann.—p. 1268.

Significance of Palpitation. H. Müller.—p. 1270.

*Treatment of Gastric Ulcer with Histidine Preparation. L. Bogendorfer.—p. 1270.

Influence of Salt Baths on Circulation with Especial Consideration of Natural Potassium Bath Salt. E. Lendel.—p. 1272.

*New Method of Percussion. Hasse.—p. 1273.

Funicular Spinal Disease and Its Therapy.—Illing describes the histologic aspect of funicular spinal disease and shows how it differs from the changes characteristic for tabes and for multiple sclerosis. Parallelism between the clinico-neurologic and the anatomic aspects is often missing in funicular spinal disease. Moreover, this disorder is frequently only a symptom of an internal disorder. In more than half of the cases it concurs with pernicious anemia, but the author is

primarily interested in the cases in which funicular spinal disease is the only disorder and in which achylia, psychosis and disturbances in the hematopoiesis are absent. He observed four cases of this nature. The first symptoms of the disease appeared from six to twelve months before admission to the clinic. Three patients, women of the menopausal age, complained of a feeling of numbness or of formication in the feet and hands and of weakness in the legs and arms, and one complained of occasional urinary incontinence. The serologic tests for syphilis were negative. The neurologic manifestations were most severe in the legs. In two patients the symptoms of an involvement of the dorsal funiculus predominated, but they were mixed with spastic symptoms. In the other patient spastic symptoms predominated. Since vitamin B has an antineuritic effect, the author decided to try treatment with yeast in the three women. They were given yeast three times each day, and considerable improvement resulted. It is assumed that the yeast treatment arrested the further progress of the spinal disorder. The author admits that a complete cure cannot be expected, since nervous tissue, once destroyed, cannot be repaired, but in new cases the paresthesias may disappear. He suggests that the funicular spinal disorders in which pernicious anemia is absent may be the result of avitaminosis.

Treatment of Gastric Ulcer.—Bogendörfer resorted to the intramuscular injection of a histidine preparation in patients with gastric and duodenal ulcers. He used a preparation 1 cc. of which contained 0.04 Gm. of histidine monohydrochloride. The daily administration of 5 cc. caused no undesirable complications. The author employed the treatment in about thirty cases. All other medicinal treatments were discontinued while the histidine preparation was administered. The result was that the pains disappeared rapidly, and within a comparatively short time the patient could be put on an ordinary diet. The author gives brief clinical histories of three cases which indicate that the patients could be discharged from the clinic in from two to three weeks. A satisfactory explanation of the action mechanism of this treatment is still lacking, but experiments are now being conducted to determine the influence exerted by the preparation on the gastro-intestinal functions.

New Method of Percussion.—Hasse corroborates the efficacy of the friction method described by Bukovala in the *Minchener medizinische Wochenschrift* (81:1026 [July 6] 1934; abstr. THE JOURNAL, Aug. 25, 1934, p. 636). He asserts that he employed this method with excellent results for thirty years. However, he wishes to call attention to still another aid that is helpful in determining the outlines of organs, particularly in the auscultatory comparison of the two lungs. If the sound tube of the binaural stethoscope is held in the fold between the right thumb and the hand, it is possible to percuss the forefinger of the left hand with the middle finger of the right hand. The conduction of the percussion sound by the middle finger, the sound tube and the tubing into the two auditory meatuses increases the intensity of the percussion sound by two or three times its volume, so that this method permits the perception of sound values that otherwise cannot be heard. The author thinks that this rather simple procedure is helpful in the usual methods of percussion as well as in the friction method. Control tests before the roentgen screen corroborated the fine differences detected with the described method.

SI:1335-1372 (August 31) 1934

- *Arrest of Severe Hemorrhages in all Forms of Hemorrhagic Diathesis and of Hemophilia by Parenteral Administration of Vitamin C. A. Böger and H. Schröder.—p. 1335.
- *Problem of Psittacosis. Gutzeit and Johannsen.—p. 1337.
- Hypnosis in Treatment of Chorea Minor. M. Eszenyi.—p. 1340.
- Choleretic Substances. P. A. Popow.—p. 1342.
- Habitual Curvatures of Vertebral Column and Their Treatment. Gaugele.—p. 1344.
- Simultaneous Existence of Duodenal Ulcer and of Biliary Disturbance. H. Müller.—p. 1348.
- Duck Eggs as Carriers of Enteritis Bacilli. H. Bruns and Fromme.—p. 1350.

Arrest of Hemorrhages in Hemorrhagic Diathesis and Hemophilia by Vitamin C.—The favorable effects produced with the parenteral administration of vitamin C (ascorbic acid) on capillary hemorrhages induced Böger and Schröder to try this therapeutic method in other hemorrhagic diatheses. In a case of Schoenlein-Henoch's purpura, they found that the daily

intravenous administration of 100 mg. of an ascorbic acid preparation effected a rapid disappearance of the manifestations of the capillary toxicosis. This was the more surprising since the oral medication with vitamin C had been ineffective. The failure of the oral medication may be the result of the gastro-intestinal disturbances that frequently accompany the avitaminoses. The authors succeeded also in arresting severe intestinal hemorrhages in a hemophylic patient with the daily intravenous injection of 150 mg. of the ascorbic acid preparation. In a patient with "acute" essential thrombopenia, in whom there existed an almost complete lack of thrombocytes and severe hemorrhages of the skin, the mucous membranes and the kidneys, the daily intravenous injection of 150 mg. of the ascorbic acid preparation accomplished the cessation of the hemorrhages within four days. This case is especially noteworthy because the hemorrhages ceased before there had been an increase in the blood platelets. The increase in the thrombocytes did not take place until two days after the complete cessation of the hemorrhages. The authors conclude from this that thrombocytopenia is not the only factor in Werlhof's disease but that a permeability of the vascular walls is likewise of some importance. They think that vitamin C exerts an influence on the vascular permeability but also modifies the albumin factor in the plasma. They hope that the parenteral vitamin C therapy of hemorrhagic disorders will be tried in other clinics.

Psittacosis.—Gutzeit and Johannsen report an increased incidence of psittacosis in Berlin during the first few months of 1934. In discussing the roentgenograms of psittacosis pneumonia, the authors point out that in contradistinction to the rather atypical clinical symptoms, which resemble those of bronchitis, the roentgenograms are typical. They show extensive infiltrative pulmonary processes either on one side of the lung or many, sometimes successively developing, small areas of denseness on both sides. The structure and the outlines of the infiltrates of psittacosis are characteristic and can be differentiated from those of bronchopneumonia and of lobar pneumonia by their uniform and finely granulated structure. At the onset of the infiltration a fine veil of denseness, without foci of greater denseness, seems to be spread over the still visible, normal structure of the lung. As densification advances the veil extends further and gradually covers the structure of the lung, but there is always a characteristic uniformity of denseness. The treatment employed by the authors was purely symptomatic. During the severest stage, when a general toxicity predominated, circulatory and cardiac remedies were given also as in the typical pneumonias, quinine and urethane, packs of the chest and cold spongings. Small doses of amidopyrine proved helpful in reducing the fever. The clinical diagnoses of the cases observed by the authors were corroborated in animal experiments. The birds that were the source of infection had been in contact with some of the patients for nine months. The authors conclude from this that the virus is eliminated only at times, and they point out that parrots may be carriers of the virus without showing signs of the disease. They suggest measures for the prevention of psittacosis.

Strahlentherapie, Berlin

50:529-720 (Aug. 15) 1934. Partial Index

- Selective Treatment of Carcinoma of Cervix Uteri. M. Bolaffio.—p. 566.
- Principles of Roentgen Tube Introduced into Body Cavities and of Its Application. W. Schaefer and E. Witte.—p. 579.
- Seminoma of Testicle and of Ovary. A. Bécère.—p. 597.
- Lympho-Epithelial Tumors. E. Maier.—p. 611.
- *Roentgenotherapy of Ankylopoietic Spondylarthritis. F. Haenisch.—p. 623.
- *Treatment of Actinomycosis. O. Dyes.—p. 641.
- Failure of Castration and Sterilization by Means of Roentgen Rays in Patients with Pulmonary Tuberculosis. F. von Mikulicz-Radecki.—p. 658.
- Roentgenotherapy of Paradenitis: Technic and Method. K. Staunig.—p. 677.
- *Formation of Hydrometra After Postoperative Radium Treatment on Account of Ovarian Carcinoma. E. Vogt.—p. 683.
- Roentgen Meter for Small Quantities of Rays. J. Frank.—p. 687.
- *Action of Intravenous Injection of Radon on Blood. M. Nemenow and R. Gurewitsch.—p. 693.

Roentgenotherapy of Ankylopoietic Spondylarthritis.—Haenisch employed roentgenotherapy in thirteen rather severe cases of ankylopoietic spondylarthritis. In three patients the treatment proved ineffective, but in two of these the period of

observation and treatment has been too short to permit a definite evaluation. In the remaining ten cases the subjective complaints were considerably improved, so that the patients were highly pleased with the results. Many requested a repetition of the irradiation as soon as the improvement seemed to subside. Two patients have been under the author's observation for more than four years. Some patients had been subjected to other treatments without satisfactory results, and they stated of their own accord that the temporary or prolonged improvement was the result of the irradiation. But the author admits that, as far as he is able to judge, the ankylopoietic process advances in spite of the treatment, the reduction in pain and the improvement in the general condition. Of course, it is impossible to estimate whether the anatomic changes in the skeleton are retarded by the roentgen treatment or not, but he thinks that his observations justify a trial with roentgenotherapy in suitable cases of ankylopoietic spondylarthritis. He recommends the following method of irradiation: The rays are applied to three or four fields along the spinal column and eventually to one or two fields on the right and left sacro-iliac synchondrosis. The fields are 10 by 12 or 10 by 15 cm. To each field 130 roentgens is applied five times. The irradiations are given from a distance of 30 cm., through a filter of 0.5 mm. of copper and 1 mm. of aluminum, and with 0.9 mm. of copper as the half layer value. The intensity is such that from 28 to 35 roentgens is applied each minute. The intervals between the irradiations of each field are from five to ten days. The joints react occasionally to from six to ten applications of 65 roentgens, applied under the same conditions. The series of treatments may be repeated after six months, but a definite rule is difficult and the result of the treatment and the severity of the condition should be taken into consideration.

Treatment of Actinomycosis.—After evaluating various methods of treatment, such as surgery, medication with iodine, injection of methylene blue and vaccination, Dyes expresses the opinion that the results obtained with roentgenotherapy are such that the treatment hardly requires further recommendation. From the standpoint of the roentgenologist, actinomycosis takes a special position among the inflammatory disturbances in that it requires much larger quantities of roentgen energy than do other inflammatory conditions. According to the dose of roentgen rays that was employed, the author reports three groups of cases. In the first group the entire unit skin dose was applied, either in one session or within six days. These patients recovered within from three to ten weeks. The second group includes the patients in whom from 40 to 60 per cent of the unit skin dose was given, either once or several times in several sessions with intervals of several weeks' duration. The fact that the irradiation had to be repeated indicates that the single dose was not sufficiently large. The patients belonging to the second group recovered in from nine to sixteen weeks, and relapses did not occur. In the third group of patients, the single dose did not reach 40 per cent of the unit skin dose, and in most cases 25 per cent was applied, either once or repeatedly after intervals of several weeks. The actinomycosis was cured in all ten cases that were treated in this manner, but in one case a relapse occurred six months later. The observations on these three groups of patients prove that the large dose accelerates the cure considerably.

Hydrometra After Intra-Uterine Radium Irradiation.—Vogt gave intra-uterine radium irradiations to a woman who had undergone an operation for bilateral ovarian carcinoma, and a hydrometra developed. The author considers this a rare occurrence, since it was the only case in which he observed it. The differential diagnosis of hydrometra may present great difficulties. If the uterus remains after the removal of both adnexa on account of carcinoma, the later enlargement of the uterus generally leads to the assumption of a myoma or of a relapse of the ovarian carcinoma. In the course of the operation for the removal of the uterus, after the development of the hydrometra, it was found that the postoperative irradiation with roentgen and radium rays, to which the woman had been subjected after the operation for ovarian carcinoma, had produced good results.

Action of Intravenous Injection of Radon on Blood.—Nemenow and Gurewitsch describe experiments on rabbits

which reveal that the intravenous injection of radon effects a reduction of the number of leukocytes, especially the small lymphocytes. Histologic studies of the blood forming organs disclose that the changes observed correspond with those of the circulating blood. The lymph nodes and splenic follicles are most severely changed, but the bone marrow is likewise involved. The authors point out that their method of influencing the blood by the intravenous administration of radon is valuable in studies on the hematopoiesis but that the problem of the therapeutic application of radon by means of intravenous injection is still unsolved. They are convinced that the intravenous application of radon is of no value in the treatment of malignant tumors. However, they think that in leukemia, particularly the lymphatic form, the therapeutic prospects of the intravenous injection of radon are more promising, and they are now investigating this possibility.

Wiener Archiv für innere Medizin, Vienna

25: 161-320 (Aug. 10) 1934

Metabolic Investigations in Disturbances of the Circulation. D. Laszlo.—p. 161.

Fate of Resorbed Fats in Organism. H. Schur, A. Löw and A. Kréma.—p. 197.

Action of Insulin on Provisional Storage of Resorbed Carbohydrates and Fats in Organism. H. Schur, A. Löw and A. Kréma.—p. 203.

Histopathology of Chronic Articular Rheumatism and Its Clinical Significance. E. Freund.—p. 211.

Role of Environmental Factors in Pathogenesis of Primary (Vascular) Hypertension. E. Baráth and A. von Mírgay.—p. 221.

*Bacteremia, Wassermann Reaction and Morphologic Blood Picture in Endocarditis Lenta. A. Wydrin.—p. 231.

*Tendinous Fibers and Cardiac Sounds. S. Bondi.—p. 245.

Role of Liver in Water Economy. D. Adlersberg.—p. 269.

Leukopenia Under Physiologic and Pathologic Conditions. U. Strasser.—p. 283.

Bacteremia and Blood Picture in Endocarditis Lenta.

—Wydrin reaches the conclusion that *Streptococcus viridans* cannot be considered the specific organism of endocarditis, but he admits that it is the organism that is most frequently found in bacteriologic studies of endocarditis lenta. In all cases in which there are no indications of syphilis, great caution is necessary in the evaluation of a positive Wassermann reaction. A secondary anemia is one of the principal symptoms of endocarditis lenta, and in cases of severe septic manifestations and of reduced resistance it may appear in a severe form. Leukopenia with manifestations of neutrophilia and nuclear deviation to the left with the appearance of staff-nuclear and young forms and lymphopenia are indications of grave danger. Monocytosis with some or numerous endothelial cells and frequently with macrophages indicates an unfavorable prognosis, particularly in cases of progressive anemia and growing septic symptoms.

Tendinous Fibers and Cardiac Sounds.—Bondi considers the old theory that transverse tendinous fibers are responsible for the development of the musical heart sounds, valuable so far as it calls attention to the fact that tendinous fibers and not alone the valvular apparatus are involved in the formation of cardiac sounds. On the other hand, this theory has underestimated the significance of the tendinous fibers, for sounds may be formed by the transverse and under certain conditions by the longitudinal fibers. Moreover, the tendinous fibers play a part not only in the formation of the musical sounds but also in a portion of the rough, that is the ordinary, heart sounds. The direction, the volume and the velocity of the blood are important for the production of a sound phenomenon. In order to produce a sound, the onflow must be as much as possible in the vertical direction and the velocity must be more than 1 meter a second. These requirements must be fulfilled also in the case of musical sounds; but here tendinous fibers of an especial delicacy, with a diameter of approximately 0.01 cm., are required, and those delicate fibers seem to be present only underneath the fibers that are stretched longitudinally. In these cases a lesser velocity, up to about 60 cm. a second, may be sufficient to produce a musical sound. The occurrence of isolated musical sounds becomes understandable when it is considered that the velocity is not sufficient to produce rough sounds from the thicker tendinous threads or in the valvular canal. Other musical sounds may develop as the result of narrow and regular clefts in a valvular membrane or as the result of cut sounds.

Wiener klinische Wochenschrift, Vienna

47: 1057-1080 (Aug. 31) 1934. Partial Index

- *Clinical Significance of Terminal Deflection in Electrocardiogram. D. Scherf.—p. 1057.
- *Spinal Hemilateral Paralysis of Diaphragm. K. H. Bardenhofer.—p. 1067.
- Attempt to Treat Puerperal Sepsis in Dog by Means of Insulin-Dextrose. W. Neumann.—p. 1069.
- Ileus Following Eating of Dried Pears. P. Moritsch.—p. 1070.
- Pathogenesis and Therapy of Hay Fever (Rhinopathia Pollinosa, Asthma Pollinosum). E. Urbach.—p. 1073.

Terminal Deflection in Electrocardiogram.—Scherf stresses the great independence of the shape of the terminal, the ST, deflection. This is partly due to the fact that the various external influences modify the T wave more readily and noticeably than they influence the QRS complex. In enumerating the factors that influence the ST deflection, the author mentions the condition of the cardiac muscle, the tonus of the cardiac nerves, the position of the heart (position of the diaphragm), the thickness and the moisture content of the skin, thoracic exudates, action of digitalis and cardiac hypertrophy. The author further discusses the various abnormalities of the ST deflection and their significance. He concludes that abnormalities of the T wave in leads I and II indicate a pathologic condition in the myocardium, but that it is wrong to base a prognosis as to life expectancy on such changes. In patients with coronary thrombosis, for instance, the abnormal T wave and all other clinical signs may vanish within a comparatively short time and the patient may feel well for many years after. The prognosis should take into consideration all other clinical symptoms as well as the electrocardiogram.

Spinal Hemilateral Paralysis of Diaphragm.—Bardenhofer points out that paralyzes of the diaphragm that can be traced to an impairment of the spinal cord are found as a rule only in cases of extensive impairment of the cervical cord, such as the terminal stages of Landry's paralysis, systemic disorders of the anterior horn and syringomyelia. These spinal forms of diaphragmatic paralysis are as a rule bilateral, but the literature reports also unilateral cases. In all these cases, however, other spheres, whose nuclei are near the spinal origin of the phrenic nerve, were involved in the spinal paralysis. Cases in which a unilateral diaphragmatic paralysis of spinal origin is the only neurologic symptom have never been described before, and for this reason the author feels justified in reporting the history of a man, aged 51, in whom an isolated hemilateral diaphragmatic paralysis developed. It is assumed that this paralysis originated in a small myelitic focus.

Zeitschrift für urologische Chirurgie, Berlin

39: 319-427 (July 21) 1934

- Attempt at Transperitoneal Pyelotomy. A. Gridnev.—p. 319.
- Significance of Pyelography for Differential Diagnosis of Abdominal Tumors. P. I. Felfer and M. I. Schor.—p. 322.
- Radiologic Vesico-Ureteral Sign and its Role in Estimation of Intravenous Urography. P. Constantinescu.—p. 334.
- Primary Cancer of Renal Pelvis. G. S. Epstein.—p. 354.
- *Simple Ulcer of Bladder. W. Pollak.—p. 362.
- Incontinence of Female Bladder and Its Treatment. J. Frigyesi.—p. 369.
- *Alkali Reserve of Blood Plasma in Surgical Diseases. E. Szold.—p. 389.
- Surgical Treatment of Urinary Incontinence in Cases of Defective Formation of Urinary Organs. D. A. Wedenski, M. B. Levitanus, L. G. Milberg and E. A. Frakmann.—p. 394.

Simple Ulcer of Bladder.—Pollak points out that, among the many ulcerous processes of the bladder, one was definitely identified by Paschkis as a disease entity. This type is now generally known as simple ulcer. This form of simple ulcer of the bladder is of nonspecific origin, and tuberculosis, syphilis and carcinoma can thus be excluded. However, the genesis, the diagnosis, the pathologic anatomy and the therapy are still in dispute. The author describes two cases of simple ulcer of the bladder, one of which was under his observation for six years. A cystogenic pathogenesis seems to be certain in both patients. A neglected cystitis during the puberal age appears to have been the cause of the simple ulcer in the first woman, and in the second patient the ulcer began with a puerperal cystitis. It has been pointed out by some investigators that

simple ulcer is a gynecologic disease occurring exclusively in sexually mature women. The two patients observed by the author stated that before the onset of menstruation the condition was exacerbated, while the condition was improved during and after menstruation. Moreover, pregnancy effected an improvement in both instances. To the knowledge of the bacteriology of simple ulcer the two cases contributed in that they revealed that the condition is not caused by a definite organism. Colon bacilli and staphylococci were found in one case, while unidentified gram-negative rods were detected in the other. Local disturbances in the blood supply may promote the development and the relapse of the ulcers. The diagnosis must be made by exclusion. After a specific genesis and carcinoma have been excluded, the condition must be differentiated from ulcerous cystitis and from incrustated ulcer. But loosely adhering incrustations occur also in simple ulcer. The usual treatment for cystitis is ineffective in simple ulcer of the bladder. The local application of methylene blue (from 0.25 to 0.5 per cent solutions) is the most satisfactory of the conservative remedies. Electrocoagulation, however, is the most effective method and proved superior even to the excision of the ulcer.

Alkali Reserve of Blood Plasma in Surgical Diseases.—Szold calls attention to a reduction of the alkali reserve of the blood of patients with renal disease. He studied the alkali reserve of the blood plasma of 100 patients in a urologic clinic and at the same time made the various functional tests of the kidney. He found that in urologic surgical disturbances the reduction in the alkali reserve runs parallel with the damage to the excretory organ and with the inhibition of the discharge. Moreover, there is a parallelism between the reduction in the alkali reserve of the blood serum, the lowering of its freezing point and its content in rest nitrogen and in xanthoprotein.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 4417-4512 (Sept. 29) 1934

- Functional and Organic Changes of Speech. L. Kaiser.—p. 4418.
- Diverticula of Urinary Bladder. D. Van Cappellen.—p. 4425.
- *Cirrhosis of Liver with Hemolytic Anemia and Severe Hematinemia. A. A. Hijmans Van Den Bergh and A. W. C. G. Kamerling.—p. 4432.
- *Treatment of Addison's Disease with Sodium Chloride. J. F. Touw and W. F. Noordhoek Hegt.—p. 4439.
- Recent Observations on Bacteriology of Hemoglobinophilic Bacteria. J. Mulder with the collaboration of Miss J. Ubbink.—p. 4447.
- Artificially Produced Quartan Malaria. C. W. F. Winckel.—p. 4455.

Cirrhosis of Liver with Hemolytic Anemia and Severe Hematinemia.—Hijmans Van Den Bergh and Kamerling describe a patient presenting hepatic cirrhosis of the Laënnec type in whom a severe icterus and macrocytic anemia developed without any sign of hemorrhage. Such symptoms as the intensity of the icterus, the itching of the skin, the relatively slow pulse and the amount of coproporphyrin (hematin derivative) in the blood serum suggested an obstructive icterus. Other symptoms, however, suggested a hemolytic icterus: reticulocytosis, marked urobilinuria without bilirubin or bile salts in the urine, a marked amount of iron salts in the urine and of bilirubin in the blood serum (the latter mainly with a delayed reaction), strong excretion of urobilin in the stools, severe hematinemia and at necropsy a redness of the bone marrow. The authors advance several hypotheses as to the genesis of pernicious anemia: 1. In consequence of the disease of the liver, the hepatopoietic substances may be destroyed. 2. Resorption of these substances may be disturbed by the intestinal mucosa. 3. There may be a lack of the intrinsic factor of Castle, just as in cases of pernicious anemia.

Sodium Chloride Treatment of Addison's Disease.—Touw and Noordhoek Hegt review the literature on the influence of administration of sodium chloride on epinephrectomized animals and the favorable results of increased salt intake on Addison's disease. The authors observed the clinical manifestations and blood chemistry of two patients suffering from Addison's disease during periods of normal, salt-free and excessive salt diets. There was a noteworthy parallelism between clinical improvement of the patients and the rise of the sodium content of the blood after oral administration of large quantities of sodium chloride (from 20 to 35 Gm. daily).

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 20

CHICAGO, ILLINOIS

NOVEMBER 17, 1934

A CONSIDERATION OF THE STONELESS GALLBLADDER

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Several writers have called attention to the frequency of unsatisfactory results after cholecystectomy on patients whose gallbladders showed a minimal amount of change from the normal condition (Whipple,¹ Muller,² Judd,³ Stanton⁴ and others). The observation, therefore, that surgical results in the stoneless gallbladder, on the whole, are not so satisfactory as in those cases in which gallstones are present is not by any means new.

In most other conditions the idea has gained ground that one should attack a disease early in order to obtain the most satisfactory therapeutic results. Alvarez⁵ has even suggested that the same principle holds true in cases of cholecystitis. There is some reason to think, however, that this principle does not hold for diseases of the biliary tract. Indeed, if one were to be guided only by a table of comparative results obtained by cholecystectomy in cases of minimal pathologic change as compared with those which showed marked and definite changes, one might jump to the conclusion that the statistical results proved the point that cholecystectomy should not be undertaken in the early cases of cholecystitis before well marked changes have occurred.

The case, however, is not so simple and it cannot well be decided merely on the evidence of a compilation of statistics. There are several other considerations that must be taken into account. For example, in assessing the proper value to be placed on the operation of cholecystectomy for the relief of symptoms, it is necessary to take several other considerations into account. Obviously the first question to be asked before an operation is performed in a given case is How much does the gallbladder contribute to the symptoms of that particular patient? It is clear that when the patient is suffering

from repeated attacks of severe biliary colic with its associated symptoms the relief of the symptoms occasioned by the removal of the offending agent may be very striking. An example of such a case is one in which a stone is lodged in the cystic duct or in the neck of the gallbladder. On the other hand, if the patient is having only comparatively mild symptoms, regardless of the extent of the pathologic changes that may be present in the gallbladder, the relief of symptoms obtained by cholecystectomy will be proportionately less. Moreover, if the patient happens to have another unrelated lesion that is responsible for many of the symptoms, it is obvious that the removal of the gallbladder will not give satisfactory relief despite the existence of well marked disease in the latter organ. An example of the latter sort in our experience was a patient who had calculi in the gallbladder but also an early tuberculosis of the spine which became progressive. Finally also there are the patients whose symptoms come chiefly if not entirely from lesions that are mistaken for diseased gallbladders, in whom the operation of cholecystectomy fails to give the expected relief. It is perhaps not sufficiently appreciated that many common conditions are often confused with gallbladder disease, particularly with the less severe forms of cholecystitis, and that operations are therefore unwisely performed on the biliary tract with necessarily a large percentage of failures, to relieve the patient of symptoms. Some of the most common of these conditions are diseases of the spine, especially osteo-arthritis, chronic constipation, surgical diseases of the right kidney and urinary tract, and duodenal ulcer.

When a decision has finally been reached to perform an operation on the biliary tract in a patient with comparatively mild symptoms of cholecystitis, the surgeon, if he finds little evidence of a pathologic change at the operation, is likely to try to find solace and justification for the removal of the gallbladder in the microscopic examination of the organ. Unfortunately, however, this examination is unlikely to be of much help in just those cases in which the help may be most needed. It is well known, for example, that there is practically no agreement among pathologists as to what constitutes a normal gallbladder. This is especially true after middle life, the period in which most patients present themselves for operation for the condition. It is rare, therefore, for a gallbladder to be pronounced normal on the basis of a microscopic examination.

With these considerations, it should not seem strange that statistics in general have shown that the best results have followed those operations which have been performed in cases not of early or minimal pathologic changes but rather in those associated with relatively advanced changes. The presence of calculi usually

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934

1. Whipple, A. O., cited by Muller.²
2. Muller, G. P.: The Noncalculous Gallbladder, *J. A. M. A.* 89: 786 (Sept. 3) 1927.

3. Judd, E. S.: Clinical Versus Pathological Cholecystitis, *Collected Papers of the Mayo Clinic* 17: 152, 1925

4. Stanton, E. M.: Stoneless Gallbladder: Study of Operative Cases, *Am. J. Surg.* 18: 246 (Nov.) 1932.

5. Alvarez, W. C.; Meyer, K. F.; Rusk, G. Y.; Taylor, F. B., and Easton, Jessie. Present Day Problems in Regard to Gallbladder Infections, *J. A. M. A.* 81: 974 (Sept. 22) 1923.

implies a condition of relatively advanced pathologic change. Regardless of the exact origin of stones in the biliary tract, their presence necessarily implies a more advanced state of the process that caused them than the beginning of the process, and under no circumstances can they be regarded as a normal finding, no matter whether their origin was an infection or merely a disturbed state of metabolism. Moreover, it can scarcely be denied that the stones themselves often produce severe symptoms by blocking the ducts or by acting like foreign bodies in maintaining an infection. On the other hand, in the cases of most advanced pathologic changes the results are not likely to be so good because in such cases serious and usually irreparable damage has usually occurred in other important organs, notably the liver and pancreas. Again also the question of overlooked stones in the ducts arises. However, it should not be understood that a satisfactory relief from symptoms is never to be expected in a patient with minimal changes; for, as the analysis to be given will show, even in such cases a satisfactory result may be obtained in the majority of instances provided reasonable care has been exercised to exclude other sources of the patient's complaints.

I should like, therefore, to review certain features based on a study of 161 patients who were operated on at the Barnes Hospital but who had no stones, except in the cases of seventeen who had a combination of cholesterosis with stone. The latter cases were added because by some the conditions of cholesterosis and of cholesterol stones are considered to be expressions of a disturbed metabolism rather than of a definite disease of the gallbladder. All the patients who comprised this study had had a cholecystectomy more than a year before they were reexamined to determine the results.

The 161 patients whose condition was ascertained more than a year after operation were classified, according to pathologic lesions, as follows: minimal lesion, fifty-seven; cholesterosis without stone, thirty-one; chronic catarrhal cholecystitis, fifty-one; chronic fibrous cholecystitis, five; cholesterosis with stone, seventeen.

The term minimal lesion was assigned to those cases in which the gallbladder wall was not greatly thickened, the organ contained concentrated bile, and on microscopic examination there were a few lymphocytes in the wall. A diagnosis of cholesterosis was made when the mucosa of the gallbladder contained the yellowish plaques that are characteristic of lipid deposits. Chronic catarrhal cholecystitis was said to be present when there was edema of the mucosa, a greater infiltration of lymphocytes than in the minimal lesion and some muscular thickening. Chronic fibrous cholecystitis was the term applied to those gallbladders with markedly thickened walls, cuboidal epithelium that often is absent in places, and diverticular crypts. This type of lesion is almost always accompanied by biliary calculi.

The ultimate results in those cases in which no stones were present showed only 60 per cent of patients who considered themselves well. There was an equal number of gallbladders which had a few adhesions and of those which had many adhesions. In the class listed as greatly improved nearly three times as many patients showed only a few adhesions around the gallbladder. On the other hand, all of the seventeen patients with cholesterosis and stone showed either marked improvement or complete recovery from their symptoms.

Of perhaps greater importance and of greater interest is the fact that in 153 cases of this series it was possible to compare the results in those patients who gave a definite history of biliary colic with those who did not have such a history. Of the stoneless cases only 33 per cent gave a history of biliary colic, but 76 per cent of these patients considered themselves well or improved. On the other hand, only 58 per cent of those without biliary colic were well or improved. Moreover, 82 per cent of the patients with cholesterosis and stone gave a history of biliary colic and all were relieved. Again, although the remaining 18 per cent of the cases of cholesterosis with stone did not give a history of biliary colic, nevertheless they were all improved. The importance of stones in the production of symptoms is therefore again emphasized.

In an attempt to correlate the importance of the pathologic changes to the prognosis after cholecystectomy, table 1 was arranged.

TABLE 1.—Importance of Pathologic Changes to Prognosis After Cholecystectomy

	Well	Im- proved	Unim- proved	Postopera- tive Death	Total
Minimal lesion.....	11	22	21	3	57
Cholesterosis.....	14	2	14	1	31
Chronic catarrhal cholecystitis..	18	16	13	4	51
Chronic fibrous cholecystitis....	2	3	0	0	5
Cholesterosis with stone.....	6	11	0	0	17
	51, or 31.7%	54, or 33.5%			161

Table 1 illustrates two points in a striking manner. One is that, although only a small proportion of the patients were relieved of all their complaints, nevertheless about 65 per cent considered themselves improved. This point indicates that there is no justification for an undue pessimism concerning the results of operation on the stoneless gallbladder, despite the fact that the results are far from satisfactory. In this particular group of cases the postoperative mortality was excessively high; in fact, far higher than in our total series of cholecystectomy performed for conditions with and without stones. For the last five years our total operative mortality for cholecystectomy has ranged around 1 per cent. For a period of two years the mortality stayed at only 0.4 per cent. All patients who died in the hospital after operation are considered as postoperative deaths. Actually, however, in the majority of instances the operation probably had little or nothing to do with causing the death. The fact that the mortality is so high in the stoneless cases is found to be due on closer analysis largely to faulty diagnosis; that is to say, many of these deaths were due to general constitutional disorders of which the suspected gallbladder disease proved to be only an insignificant detail. Included in the category of constitutional disorders was one case of a blood stream infection and several other cases of primary hepatic disease. Most of the patients who died probably should not have been subjected to operation at all. This consideration is a matter of great importance because not only does it emphasize the necessity of a complete inventory of the patient who happens to have some evidence of gallbladder disease, but it also indicates that, as a rule, a primary hepatic disease (cirrhosis, toxic hepatitis, and the like) is not favorably influenced by cholecystectomy even when the gallbladder presents definite pathologic changes. Our rule now is usually not to operate on a patient's gallbladder merely

because he presents some evidence of cholecystic disease unless, after a thorough and complete examination, we can satisfy ourselves that probably the symptoms are coming from that organ, at least to a major degree.

Another angle from which this study has been made has been to attempt to correlate the cholecystographic examinations with the ultimate results in cases of the stoneless gallbladder. Of the 161 cases that have been made the basis of this whole study, for various reasons only 114 are available for a particular investigation of the correlation of the cholecystographic response with the ultimate postoperative results. These are presented in table 2.

TABLE 2.—Cholecystogram and Prognosis: 114 Cases

Type of Cholecystographic Response	Total	Clinical Result			Percentage Well or Improved
		Well	Im- proved	Unim- proved Postopera- tive Death	
Normal gallbladder..	10	5	1	4	60
Deformed shadow...	8	4	2	2	75
Faint shadow.....	75	22	22	25	59
No shadow.....	21	6	7	5	62
	114	37	32	39	60

Certain rather astonishing results have been obtained from this particular study. It will be seen, for example, that the total percentage of well or improved patients, which is 60, is about the same as the percentage that showed a faint shadow or a shadow which was designated as being normal. Some discussion is needed to clarify these points. The ten patients who were operated on in spite of a normal cholecystographic response had their operations because it was felt that the symptoms warranted the operation in spite of the negative roentgen examinations. The series of ten cases of this sort is, of course, far too small from which to draw any sweeping conclusions. Moreover, since six of these patients considered themselves either well or improved after operation, our own inclination is to assume that probably the removal of the gallbladder had little or nothing to do with the relief of the symptoms. Our routine procedure is to remove the appendix also whenever a cholecystectomy is performed. It is within the range of possibility, therefore, that the removal of a diseased appendix was perhaps more responsible for the relief of symptoms in these cases than the removal of a normal gallbladder.

Previous studies have shown that at our hands a gallbladder that appears normal on cholecystographic examination rarely shows any pathologic changes other than those which we have described as minimal in this article. The question of faintness of shadow is an old stumbling block. From the beginning of our experiments with cholecystography as well as those of others it has been recognized that faintness of shadow constitutes a great difficulty in diagnosis of cholecystic disease. The fact that only 62 per cent of those patients who had no shadow were relieved of their symptoms by cholecystectomy may occasion some astonishment because ordinarily others as well as ourselves have interpreted the failure of a shadow as a definite indication of demonstrable disease of the gallbladder in practically all instances, provided the technic has been satisfactorily performed. The fact that in this series only 62 per cent of such patients were relieved of their symptoms after cholecystectomy in our opinion merely indicates again the frequency with which the chief symptoms of which a patient complains are ascribed to the gallbladder

merely because that shows some evidence of disease. It is not a reflection on the value of cholecystography as a means of demonstrating a disturbed function of the gallbladder but rather it constitutes a reflection of our failure to assess properly the different complaints of the patient. In other words this finding reemphasizes the necessity of a complete and thorough search in other parts of the body for the causes of symptoms that may be thought to be due to the gallbladder, especially when those symptoms are not severe.

SUMMARY

This study emphasizes the point that from the standpoint of satisfactory results the symptom of pain, particularly the typical biliary colic, is an important feature. In the absence of severe pain the beneficial results to be obtained by cholecystectomy in cases of a stoneless gallbladder are likely to be unsatisfactory in approximately 40 per cent. There seems at present to be little justification for the subjection to operation of patients who have only the early beginnings of cholecystic disease, unless one is interested in the prevention of complications. At any rate, the evidence indicates that if one operates on such patients the results will be far from satisfactory in almost one half of the cases. In this article no particular mention has been made of other features of cholecystic disease, such as flatulent dyspepsia. It will be apparent, however, from the remarks already made that symptoms other than pain which are commonly associated with gallbladder disease are much less likely to disappear after cholecystectomy than is pain itself, unless the changes in the organ are definite and marked. The determination of how much a patient's symptoms are due to the gallbladder in a case of minimal disease of that organ is extremely difficult. Many of these patients are undoubtedly on the borderline between purely functional and anatomic disorders that produce disturbances of function. In order to arrive at a satisfactory incrimination of the gallbladder it is necessary to examine the patient thoroughly with reference to the possibility of other sources of the complaints; and so far as the gallbladder itself is concerned it is necessary not only to take a very careful clinical history but also to resort to various special methods of examination. Even after the presence of cholecystic disease is demonstrated in the anatomic sense, however, it is still difficult to satisfy oneself that the function of the organ is sufficiently disturbed by those pathologic changes to cause the symptoms of which the patient complains. The presence of calculi and the history of typical biliary colic greatly increase the chance of a satisfactory result after cholecystectomy.

Introduction of Lumbar Puncture.—In the year 1891, and in a quiet way, came an experiment which slowly led to the most astounding progress in our knowledge of nervous disease and of its diagnosis, differentiation and treatment. No event in the history of neurology has brought so many assets as has the introduction of lumbar puncture. Quincke of Magdeburg conceived that he might relieve the symptoms of hydrocephalus by draining the cerebrospinal fluid. Six years previously Corning in America had drained the fluid for the treatment of tuberculous meningitis, but Quincke was the first to make his work known throughout the world. The discovery of changes indicative or characteristic of certain diseases in this hitherto unimportant fluid soon followed, and lumbar puncture has become a routine in diagnosis and treatment.—Collier, James: The Harveian Oration on "Inventions and the Outlook in Neurology," *Brit. M. J.* 2:707 (Oct. 20) 1934.

THE APPLIED PHYSIOLOGY OF THE
EXTRAHEPATIC BILIARY TRACT

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Since an epoch in the advance of knowledge of the physiology and functional pathology of the biliary tract has been witnessed during the past decade, it is appropriate to outline the present state of information concerning it.

The gallbladder manifests, like the intestine, three types of activity: absorption, secretion and motor activity.¹

ABSORPTION OR CONCENTRATION

In the process of absorption, the gallbladder concentrates the hepatic bile that enters it from four to ten times. Chiefly water and certain inorganic constituents are absorbed. In the process of absorption the bile, which is alkaline as it leaves the liver, is slightly acidified. The bile acids render the fats and cholesterol soluble at the acid reaction of gallbladder bile.

The concentrating function of the gallbladder renders it a reservoir of small volume but large capacity. In the fasting human being or dog it may store the entire twelve or twenty-four hour output of hepatic bile. This is the reason why dogs without a gallbladder become jaundiced sooner after complete common duct obstruction than dogs with a gallbladder.²

The bile ducts of animals possessing a gallbladder do not concentrate to a significant extent.³ The bile in the obstructed duct, in the absence of the gallbladder, may look considerably darker than hepatic bile for the first day or so, but this is said to be due to a change of bilirubin to biliverdin.^{3a} If there is any concentration of bile in the obstructed common duct in the absence of the gallbladder, it does not amount to more than two or three times.^{3b}

The acutely inflamed gallbladder mucosa does not concentrate. If the inflammation of the mucosa is "patchy" or if the inflammation is localized to the serosa or muscularis, the gallbladder may concentrate. The acutely inflamed gallbladder does not evacuate. After the acute inflammation has subsided, the gallbladder may again concentrate and evacuate. However, if fibrosis results, concentration does not occur, or is slight.⁴

Caylor and Bollman⁵ found that the gallbladder which has hypertrophic rugae with papillomas concentrates exceedingly well. We⁶ can verify this for dogs. Such gallbladders, of course, visualize well, until inflammation occurs. Hyperplasia of the rugae and lymphoid

tissue of the gallbladder may be produced in the dog by biliary stasis⁶ caused by stricture of the common duct or reversed loops of the duodenum. Thus, a hypertonic sphincter of Oddi or abnormal duodenal motility may cause stasis and hypertrophy of the gallbladder mucosa.

Cholesterosis of the gallbladder ("strawberry gallbladder") is a condition characterized by lipid deposits in the mucosa of the organ. Its pathogenesis is not well understood, but a similar condition has been obtained experimentally in rabbits by producing low grade inflammatory changes in the gallbladder wall and at the same time feeding cholesterol. Cholesterosis does not interfere with the concentrating activity or emptying of the gallbladder unless associated with a moderate or severe cholecystitis.⁷

SECRETION

The gallbladder secretes normally a mucoid fluid. The normal rate is not known, but in human cases of cystic duct obstruction with a gallbladder fistula, 20 cc. for each twenty-four hours has been collected.⁸ When the gallbladder is acutely inflamed, a considerable quantity of limpid, sometimes blood-tinged, fluid is formed by the mucosa.⁹

The ducts secrete a colorless slightly viscous substance, particularly when obstructed.

When the common duct is obstructed for twelve or fourteen days with a normal gallbladder in place, green fluid, or a "green system," is found in the ducts. When the common duct is obstructed for twelve or fourteen days with the gallbladder out or functionless, a white fluid, or a "white" system, is found. This is the "white bile" that the surgeon finds not infrequently.^{3a}

"White bile" or lightly pigmented bile is found and can be produced experimentally under the following conditions: (a) common duct obstruction with a functionless gallbladder; (b) when liver secretes against pressure in the absence of total obstruction; (c) toxic hepatitis (chloroform, and the like); (d) high grade ascending infections or hematogenic hepatitis. In infectious febrile diseases such as pneumonia, bile output is decreased, but a "white bile" is not secreted unless there is an associated hepatitis.

The "white bile" of the gravest concern to surgeons is associated with toxic or a generalized hepatitis. Here one must treat the hepatitis, whether due to obstruction or other causes. If the surgeon finds no obstruction, the patient should not have been operated on; but the differential diagnosis is not always easy. There is, of course, a high grade dye retention and icterus in all "white bile" cases.

Clinical experience indicates that dextrose may be used effectively in these cases. Dextrose favors the activity of liver cells and also the reduction of coagulation time of the blood.¹⁰ Calcium chloride is also used by some clinicians, particularly in the presence of a hemorrhagic tendency. The evidence indicates that even in the bleeding cases calcium affects some tissue, probably the liver, other than the blood.¹¹ Bile salts should probably not be used to start a flow of pigmented bile,

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A consideration of cholelithiasis and reflex symptomatology is intentionally omitted from this discussion.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

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since, according to Adlersberg,¹² dehydrocholic acid decreases the rate of elimination of bilirubin and dyes from the blood into the bile.

MOTOR ACTIVITY OF GALLBLADDER

The motor activity of the gallbladder is of two types first, rhythmic tonus changes amounting to from 1 to 3 cm of bile pressure, which may be augmented in rate and amplitude by any mild adequate stimulation, and, second, a tonic contraction of the musculature of the gallbladder as a whole. The gallbladder of the dog by contracting may exert a pressure of from 20 to 30 cm of bile.¹ The force of contraction of the human gallbladder has not been measured, but it has been seen by direct vision to contract and evacuate.¹ It is interesting that stones located in a group in the fundus of the gallbladder may line up in a column of twos after the ingestion of a fatty meal.¹³

It is obviously significant that the power of the normal gallbladder to contract is not greater than the secretory pressure of bile.

The chief stimulus of gallbladder contraction thus far discovered is the hormone cholecystokinin. The stimulation of nerves has never been observed to have more than a slight and temporary effect on gallbladder evacuation.¹

The hormone may be extracted from the duodenal mucosa and, when injected intravenously, causes a more or less prolonged contraction of the gallbladder with evacuation. It has been demonstrated to operate physiologically by cross-circulation and transplantation experiments in the dog and by blood transfusion experiments in man.¹

The most effective excitants of hormone production are acids and fats acting in the upper part of the intestine. All fats are effective, but egg yolk and cream appear to be the most active. Proteins, particularly meat, rank next, and carbohydrates have no action.

The action of many drugs on the musculature of the gallbladder has been studied. In our hands, cholecystokinin has proved to be the most powerful gallbladder motor excitant known and produces no side actions such as a fall or rise in blood pressure.

Atropine relaxes the gallbladder but does not abolish the action of cholecystokinin. Morphine, when effective, increases the tonus rhythm of the gallbladder. Pilocarpine may cause some expulsion of bile from the gallbladder into the ducts, but it does not cause evacuation, owing to its augmentation of sphincteric and duodenal tone. Solution of pituitary after a latent period of ten or fifteen minutes causes the gallbladder to contract and frequently to evacuate from one fourth to one half of its contents. However, solution of pituitary is not as effective as egg yolk and fat.¹

Surgical operations such as gastro-enterostomy, gastric resection, and pyloroplasty do not decrease the efficacy of egg yolk in provoking gallbladder evacuation.¹⁴ However, the injection of egg yolk into the mid or lower part of the ileum has no effect on the gallbladder.¹ During the first day or two following operations on the upper part of the abdomen the gallbladder may manifest a rather marked atonic distention.¹⁴

SPHINCTER OF ODDI

Whether or not the gallbladder will evacuate when stimulated depends on the tone of the sphincter of Oddi or duodenum, or the intramural resistance offered to the flow of bile from the common duct into the lumen of the duodenum. (We shall hereafter designate the intramural resistance as being due solely to the sphincter of Oddi, which is true only in part.)

The sphincter of Oddi can resist up to 75 cm of bile pressure, whereas the maximum expulsive pressure of the normal gallbladder is 30 cm. Hence it is possible for a spastic sphincter or duodenum to prevent gallbladder evacuation.

In human subjects it has been shown that, if the sphincter is spastic, biliary colic may be produced by exciting the gallbladder to contract. Magnesium sulphate introduced into the duodenum will relieve the pain, and dark bile will be obtained.¹⁵ This condition has been called "hypertonic dyskinesia" by Westphal,¹⁶ "cholepathia spastica" by Schmieden,¹⁷ "spastic distention" by Newman,¹⁸ "spastic dysfunction" by Lyon¹⁹ and "physiologic block" by Smithies.²⁰

What is the present status of the Doyon-Meltzer concept, which maintains that when the gallbladder contracts, the sphincter relaxes? It can be stated that the evidence obtained by the best methods supports this concept.¹ There is evidence showing that, when the sphincter contracts, the gallbladder fills, as might be expected. Whether this is due to a reciprocal nervous mechanism or is only passive is not settled. That the literature is not in agreement is not surprising when one views the intricacy of the possible mechanisms and recalls that many years were required to clear up the stomach-pyloric sphincter relationship.

The fact that the sphincter of Oddi becomes incompetent soon after removal of the gallbladder shows that the gallbladder has some functional relation to the sphincter. Later in most instances the sphincter becomes sufficiently competent to cause the ducts to dilate. Section of the sphincter prevents dilatation.²¹ Certain other facts pertaining to the physiology and functional pathology of the sphincter of Oddi may be summarized as follows: (a) Any procedure that increases the muscular tone of the duodenum inhibits the flow of bile into the duodenum.²² (b) Any procedure that decreases the tone of the duodenum favors the flow of bile. (c) Chemical irritation of the duodenum delays gallbladder evacuation. (d) Atropine favors the flow of bile into the duodenum and pilocarpine stops the flow of bile. (e) Morphine tends to inhibit the flow of bile into the duodenum, owing to its effect of increasing the tone of the circular muscle of the duodenum. (f) magnesium sulphate, magnesium oxide and sodium sulphate favor the flow of bile. (g) In some patients having cholecystitis or duodenal ulcer the sphincter may be hypertrophied.²³ (h) It is reported that some time

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after cholecystectomy the sphincter may become competent or possibly undergo hypertrophy.²⁴ (i) In animals without a gallbladder the sphincter resistance is less than in animals having a gallbladder.²¹

It is known both from comparative physiology and by actual experiment that one of the functions of the sphincter is to fill the gallbladder, another function being possibly to prevent regurgitation of contents and transmission of pressure from the duodenum to the common duct.

On weighing the evidence pertaining to the relationship between the gallbladder and the sphincter of Oddi or the choledochoduodenal mechanism, we are convinced that the gallbladder and the sphincter constitute a functional unit. This concept was implied by Oddi in 1887 and was clearly stated by Doyon in 1894. This concept directly implies that serious consideration must be given to the sphincter of Oddi or the choledochoduodenal mechanism in order for the functional pathologic changes and the therapy of biliary tract disease to be understood.

TYPES OF EVACUATION

Those investigators who have devoted considerable time to the detailed study of the mode of gallbladder evacuation consider the gallbladder and sphincter of Oddi as a functional unit. This is exemplified in the types of evacuation that Boyden²⁵ has described for "normal" subjects and in the types of motor dysfunction described by Westphal and others.

Boyden,²⁵ who has studied by a quantitative method more than 100 "normal" human subjects, recognizes three types of gallbladder response to a fat meal. In the first type, a primary relaxation of the gallbladder results with what appears to be a closure of the sphincter. Only a temporary delay in emptying occurs. This type is relatively rare. In the second type, which is more common, contraction and evacuation start quickly with simultaneous relaxation of the sphincter, and evacuation occurs rapidly. This comprises the larger group of subjects, evacuation being complete (95 per cent) in two hours. In the third type, evacuation starts but, after an interval, stops. Then, filling of the gallbladder occurs. Further, evacuation occurs in successive phases. Boyden thinks that in this type the sphincter is primarily concerned in stopping the evacuation and starting the filling, since the speed of the initial evacuation is normal.

Westphal²⁶ has described two major types of motor dysfunction of the biliary passages.

I. Hyperkinetic.

(a) Hypermotile: Increased motility of gallbladder and ampulla with rapid emptying.

(b) Hypertonic: Contraction of the gallbladder against spasm of the sphincter with spastic distention and colicky pain.

II. Atonic: Relaxation or atony of the gallbladder with spasm of the sphincter of the papilla causing atonic distention of the gallbladder with mild continuous "heavy," aching sensation.

Westphal^{26b} and Kalk²⁷ report that in from 10 to 20 per cent of patients who complain of biliary tract dis-

tress the distress is due to a motor dysfunction of the gallbladder and sphincter. These and other authors¹⁷ including Aschoff²⁸ attribute the so-called stasis gallbladder to a functional motor disturbance. Newman¹⁸ has cautioned against the division of motor dysfunctions into hard and fast entities and, we believe, properly so. However, we believe that the concept is sound from a physiologic point of view.

THERAPEUTIC CONSIDERATIONS

Prevention of gallbladder disease may be aided by the daily evacuation of the viscous by the appropriate intake of fat. This applies particularly to the gallbladder that evacuates slowly and incompletely but without causing symptoms. Such prophylaxis should be a part of antepartum care.

In acute biliary tract disease not demanding immediate operation, the employment of the physiologic principle of sedation has been and is effectively employed. Foods such as fats, meats and acid fruit juices which excite activity should be withheld. Magnesium sulphate or magnesium oxide, because of the relaxing effect of magnesium on the sphincter, may be used. Atropine or belladonna is indicated for the same reason. The advisability of using bile salts or dehydrocholic acid, in order to promote the formation of bile in these cases, is to be seriously questioned. If the obstruction is complete, or almost so, the pain or distress will be increased. This would be true even with the gallbladder out, since distention of the ducts causes distress.

If the sphincter or duodenum is hypertonic or irritable, the procedures that decrease intramural resistance are indicated. Fat (egg yolk, milk and cream) tends to decrease the tonicity of the duodenum as well as the stomach, but the amount to be used will depend on the condition of the gallbladder. If the gallbladder is atonic, fat will favor evacuation; but if the gallbladder is irritable, the fat intake will have to be adjusted to the "tolerance" of the patient.

It must be recognized, however, that there are patients having chronic cholecystitis whose gallbladders visualize poorly with or without one or more large stones present (by large we mean capable of causing impaction of but not capable of passage through the cystic duct) in whom fatty meals or "mayonnaise dressing" or fruits rich in organic acids, cause trouble; that is, these excitants in excess produce right hypochondrial distress, stitching pains or soreness in the region of the scapula, or even colic. In those patients who refuse operation, excitant foods must be reduced to meet the patient's tolerance. The "tolerance" can be ascertained only after careful dietary experimentation, a cooperative patient of fair intelligence being prerequisite. The gallbladder excitatory foodstuffs should not be eliminated from the diet entirely. Too much of the excitants will irritate the gallbladder, but absence of the excitants will cause stasis, and stasis must be avoided. These are the patients who, refusing operation and not being helped by the physician, we believe go to the drug store and purchase "pills" that contain a cathartic and bile salts. So far as is known, bile salts only increase the fluid volume of the bile, the total output of bilirubin and other biliary constituents being unaltered or slightly diminished. It is rational to believe that bile salts have a place in the therapy of chronic but not of acute biliary tract disease.

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CHOLECYSTOSTOMY

It is well known that unless great care is taken, in the dog cholecystostomy always leads to infection of the biliary passages in from two to three weeks. Several reports are available in which cholecystography was done after cholecystostomy in man. Graham²⁹ found nonvisualization in all but one. Spurling and Whitaker³⁰ in twelve cases failed to find a normal cholecystogram. Fleming³¹ studied thirty-six cases, one showing a normal shadow, six visualizing but having impaired function, and twenty-nine failing to visualize. The lack of preoperative cholecystograms makes it impossible in these cases to evaluate the effect of cholecystostomy. The evidence is strongly presumptive, however, that the gallbladder is not benefited by drainage. If the mucosa is not permanently damaged, the scarring incident to drainage may interfere with normal emptying.

CHOLECYSTECTOMY

It is now generally recognized that cholecystectomy is definitely indicated in patients with multiple small stones, and in cases of nonvisualization with a high grade chronic cholecystitis. If the gallbladder is so permanently injured that it does not visualize, from the physiologic point of view, a functional cholecystectomy has already been performed, and if it is harboring infection or stones no harm or change can result from cholecystectomy, if postoperative adhesions and surgical accidents are not considered.

As already pointed out, the removal of a gallbladder which concentrates leads to physiologic and anatomic changes in the biliary passages. For this reason, if for no other, the gallbladder cannot be viewed as a vestigial organ to be removed without adequate and justifiable reason. This statement will not stand unequivocally, however, unless it is supported by evidence showing that actual injury may result as a consequence of either an incompetent sphincter or a competent sphincter with a dilated duct. Unless it can be shown that cholecystectomy has actually a harmful effect, the operation will always be performed in borderline cases in which the gallbladder is suspected of being at fault.

In the dog, a cholecystoduodenostomy or a cholecystogastrostomy with or without gastro-enterostomy leads in the course of several months to an ascending biliary tract infection and hepatitis. The same is true in man. Apparently a normal sphincter of Oddi serves as a barrier against ascending hepatitis. Thus, following cholecystectomy, the presence of an incompetent sphincter favors regurgitation, or the presence of a competent sphincter and dilated ducts may favor stasis. Theoretically, infection might occur in either case unless the bile flow was always sufficiently copious to prevent regurgitation or stasis. In this connection, we have often wondered whether those patients (adhesion free) who have distress after cholecystectomy are (a) those who have an incompetent sphincter, (b) those who have a competent sphincter with dilation of the ducts, or (c) those who had a hypertonic or hypertrophic sphincter prior to the cholecystectomy. (Of course, the presence of a chronic infection of the ampulla and ducts must also be considered.) The only information that

we have been able to find on this question is as follows: Zander³² reports that spastic contractions of the sphincter of Oddi may occur after cholecystectomy. Rehn and Hoseman,³³ in a series of 215 cases, removed twenty-five stone-free gallbladders; of the twenty-five, seven presented symptoms accountable for by a spastic or hypertrophic sphincter. Westphal³⁴ reports that residua remain in from 20 to 30 per cent of cholecystectomized patients. On duodenal drainage in these patients and after the instillation of oil, he obtains more highly pigmented stasis bile. As Giordano and Mann³⁵ and also Westphal³⁶ have pointed out, a spasm or hypertonic or hypertrophied sphincter may obstruct not only the outflow of bile but also of pancreatic juice in those patients (20 per cent) whose duct of Wirsung opens into the ampulla at a high level.

It should be pointed out that a patient having a hypertonic or hypertrophic sphincter may obtain temporary relief following a cholecystectomy, owing to the preliminary paresis of the sphincter that always results. But on recovery from the temporary paresis, the hypertonicity of the sphincter may recur and produce symptoms. It may or may not be possible to manage such patients medically. Whether section or dilatation of the sphincter, or choledochoduodenostomy or cholecystoduodenostomy with or without gastro-enterostomy is the operation of choice when medical management fails, we believe remains an experimental and clinical problem. Of course, if the ampulla, common duct or intrahepatic ducts are infected, the conditions are altered, and T tube drainage is, we believe, a rational procedure. This is of physiologic interest because the presence of inflammation in the crypts of the ampulla may increase the irritability of the sphincter and a relief of the inflammation by drainage may decrease the irritability of the sphincter.

What are the observed facts pertaining to the harmful effects of cholecystectomy? It is known that the cholecystectomized dog and man may live a long time in apparently good health. This may or may not be significant, because the factor of safety in digestion and in the liver is large. In man there is no information on the effect of cholecystectomy on the liver except that of Rost,³⁴ which is unsatisfactory. Without controls he thought that cholecystectomy caused hepatitis. In the dog there is one report³⁵ in which a slight hepatitis was found after cholecystectomy and another³⁶ in which hepatitis was not found. Rost³⁴ reports that pancreatic secretion and bile formation are decreased. In man, McClure³⁷ reports that in cases with cholecystectomy the pancreatic secretion is diminished, but no control studies were made before the operation.

Hence the evidence at hand is inadequate to warrant the statement that actual damage is done the patient by removing a gallbladder that visualizes and empties. The fact, however, that physiologic and anatomic changes do result following the removal of such a gallbladder should deter the surgeon at least until medical control has been tried. This fact also condemns the idea of prophylactic removal of the gallbladder or its

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31. Fleming, B. L.: Ann. Surg. 93: 730 (March) 1931.

32. Zander, P.: München med. Wehnschr. 70: 1173 (Sept. 14) 1923.

33. Rehn and Hoseman, cited by Aschoff.³⁴

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35. Troitzky, A. A.: Omsky, M. J. 4: 21, 1929.

36. Halpert, Béla; Rewbridge, A. G., and Healey, Claire: Effects of Cholecystectomy on the Biliary System, Arch. Surg. 26: 589 (March) 1933.

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removal on the basis of suspicion. The earlier the larval forms of cholecystopathy are recognized and controlled, the more the surgeon will be of the same opinion.

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STUDIES IN BILIARY TRACT DISEASE

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It is only slightly more than a decade ago that Rous and McMaster¹ published their observations on gallbladder function. Besides extending knowledge their work gave quantitative confirmation of much that had been done previously. Since then a great deal has been accomplished, as can be seen from the review recently published by Ivy;² but as yet knowledge of the normal and pathologic physiology of biliary function is incomplete. The excretory, secretory and absorptive functions of the liver and gallbladder and their associated ducts in health and in disease must of course be intimately correlated with the chemistry of the bile. It is with these aspects of function that we, as well as numerous other investigators, have concerned ourselves.

Under normal conditions the hepatic bile of the dog maintains a fairly constant chemical composition (figs. 1 and 2).³ Although this is very likely true for man also, we cannot make this statement definitely, for we have only been able to study human hepatic bile over long periods in patients who presented surgical lesions of the biliary tract when first seen. However, hepatic bile obtained from the common duct of patients when complete or nearly complete hepatic restitution had

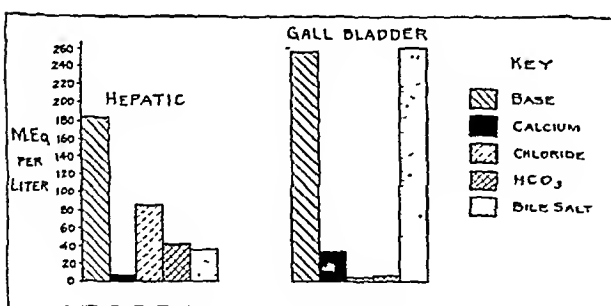


Fig. 1.—Normal dog bile.

taken place is, with the exception of the cholesterol concentration, similar to normal dog's hepatic bile in its composition. In human hepatic bile the concentration of cholesterol is significantly higher than it is in dog's bile.

When normal hepatic bile of dog or man is received in a normally functioning gallbladder, certain definite changes occur. Water is absorbed at a rate as high,

in the dog, as 6.75 cc. per hour.⁴ The chloride and bicarbonate are rapidly absorbed, so that there is a marked decrease of these substances both in absolute amount and in concentration in normal gallbladder bile. The concentrations of cholesterol and of bilirubin increase and there are no quantitative data which indicate that under normal conditions these substances are either absorbed or secreted in the gallbladder. The calcium and bile salts are concentrated, but small amounts of both these substances are absorbed. The bile normally becomes more acid during this process of selective concentration and absorption.

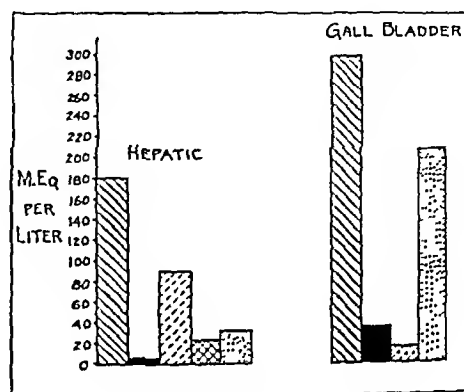


Fig. 2.—Normal human bile.

The part that such a mechanism plays in the body economy has been a much debated subject. The substances except water that are known to be absorbed from the normal gallbladder bile and returned to the blood are absorbed only in insignificant amounts, and there is no available evidence which indicates that any important substance is secreted by the normal gallbladder into the bile.

The fact that certain species are born without a gallbladder and that man can live a normal life span in apparently perfect health after its removal is, however, not in itself evidence that the normal viscus is unimportant in those species in which it is found. The data of McMaster,⁵ who found that the rat, which has no gallbladder, secretes hepatic bile that contains eight times as much bilirubin as is found in the hepatic bile of the mouse, which has a gallbladder, and of Boyden,⁶ who found that a cat in which the gallbladder was congenitally absent secreted bile with a bilirubin concentration 2.2 times as high as a cat whose gallbladder was present, are of interest in that they demonstrate an ability of the liver under such circumstances to secrete a more concentrated bile.

Ivy,² who has reviewed the available data carefully, has concluded that "the gallbladder is a factor of safety in physiological economy." If this is true, and we believe that it is, the normal organ should not be removed with the same impunity that one would remove a so-called chronically diseased appendix.

When the gallbladder becomes damaged by trauma or infection, certain significant changes occur in the composition of gallbladder bile (figs. 3 and 4). There may result merely a retardation in the rate of absorption and concentration. From this simple change one may find all types of perversion of function until, in the

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

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6. Boyden, E. A.: *Proc. Soc. Exper. Biol. & Med.* 27: 86 (Nov.) 1929.

severely damaged gallbladder, fluid flows into its lumen instead of being absorbed from it, and other substances previously absorbed may be secreted into it, while substances that were only concentrated may be absorbed.⁷

For purposes of discussion we have divided the patients whose gallbladder bile we have studied into three groups: (1) patients having chronic cholecystitis without calculi, (2) patients having chronic cholecystitis

The data we have collected from bile specimens obtained from gallbladders falling in these groups indicate that with increasing impairment of function there was generally an increasing tendency for the bile to become more dilute in some materials and more concentrated in others. This may be due to retardation of water and solute absorption, to dilution of the hepatic bile after the gallbladder receives it, or to the addition of substances as fluid flows into the gallbladder lumen. In general it may be said that the concentrations of calcium and of bile salt show a progressive decrease with increasing severity of damage, the latter being

TABLE 1—The Gallbladder Bile in Chronic Cholecystitis Without Calculi

Patient	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.	Choles- terol, Mg. per 100 Cc.	Bile Salt Cholesterol, Mg. per Mg. per 100 Cc.
Ar.	37.0	145.5	5,990	176	34.0
Mn.	27.8	344.7	1,920	242	7.9
Ba.	18.0	191.7	2,090	384	5.4
Pe.	60.0	92.7	3,740	122	30.6
Su.	39.4	150.5	0	133	
Gr.	20.0	373.6	0	40	
Sc.	24.8	203.4	3,000	303	9.9
Hu.	21.6	214.8	1,090	78	13.9
He.	26.6	113.2	1,670	148	11.1
La.	45.6	93.4	2,080	744	2.8

with calculi and (3) patients having abnormal calcium deposits in the gallbladder wall or lumen.

In patients with proved chronic cholecystitis without calculi the change in the chemical composition of the bile is often not very great, although definite exceptions were found. In most of the specimens of bile from a chronically diseased noncalculous gallbladder that we have studied we have found evidence of concentration of calcium or bile salt, or both, whether or not the gallbladder was visualized after the administration of tetraiodophenolphthalein sodium. A few of the representative data are given in table 1.

Of the patients with chronic cholecystitis with calculi, two general types present themselves (table 2): (A) Patients whose gallbladders are visualized after the administration of tetraiodophenolphthalein sodium. In these evidence of the concentration of calcium and to

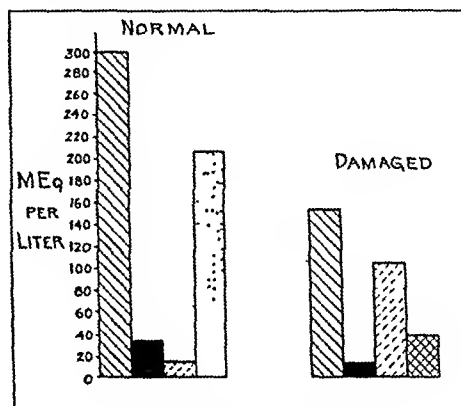


Fig. 4—Human gallbladder bile

measured by evidence obtained from cholecystographic studies. The larger number of low values for both calcium and bile salts were obtained in the group having the most severely damaged gallbladders. The chloride concentrations, on the other hand, show a progressive tendency to increase in concentration with increasing

TABLE 2—The Gallbladder Bile in Chronic Cholecystitis with Calculi

Patient	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.	Choles- terol, Mg. per 100 Cc.	Bile Salt Cholesterol, Mg. per Mg. per 100 Cc.
Gallbladder Visualized After the Administration of Tetraiodophenolphthalein Sodium					
Ba	24.0	290.2	0	330	
Sm	46.0	211.5	3,600	400	9.0
Bro	54.0	130.5	1,320	759	1.6
Bra	27.2	205.5	1,330	278	4.4
Co		209.3	1,875	377	4.9
Os	23.0	273.3	3,120	368	8.8
Gallbladder Not Visualized After the Administration of Tetraiodophenolphthalein Sodium					
Li	26.0	186.6	83	787	0.1
Ra		298.1	3,060	312	9.6
Al	27.0	321.6	1,240	121	10.3
Ja	11.0	363.3	0	42	
Sc	26.0	351.8	0	98	
Mi	12.2	328.7	708	242	2.9
Ch	50.0	489.3	0	26	
Fe	15.0	208.5	1,460	356	4.1

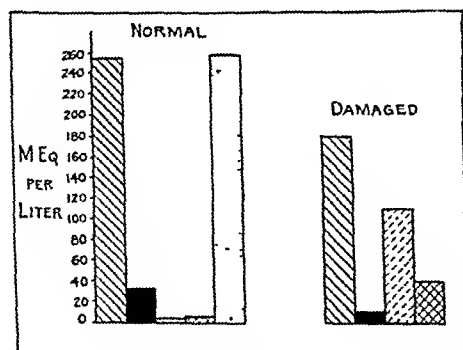


Fig. 3—Dog gallbladder bile.

a lesser degree of bile salts was also as a rule obtainable. (B) Those whose gallbladders were not visualized after the administration of the dye. Although evidences of the concentration of calcium and at times of bile salts were found, the data as a rule show a greater deviation from the normal than do those of the previous groups.

⁷ In all references in this paper to the determination of bile salts the analyses were made by the Gregory-Pascoe method.²² Both free and conjugated cholic acids respond with a characteristic color reaction, although desoxycholic and perhaps other naturally occurring bile acids cannot be determined by this method. Experiments now being conducted in this laboratory suggest that, even when the typical Gregory-Pascoe reaction is not obtained, some free or conjugated bile acids may be present but the reaction may be masked.

evidence of a perversion of function, the highest values being found in the group having chronic cholecystitis with calculi and in which the gallbladder did not visualize after the administration of tetraiodophenolphthalein sodium.

The cholesterol concentration varied greatly and in the data given here appears to vary as a rule with the bile salt concentration; i. e., the lowest value for cholesterol was found when no bile salt was demonstrable, and many of the highest values for cholesterol were found in bile having the highest bile salt concentration.

However, there were exceptions to the latter, and it was not possible to show a definite linear relationship between the variations in the two constituents. The evidence strongly suggests that cholesterol may be secreted into the gallbladder bile in at least some of the damaged gallbladders, because the concentration of cholesterol in some instances was considerably higher than in normal hepatic bile, and there was at times no evidence of the concentration of other constituents normally concentrated in the gallbladder bile. This is at least partially in agreement with the data reported by Elman and Graham.⁸ Data that we have obtained in the dog would appear to corroborate this concept.

The relationship of these changes to the failure of the gallbladder to visualize in cholecystography is of some interest. Frequently the roentgenologist reports the nonvisualized gallbladder as a "nonfunctioning gallbladder," which implies a static condition of the gallbladder wall. In reality the dye in the hepatic bile may be further diluted on reaching the gallbladder by a viscus whose function is perverted, or it may be more rapidly absorbed than it is under normal circumstances. Both of the mechanisms tend to prevent visualization, but they are evidences of a perversion of function which is a dynamic process rather than of loss of function.

In the third group the outstanding feature is the increase in the amount of calcium that may be found in the gallbladder. The gallbladder may be filled with a white fluid "kalkmilch" consisting largely of calcium carbonate, or there may be a gelatinous mass filling the gallbladder in which streaks of this emulsion together with calcium carbonate stones may be found. There may be a single stone obstructing the cystic duct either covered on one side or surrounded by a small or large amount of calcium carbonate (figs. 5 and 6). These lesions have been described and discussed by Willich,⁹ Volkmann¹⁰ and Phemister and his associates.¹¹ In still another type the calcium may be precipitated in the gallbladder wall as described by Jones and Palmer¹² (fig. 7).

With the exception of those showing merely calcification of the gallbladder wall, the condition is generally associated with cystic duct obstruction, but no adequate explanation has been advanced to explain the large amounts of calcium often found in these gallbladders. Several years ago we¹³ called attention to the fact that the increase in the alkalinity of the bile in a damaged gallbladder and the high bicarbonate present in certain specimens of gallbladder bile in disease provided favorable conditions for the precipitation of calcium. If the calcium is secreted by the gallbladder wall in these cases, fluid must enter the gallbladder with it. We have previously reported¹⁴ that in hydrops of the gallbladder the fluid pouring into the lumen of the gallbladder has a calcium concentration of from 5 to 10 mg. per hundred cubic centimeters. This agrees with the data reported by Fowweather and Collinson,¹⁵ who found calcium concentrations of from 2.8 to 15 mg.

per hundred cubic centimeters in "white bile" from the human gallbladder. It may be that there are periods of increased damage of the wall when fluids pour in and periods of a return to more normal function when fluids are absorbed, the calcium remaining behind. Murphy and Bollman¹⁶ have reported evidence which demonstrates that the gallbladder may again concentrate after recovery from acute cholecystitis.

The low bile salt concentrations frequently found in bile from a damaged gallbladder and previously reported by Rosenthal and Licht,¹⁷ Newman,¹⁸ Andrews, Schoenheimer and Hrdina¹⁹ and by us²⁰ have been used, together with the cholesterol concentration, in obtaining a bile salt-cholesterol ratio. The formation of certain gallstones has been attributed to deviation of this ratio from the normal, the cholesterol precipitating out of the bile when the bile salt concentration falls below a critical level. Newman²¹ has reported that the bile salt-cholesterol ratio normally is about 18, whereas "in bile from gallbladders with faceted stones it is 2.5 and in bile from gallbladders containing calcium pigment stones it is normal. Of the bile salt-cholesterol ratio in cases of cholesterol solitaire stones nothing is known."

TABLE 3.—Bile Salt-Cholesterol Ratio in Various Types of Stones

Patient	Bile Salt, Mg. per 100 Cc.	Cholesterol, Mg. per 100 Cc.	Bile Salt- Cholesterol, Mg. per 100 Cc.	Type of Stones
Bl.....	2,370	344	6.8	Calcium pigment
Ka.....	2,050	312	6.6	Calcium pigment
Wc.....	2,250	445	5.1	Faceted
Go.....	658	88	7.4	Faceted
Da.....	0	277	...	Faceted
Sm.....	3,600	400	9.0	Faceted
Sh.....	1,030	625	1.7	Faceted
He.....	1,000	78	12.8	Cholesterol solitaire
Fe.....	1,875	377	5.0	Cholesterol solitaire
Ar.....	930	136	6.8	Cholesterol solitaire

In table 3 are given data which demonstrate that the matter is not nearly so simple. Data previously reported in this paper show a wide variation of the bile salt-cholesterol ratio even in noncalculous gallbladders. There is no doubt that bile salts are often completely or nearly completely absorbed from the damaged gallbladder. This may occur, however, without the entire bile cholesterol being precipitated from the bile. Nor can one state that the bile removed from the damaged gallbladder on one occasion may not be markedly changed at a subsequent examination. The perversion of function needs by no means remain static, as the data in table 4 demonstrate. One has no right to conclude that calculi were formed under the conditions of the bile found at operation. The evidence we have collected would seem to demonstrate that the gallbladder bile may be profoundly altered when only a cholesterol solitaire stone is found in the gallbladder, a condition which many believe is purely metabolic in origin. Trauma of the mucosa alone may alter the concentrating activity of the gallbladder to an unusual degree.

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We have studied the chemistry of human gallbladder bile removed at operation and the chemistry of the stones found in the same gallbladder. The data are of little significance in that stones of different chemical composition are found bathed in bile of strikingly similar character while stones of the same type are often found in bile whose composition is not similar.

TABLE 4—Gallbladder Bile at Two Stages in the Same Patient

Date	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Cholesterol, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.
September 1933	16.6	360.0	277.0	0.0
April 1934	27.0	269.3	365.0	60.0

In the acutely inflamed gallbladder with stones in which the cystic duct becomes obstructed, marked changes in the composition of the bile are found long before empyema occurs (table 5). The greatest changes are found in the gallbladder of hydrops, in which the fluid removed has not the faintest visual resemblance to gallbladder bile. The calcium concentrations show a further tendency to decrease, while the chloride concentrations are consistently higher. It is in this type of gallbladder that the bile only rarely contains even a trace of bile salt. Nonprecipitated cholesterol is found

TABLE 5—Acute Cholecystitis with Stones

Patient	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.	Cholesterol, Mg. per 100 Cc.	Bile Salt Cholesterol, Mg. per 100 Cc.
Sa	10.0	477.1	31	81	0.4
La	12.4	290.5	0	115	
Ho	8.0	331.5	8	75	1.5
Ha	14.4	464.1	0	27	
Ca	9.0	323.2	0	0	
Sh	21.4	390.6	0	—	

in the fluid contents of the gallbladder even though the bile salts are absent. The rapidity with which such a gallbladder permits bile pigment to be absorbed while the normal gallbladder completely retains this substance is a striking example of the degree of perversion of function that may take place in disease. The acutely inflamed gallbladder pours fluid into its lumen so that even though the cystic duct is open the gallbladder will not be visualized cholecystographically, although later with a subsidence of the inflammation this may be possible.

TABLE 6—Hepatic Bile in Cholangitis

Patient	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.
Wa...	3.2	532.7	0
Cr ..	9.2	294.7	0
He	7.6	355.0	0
Wi	4.2	427.4	0

We had observed several years ago that, when cholangitis²² occurred in dogs whose hepatic bile was previously normal, the bile salt concentration of the hepatic bile as measured by the Gregory-Pascoe reaction²² decreased markedly. This finding we have now confirmed in man (table 6). The evidence we had obtained led us to state that our data at least suggested that the liver bile was the sole site for the synthesis of bile salts. The calcium levels in hepatic bile from patients

with cholangitis tend to be below the normal hepatic bile level, while the chloride level is in general above the normal level. In these respects the data from both man and dog are in agreement. The cholesterol concentration of hepatic bile increases in cholangitis, and this would appear to be related to the degree of supuration and the exfoliation of mucosal cells.

When the common bile duct becomes obstructed either completely or partially from stone, tumor or cicatricial stenosis, the hepatic bile becomes altered in its composition. The most profound changes occur when the obstruction is complete and the pressure in the bile ducts exceeds the hepatic secretory pressure. The "white bile" found in many of these patients needs little comment. It is present only because the hepatic parenchyma no longer is functioning normally and is the result of the activity of the mucosal cells lining the ductal system.



Fig. 5—Calcium precipitation in the gallbladder lumen, calculus obstructing the cystic duct

The extent of the change in the hepatic bile depends on the extent and the duration of the obstruction, the degree of associated infection and the presence or absence of a normally functioning gallbladder. When the obstruction is complete and there is a coincidental cholangitis together with a severely damaged gallbladder, the changes in the hepatic bile appear early and are most marked.

The most striking finding in the hepatic bile obtained by common duct drainage after the release of a ductal obstruction is the reduction of the bile salt concentration as measured by the Gregory-Pascoe reaction²² (table 7). Greene, Walters and Fredrickson²³ several years ago reported studies on the common duct bile after release of partial and complete obstructions of the common duct.

Although Greene, Walters and Fredrickson found a reduction of the bile salts as measured by the Aldrich-

²² Gregory, R. and Pascoe, T. A. J Biol Chem 83:35 (Jul) 1929.

²³ Greene, C. H., Walters, Waltman, and Fredrickson C. H. J Clin Investigation 9:295 (Oct) 1930.

Bledsoe method, in hepatic bile after ductal obstruction we have found an absence of the bile salts as measured by the Gregory-Paseoe reaction in specimens of hepatic bile collected from the common duct, when the obstruction has persisted for one week or more, and the gallbladder contained calculi.

TABLE 7.—Hepatic Bile After Common Duct Obstruction

Patient	Calcium, Mg. per 100 Cc.	Chloride, Mg. per 100 Cc.	Bile Salt, Mg. per 100 Cc.	Cause of Obstruc- tion	Days Ob- structed
Br.....	6.8	280.0	0	Stone	20
Sh.....	10.8	472.0	116.5	Stone	4
He.....	7.8	353.5	0	Stone and cholangitis	21
St.....	5.0	347.6	0	Stricture	18
Je.....	8.0	355.6	0	Stone	6
An.....	6.8	358.3	0	Stricture	5
Ta.....	4.6	263.9	0	Stone	12
Do.....	4.0	463.1	0	Stone	40

An intimate experience with a number of such cases has led us to the conclusion that the interval between release of the obstruction and the reappearance of bile salt in the liver bile is directly related to the degree and duration of the obstruction and to the degree of cholangitis associated with the obstruction. The time of the reappearance of the bile salt may, we believe, be used as an indication of a return to normal liver activity.

The hepatic bile obtained after the release of an obstruction of the common bile duct has for a variable period of time a base concentration below that of the serum. The calcium fraction is in nearly every instance also low. The concentrations of both these substances tend to approach the blood level as the condition of the liver improves.

A very marked rise in hepatic bile chloride was often seen in patients who died after the release of an obstruction of the common bile duct. This finding has been so consistent that we have come to look on the return of the chloride concentration to the normal plasma level as indicative of improving functional activity of the liver and an increase in this concentration as of serious prognostic import.

The study of bile obtained from a number of sources after the institution of common duct drainage has convinced us that if the drainage was to remain until the bile was normal this objective was frequently not attained. In fact, drainage was often stopped before chemical evidences of any considerable degree of return to normal hepatic function were found.

It may be supposed that the loss of the total bile for short periods may rapidly result in a profound salt disturbance of the body. The calcium, sodium and chloride loss in the absence of cholerrhagia is not so great, however, but that these can be adequately taken

care of in the ordinary dietary, reinforced if necessary by the parenteral administration of sodium chloride. The fluid loss can also be adequately compensated for.

It is well known, however, that total bile diversion from the intestine for long periods is accompanied by serious consequences. More important than base and chloride is the loss of bile salts. From the standpoint of intestinal function the bile salts are of the greatest



Fig. 7.—Calcium precipitation in gallbladder wall.



Fig. 6.—Calcium precipitation in the gallbladder lumen.

importance. They aid in the activation of various lipases and in the emulsification and the transport of fat so that their loss from the intestine, even for short periods, seriously interferes with the known important extrahepatic functions of the bile.

We have no doubt that certain of the asthenias which are observed after the release of ductal obstructions and common duct drainage are associated with an interference of the processes of digestion and absorption. With this view in mind we have for several years made it a routine practice daily to place from 150 to 300 cc. of the drained bile into the duodenum through a Jutte tube. This method deserves a more widespread use in the postoperative therapy of common duct operations when bile diversion is taking place. Whether any other important substances are present in the bile that improve the condition of the patient cannot at this time be answered.

A better knowledge of the changes that are associated with disease of the biliary tract either in part or as a whole may, we hope, lead to better methods of preoperative and postoperative treatment and perhaps even to changes in the operative attack.

CONCLUSIONS

We have presented data showing certain changes that occur in the chemistry of the bile in various surgical lesions of the biliary tract.

These data demonstrate the direction of the changes from the normal chemistry of the bile which take place when either the liver or the gallbladder is damaged.

With increasing evidence of disease of the gallbladder wall there is in general a greater change in the chemical constitution of gallbladder bile from the normal.

Evidence is presented in relation to the bile salt-cholesterol ratio which, we believe, demonstrates that while a change in this ratio may be a factor in gallstone formation it is not the sole etiologic factor.

The changes that normally take place in hepatic bile once it enters the gallbladder are considerable. We subscribe to the concept that in man the gallbladder plays an important rôle in physiologic economy and should not be removed without definite evidence that its function is impaired.

When the liver becomes damaged either by infection or by obstruction of the extrahepatic bile ducts, profound changes occur in the chemical composition of hepatic bile.

Surgical drainage of the common duct is very often not continued until the composition of the hepatic bile returns to anywhere near normal values.

Of major importance when the hepatic bile is being drained exteriorly is the consideration of the extrahepatic functions of the bile. We believe that the daily feeding of bile to such patients aids materially in the rapidity with which convalescence may take place and in the prevention of asthenia in the patient whose hepatic bile is being drained over long periods.

3400 Spruce Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. GRAHAM AND MACKEY, IVY AND BERGH, AND RAVDIN, RIGEL, JOHNSTON AND MORRISON

DR. DONALD GUTHRIE, Sayre, Pa.: The present state of knowledge of liver function and of liver duct and gallbladder disease is due largely to the brilliant work of the physiologist, the biochemist and the experimental surgeon. This rapid advance in knowledge of these problems has armed the internist and the surgeon with safer methods of preoperative and post-operative treatment and has been responsible for better surgical procedures. In my clinic I have followed the suggestion of Dr. Ravdin and his associates of returning the bile loss in the presence of obstruction into the patient's gastro-intestinal tract and have found it a wise and helpful procedure: I also believe that the reappearance time and the concentration of the bile salts are valuable tests for the return of liver function. I agree with Drs. Graham and Mackey as to conservatism in management of the stoneless gallbladder, for the worst results have been in these unfortunate patients who remain in poor health or who have been made worse by the operation. One must be sure that the gallbladder disturbance is giving the patient the major part of his symptoms. These patients must give a history of one or more typical attacks before I will accept them for operation. Many of them may be helped by the medical measures suggested by Drs. Ivy and Bergh. I accept their idea of the choledochoduodenal system and I believe that disturbances in this system will explain not only many of the preoperative symptoms but also many of the unsatisfactory results that one sees after operation. In the presence of chronic gallbladder disease, duct disease, hepatitis, duct infections, duct obstructions and pancreatitis of various degrees, permanent damage has already been done to one or more of the important functions of the liver before the patient comes for relief by surgery. Gallbladders or stones may be removed and obstructions of the ducts may be relieved, but the damage that has already taken place in this complicated hepatic system cannot be repaired. Are not many of these unsatisfactory results following operation due to this fact, as well as to dysfunctions in the choledochoduodenal system?

DR. URBAN MAES, New Orleans: At the New Orleans session of the American Medical Association, Dr. Ravdin made

a statement in discussing a group of gallbladder papers to the effect that, after operations for biliary obstruction, bile salts are always absent from the bile for a time. Dr. Frederick F. Boyce of my staff in a series of experiments corroborated Dr. Ravdin's statements and added some observations. In studying obstruction of the biliary system by stone as compared with obstruction by carcinoma of the head of the pancreas or within the ampulla, Dr. Boyce found that in all the cases of malignancy observed the bile salts reappeared within a shorter period of time and their concentration progressed more rapidly than when the obstruction was due to stone. In all the cases of malignancy the duration of the obstruction was longer than in obstruction by stone and therefore we surmise that the infection of the intrahepatic biliary system which is an almost constant accompaniment of obstruction by stone is the factor responsible for both the delayed reappearance of the bile salts and for their slower concentration, although we realize, of course, that increase of pressure within the biliary system also plays a part. We have observed two special groups of patients. In one, typical gallbladder symptoms were associated with a marked enlargement of the liver, while in the other the x-rays without the use of dye showed a gallbladder characterized by thickening and stagnation. In both instances amebiasis could be demonstrated, and in both specific treatment for it resulted in complete relief of symptoms. The infectious processes undoubtedly are very important in the pathology of the stoneless gallbladder and I am convinced that the presence of an unsuspected and therefore undetected intrahepatic amebiasis may be responsible for some failures in the treatment of gallbladder disease.

DR. GEORGE A. HENDON, Louisville, Ky.: There has been a dispute concerning the advisability and feasibility of cholecystectomy. I have perhaps hit upon a plan by which this may be compromised. I have observed in clinical work that the gallbladder is more diseased at its fundus, and as one gets down toward the cystic duct one will find more durable gallbladder tissue. Therefore, on being confronted with conditions indicating that the gallbladder should be removed, I avoid the hazard of including or injuring the common duct as well as the hazard of hemorrhage from the cystic artery by leaving a small amount of gallbladder toward the cystic duct. I then pucker this together with a catgut ligature and leave one end of it long. I employ a tube about half an inch in diameter and cut it fishtail shaped at one end. By means of a long, straight needle, which is carried up inside the tube and brought out on one side, one can draw the puckered-up remains of gallbladder inside this tube, and while the long piece of ligature is being held taut by the assistant one can go down and sew both sides of the fishtail very snugly round the remnants of gallbladder. In this manner one preserves some gallbladder and avoids the hazards of injuring the common duct and provides for drainage. It matters not how well the cystic stump is ligated, there is always a little leakage of bile, at least in my experience, but if that occurs in this case it comes out through the tube that envelops the gallbladder stump. In the hepatic system that has become infected, drainage is the chief reliance and I do not mean drainage in the accustomed sense; I mean it in a broader and more philosophic sense.

DR. I. S. RAVDIN, Philadelphia: I think that Dr. Maes is right when he states that the rapid disappearance of bile salts in patients having obstruction of the bile ducts is probably largely associated with the cholangitis rather than the simple obstruction itself. The most rapid period of time in which the bile salts disappear in the dog are in those instances in which cholangitis is present together with obstruction. My associates and I did not present in this study patients who probably were suffering from dyskinetic lesions of the biliary tract. Lesions that affect the motor function of both the gallbladder and the extrahepatic bile ducts may also result in definite alterations in the chemistry of gallbladder bile. These are, however, not surgical lesions and the removal of such a gallbladder undoubtedly accounts for the relatively low proportion of good results that are obtained in noncalculous gallbladders. In regard to Dr. Hendon's statement of his method for attacking the gallbladder, if one permits even the smallest amount of gallbladder tissue to remain above the level of the highest heisterian valve some degree of gallbladder function

will continue and one cannot be sure that calculi will not reform. I believe, therefore, that it is essential that the surgeon go just as far down as possible. The technic that Dr. Hendon described may be used in a difficult case, but it should not be used as a routine practice in cholecystectomy.

DR. EVARTS A. GRAHAM, St. Louis: With reference to the point mentioned by Dr. Maes about obstruction of the common duct by malignant disease and by stone respectively, about ten years ago I observed that patients who have an obstruction of the common duct by malignant disease show a small amount of retention of phenoltetraiodophthalein in the blood stream, as compared with those who have an obstruction by stone. This is probably not a specific property of phenoltetraiodophthalein but would probably hold for any of the dyes that are used for so-called tests of liver function. I attribute this difference to the fact that in the cases of obstruction by stone one is dealing with an infection of the liver and in obstruction by malignant disease the amount of infection in the liver is insignificant. For ten years I have used this procedure with great help in the differentiation between obstruction by malignant disease on the one hand and by a stone on the other. The method used is described in my book on diseases of the gallbladder, published in 1928. I feel that it is practically always possible by means of a simple dye reaction, estimating the amount of dye retention in the blood stream after a certain period of time, to determine whether or not an obstruction is due to malignant disease or to a stone, except in those rare instances in which both conditions are present. It occasionally happens, of course, that one has a stone in the common duct in addition to a carcinoma, perhaps at the biliary ampulla, and in such cases one will get the reaction like that of stone rather than like that of malignant disease, because the infection associated with the stone overshadows the simple picture of obstruction by malignant disease.

DR. A. C. IVY, Chicago: I have nothing more to add, but I was pleased to find Drs. Graham and Mackey as conservative as I believe I am in regard to cholecystectomy.

FOOT IMBALANCE

REX L. DIVELEY, M.D.
KANSAS CITY, MO.

The problem of foot imbalance is one concerning which so much has been written that it would seem impossible to add anything new to the available literature dealing with its solution. Yet in spite of this voluminous literature the fact remains that the incidence of foot disorders due to foot imbalance is steadily mounting; moreover, the management of these disorders seems to be falling more and more into the hands of quacks, shoe salesmen and the manufacturers of various forms of arch supports. It appears then that the medical profession is failing in some way to meet the situation and that there is need of taking a more practical attitude toward this problem than has been held in the past. Admittedly, the treatment of foot conditions is troublesome, is uninspiring, and may even by some seem to be beneath the dignity of the profession, savoring too much of the chiropodist; yet foot imbalance is a health condition that is vitally affecting the efficiency and well being of a very considerable number of people and is well worthy of the thoughtful consideration and study of any physician. It is my object to present some practical facts that have proved helpful in the treatment of foot imbalance in the clinic.

In the space allotted it is impossible to consider even briefly the anatomic and physiologic aspects of foot

imbalance, nor will it permit of discussion of the etiology; for information on these subjects the reader is referred to the literature. This discussion will limit itself entirely to the diagnosis and treatment of the commoner forms of foot disorders.

From the clinical point of view it may be stated that there are two basic forms of foot imbalance: (1) the so-called flat or pronated foot with a low longitudinal

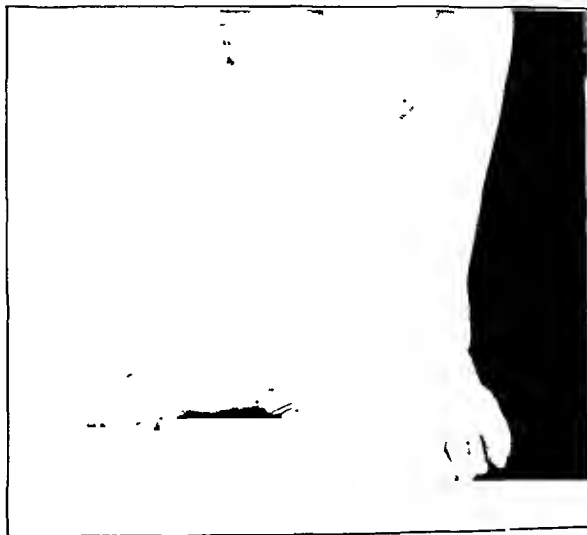


Fig. 1.—Type 1, the so-called flat or pronated foot, with a low longitudinal arch.

arch and (2) the high arched, adducted foot with a contracted plantar fascia and prominent ball. The combinations and variations of these two basic types are almost infinite in variety, but for practical purposes these two forms may be considered as presenting all the problems requiring solution in the treatment of simple foot imbalance.



Fig. 2.—Type 2, the high arched foot, with a contracted plantar fascia and prominent ball

DIAGNOSIS

The flat or pronated foot has as its principal characteristic the attitude of pronation to a varying degree and a depression of the longitudinal arch. As the body of the foot is adducted the forepart tends to adduct, resulting in a prominence of the scaphoid and internal cuneiform bones. The heel tendon and peroneal muscles are generally short or contracted, the former being

displaced laterally; this abnormal pull tends to increase the inversion of the foot.

In this type of foot a tired feeling and pain in the calf of the leg is the first symptom complained of. Later the pain is localized in the midtarsal region and through the instep; in extreme cases pain is distributed over the entire foot and various deformities evidence themselves.

The high arched type of foot is characterized by a high longitudinal arch with little or no pronation and a prominence of the ball of the foot. The heel tendon is generally short and spastic, the plantar fascia is tight and contracted, and the greater portion of the body weight is borne on the ball of the foot. With this type of foot is generally associated a fallen or depressed metatarsal arch with callosities, Morton's toe and hammer toe.

Pain in the high arched foot is usually localized in the ball of the foot; cramping at the base of the toes and pain in the calves of the legs are frequently complained of and at times pain through the instep or ankle may be added.

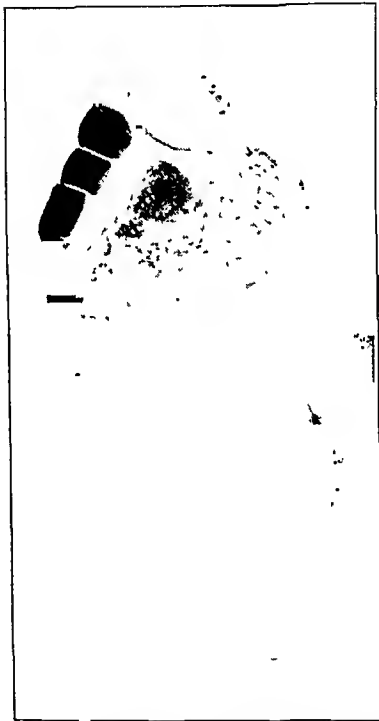


Fig. 3.—Fallen anterior arch with marked callosity formation, generally associated with the high arched type of foot.

TREATMENT

The aim of treatment in foot imbalance is to correct the faults present and thus make the foot as a whole work in an approximately normal manner so that each part functions properly. Thus one replaces the inharmonious and faulty action which must result when the foot is out of balance with some parts doing more than their share of work and others less than theirs.

Before the imbalanced foot can be brought into its correct posture, an accurate estimation

of its faults must be made by a careful examination. To facilitate this examination I have found a special foot examining stand, which places the feet on a level with the examiner's eyes as he is seated in front of the patient, most efficient and helpful.

This examining stand or platform is some 3 feet square and 20 inches high; on it is mounted a chair. Threaded from beneath the stand is a roll of ordinary white wrapping paper, which runs through a slot in the back of the platform beneath the chair and forward to the front of the stand. The loose end is held in a slot made on the front edge of the stand by a thin steel bar, which holds the paper in place and acts as a sharp edge on which to tear and remove the used pieces of paper. This allows a clean portion of paper for each patient on which diagrams and pedigraphs can be made.

A roll of adhesive plaster is held on a rack on the front face of the stand and a drawer just beneath this rack contains small instruments and measuring devices. A combination step and seat allows the patient to mount the examining stand and also serves the examiner as

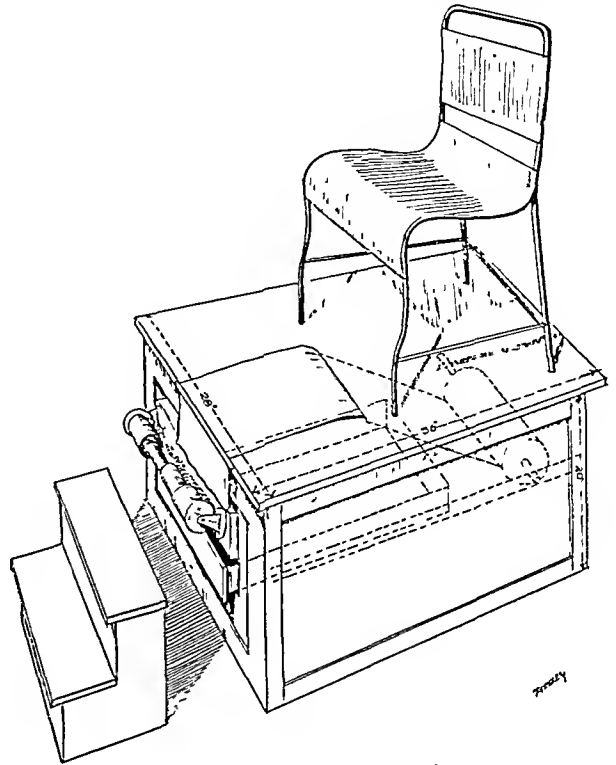


Fig. 4.—Foot examining stand.

a seat. With the patient standing or seated on the examining platform, the foot may readily be inspected in various positions and departures from the normal noted. Some systematic method of examination should

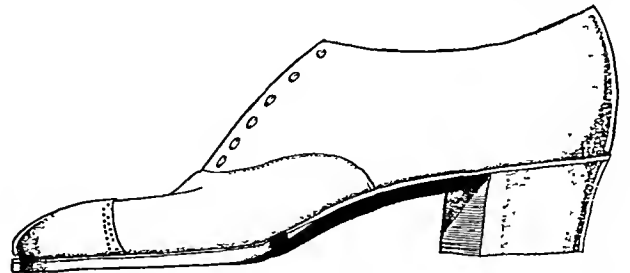


Fig. 5.—Proper woman's oxford used for correction.

be followed and the observations recorded with exactness for future reference and comparison.

After the type and needs of the particular foot under examination have been decided on, the first step toward

correction is the ordering of a proper shoe, since this is the foundation on which correct balancing measures must be built. There are many different theories as to the proper type of shoe for the human foot; I do not propose to go into a discussion of the various types

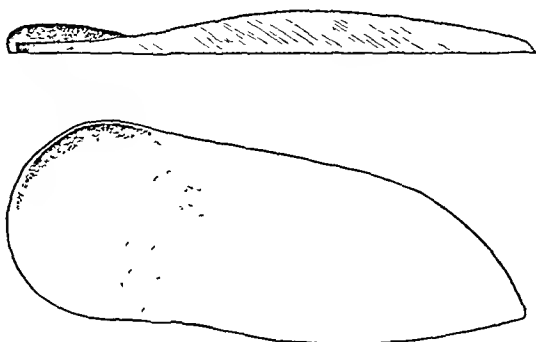


Fig. 6—Stock sponge rubber inlay.

of footwear but wish merely to state that I have found that a shoe embodying the following characteristics gives the most uniform and satisfactory results:

1. The shoe should be of a bal or blucher oxford type.

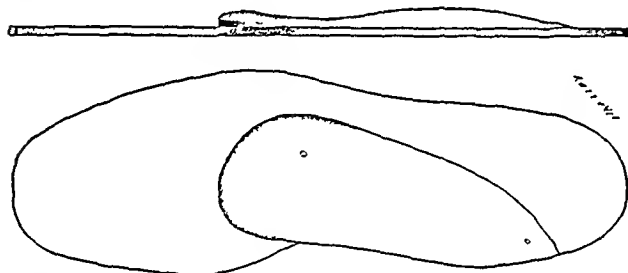


Fig. 7—Shape, contour and placement of "flat foot type" of sponge rubber inlay.

2. It should have straight lines along the inner side and should curve not too abruptly backward on the outer side of the toe.

3. There should be ample room in the cap and ball of the shoe for normal function of the metatarsal arch and the toes.

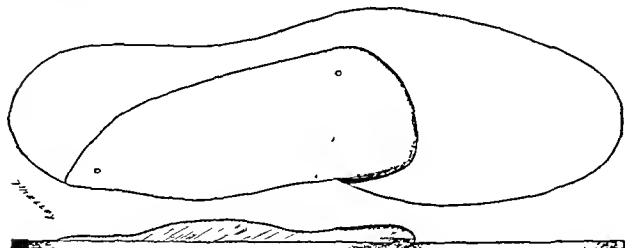


Fig. 8.—Shape, contour and placement of "high arched type" of sponge rubber inlay.

4. The sole should be of the flat type and sufficiently heavy to give protection and support.

5. The heel should be of the straight side type, preferably extending slightly forward on the inner side of the shoe; height for men $\frac{6}{8}$ and for women from $\frac{12}{8}$ to $\frac{14}{8}$.

6. The counter should be narrow enough to fit the heel snugly and the vamp should lace rather firmly over the instep.

7. The shank should be rather broad and carry a steel built-in support from the heel to the bend of the sole at the metatarsal area to provide rigidity.

Such a shoe should be worn during the working hours of the day but may be replaced by a more pleasing and lighter shoe for dress occasions and evening wear.

The proper shoe having been fitted, the next step is the insertion into the shoe of the correct type of support needed to overcome the faults of balance present. It must be borne in mind that the most important element in this part of the treatment is that each foot is a problem in itself and that, while the basic principles of support are the same in all cases, the support must be varied to fit the needs of each particular foot under treatment. The type of support that I have found most satisfactory is made of sponge rubber of a fairly firm consistency. These supports are molded in various sizes and are composed of two principal parts, the longitudinal arch support and the anterior arch support.

The longitudinal portion of the arch is some three-eighths inch thick on the inner side and is beveled to a feather edge on the outside and to the rear, the bevel running forward to meet the anterior arch portion. This component part of the support fits under the longitudinal arch of the foot, tending to hold the bones of this arch in place, take the strain off the plantar fascia, and by its thrust on the inner side of the os calcis roll the foot outward and overcome pronation.

The anterior section of the inlay is rounded in shape and some three-sixteenths inch to one-fourth inch in height and is beveled abruptly forward; backward it tapers to meet the longitudinal portion, allowing a depression in which the first metatarsal rests as it crosses the support. This part of the inlay fits up under the anterior arch just behind the heads of the second, third and fourth metatarsals, the heads of the first and fifth falling on the medial and lateral sides of the support. The inlay in this position tends to elevate the metatarsal arch into the normal posture.

A rubber inlay of this type may be fashioned readily and skived to give the support necessary for correction as determined for each patient. For the altering and shaping of the inlay, scissors or a shoe cobbler's knife may be used to trim the support to the correct size and shape. The inlay is then skived and smoothed into its proper contour over a small, coarse, motor-driven emery wheel.

In the flat or pronated type of foot the principal correction should aim at overcoming the pronation by tilt-



Fig. 9—Imprint of inlay on ball of foot, acting as guide for adjustment.

ing the foot outward and supporting the longitudinal arch. The highest elevation of the medial side of the inlay should be beneath the neck and head of the astragalus, but the elevation should extend well toward the heel before sloping down, so that a definite thrust against the sustentaculum tali is secured. This is most important if a true outward rotation of the foot is to result. The anterior part of the support properly shaped takes care of any depression of the metatarsal arch present.

If a bunion or hallus valgus is present, the inner side of the transverse arch portion should be beveled off under the great toe joint and skived low just behind this area—that part on which the first metatarsal rests—to avoid pressure on the bunion.

In extreme cases of flat foot in which the arches are markedly depressed it is advisable to begin with a rather low inlay and gradually raise the longitudinal arch

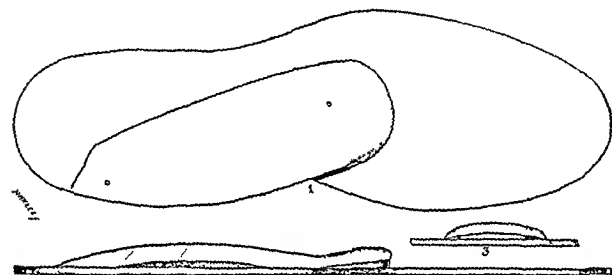


Fig 10—Method of raising long or anterior arch of inlay by the addition of thin wedges of felt or sponge rubber.

portion as the foot becomes accustomed to the new position and the pressure of the support.

In the high arched type of foot the inlay should be of moderate thickness under the central portion of the longitudinal arch but be well skived out under the heel or cut off level with the anterior margin of the os calcis. In this type of foot there is little or no pronation, and therefore the foot must not be tilted outward but the high longitudinal portion of the inlay used only to take

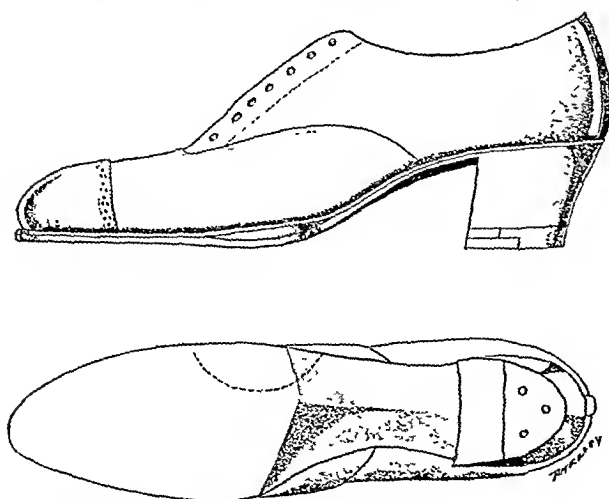


Fig 11—Position and shape of metatarsal wedge to prevent the foot from rolling to the outer side of the shoe

strain off of the plantar fascia and the longitudinal arch of the foot. The anterior portion of the support should be fairly high and carried as far forward as is possible with comfort, as in this type of foot the strain falls principally on the metatarsal arch.

The support, having been fashioned, is then fitted to the sole of the foot and, if found correct, is ready for insertion into the shoe. Measurements are now made with an ordinary carpenter's caliper; the distance from the back of the heel to the head of the second meta-

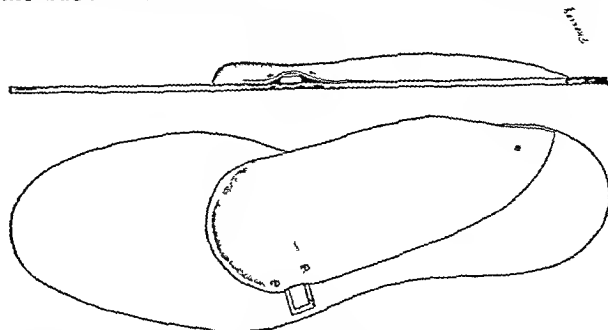


Fig. 12—Position and shape of metatarsal bar to relieve metatarsalgia and prevent the ball of the foot from rolling to the outer side of the shoe.

tarsal bone is noted, pressure being made on the ball of the foot to tense the plantar structures. This measurement gives the approximate position of the anterior margin of the inlay from the back part of the heel on the insole. The medial or heavy side of the inlay is inserted flush against the inner margin of the insole and against the upper or counter of the shoe. After the inlay has been secured on the insole by two or three small tacks, the support is covered with a thin piece of leather or leather substitute, or the original sock lining of the shoe may be used.

The patient is now allowed to walk in the shoes and give the supports a temporary trial. If they seem

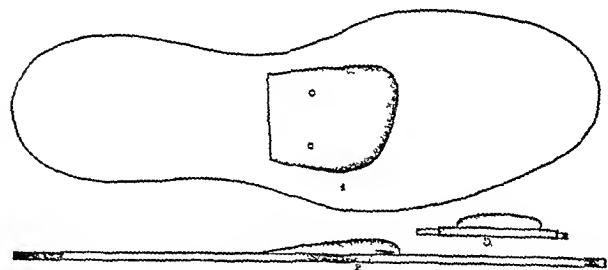


Fig 13—Shape, contour and placement of anterior heel: 1, position on insole, 2, lateral view, 3, anterior view.

comfortable the shoes are worn for two or three days, when the patient returns for further adjustment of the inlays. At subsequent visits when the shoes are removed it will be found on examining the sole that the imprint of the inlay is visible under the ball of the foot; this impression of the anterior portion of the inlay will act as a guide for future adjustments. The imprint of the anterior portion of the inlay should be evident between the heads of the first and fifth metatarsal bones and just behind the second, third and fourth metatarsal heads. It may also be found that too much pressure is being exerted by the support, in either the anterior or the longitudinal portion, in which case the inlay is removed and skived down to give the proper support. If sufficient support is not being given in any particular area, which will be judged by a nonrelief of the pain complained of, the support can be elevated on the under side by the addition of small wedges of felt or sponge rubber, which are glued into place. When the support is comfortable to the patient and complete relief is secured, the exact shape and contour with the

various measurements are noted on the permanent record.

As the foot is tilted outward to overcome the pronated position, it may be found that the forepart of the foot is shifting to the outer side of the shoe and the

1. 2.

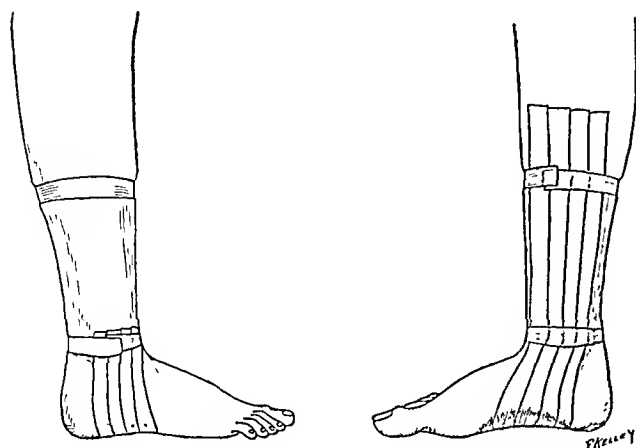


Fig. 14.—Type of strapping to support the long arch of the foot.

lateral aspect of the fifth metatarsophalangeal joint is becoming irritated. In such a case a metatarsal wedge or dutchman of one-eighth inch thickness should be inserted on the outer side of the sole of the shoe, just beneath the head of the fifth metatarsal. This elevation will overcome the outward sliding of the forepart of the foot and will in addition add to the efficiency of

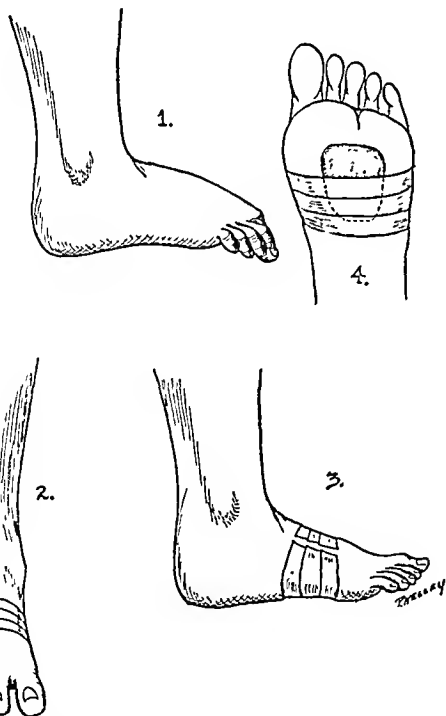


Fig. 15.—Type of strapping to support anterior arch of foot: 1, position of foot and toes for strapping; 2 and 3, views of strapping; 4, soft felt anterior heel can be incorporated in strapping for support.

the support under the longitudinal arch, as pointed out by Steindler.

In extreme cases of flat foot it may be found necessary to wedge the heel on the inner side or to extend

the heel forward on the medial side, as advocated by Thomas.

When a pump or high heel type of shoe is substituted for dress wear, only the anterior portion (anterior heel) of the support should be used; this usually gives sufficient support for a time and makes it possible to wear such a shoe for short periods when the patient is not going to be on the feet continuously.

Strapping of the feet should be used only as a temporary measure to relieve pain in acute cases. In the flat foot type of imbalance, in which the pain is localized in the long arch or in the midtarsal region, the strapping should aim at supporting the long arch (fig. 14).

In acute cases of anterior metatarsalgia, a temporary strapping of the anterior arch will aid in giving relief (fig. 15).

FOOT EXERCISES

Supports, shoes, braces and strapping may hold the foot in the corrected position and relieve pain and discomfort, but such measures must be considered as only



Fig. 16.—Exercise 1.

passive agents. One must add to these measures others of an active character, which will build up and restore tone to the muscles and ligaments, which are the true and natural supports of both the longitudinal and transverse arches. This building up can be accomplished only by exercises carefully planned and conscientiously executed.

The following exercises are designed to strengthen the various muscle groups the function of which is to give support and elasticity to the feet. The exercises should be carried out twice daily, preferably morning and evening, and of course always in the bare feet:

EXERCISE 1.—Toe gripping exercise. This exercise develops the musculature that supports the metatarsal arch of the foot.

Position: Sitting, with several marbles or jackstones on the floor.

Action: Grasp the marble or jackstone with the toes and pick it up, placing it a foot or so from its original position. Now replace the marbles to their original position with the other foot.

EXERCISE 2.—Foot adduction exercise (walking). This exercise stretches the muscles on the lateral side of the foot and strengthens the muscles on the medial side of the foot, which tends to hold the arches in the proper position. This is an excellent exercise to overcome "weak foot."

Position: Standing, ready to take a step. The foot is rolled to the outer side and the toes are forcibly flexed.

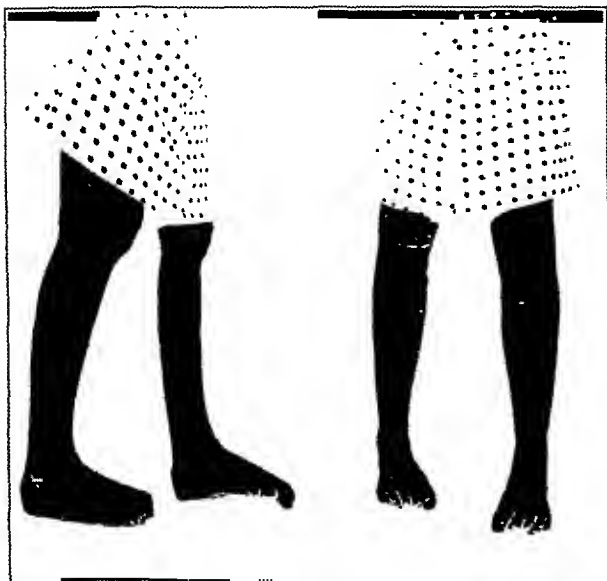


Fig. 17.—Exercise 2, lateral and front views.

Action: Take from twenty-five to fifty steps with the foot in this position. This position holds both the longitudinal arch and the metatarsal arch in their proper posture.

EXERCISE 3.—Heel stretching exercise (standing). This exercise stretches the heel tendon and strengthens the muscle groups that hold the arches in balance.

Position: Standing, facing and 3 or 4 feet from the wall. Toes are turned in and forcibly flexed and the body weight is rolled to the outer side of the foot.

Action: Lean on the wall with the arms straight, back rigid and head erect. Slowly flex the arms, keeping the back straight and the knees and hips extended and the heels firmly on the floor, until the head touches the wall, or as near as is possible, rolling the feet to the outer side. Hold this position for a few seconds, then slowly straighten the arms assuming the original position. Repeat this movement from ten to twenty times.

If you are doing this exercise properly you will feel the pull in the muscles on the back of the calf and thigh of the leg.

CONCLUSIONS

Foot imbalance is a very widespread and incapacitating health condition that is being cared for in a very inadequate manner, generally speaking. An adequate study of the needs of each case and a careful, painstaking and rational therapy will in the majority of instances result in complete or satisfactory relief. Failure to size up the situation properly or careless, slipshod methods of treatment cannot but result in failure, to the detriment of the patient and the reputation of the medical attendant. The methods here described have proved on the whole satisfactory and are presented not as an answer to the problem of foot imbalance but as a contribution to its management.

1600 Professional Building.

ABSTRACT OF DISCUSSION

DR. CARL E. BADGLEY, Ann Arbor, Mich.: I am not in accordance with Dr. Diveley's description of the two types of feet—the high-arched foot and the low-arched foot. It seems to me that the greatest difficulty is in the high-arched foot. I would add two other types seen associated with the high, bony, longitudinal arch, with marked pronation. As I understood Dr. Diveley, in cases of high-arched foot pronation does not occur. I have in mind two types, one described by Dr. Kidner, with the accessory scaphoid, and the other by Dr. Hoch, of the extremely relaxed foot. In my experience these two types of feet of the high-arched type give the most trouble. I have tried to correct this foot and found the foot plate during the growing period of the child most satisfactory. I utilized the Hoch operation for the relaxed foot and the Kidner operation for the scaphoid.

DR. THEODORE A. WILLIS, Cleveland: There is a controversy between two schools of treatment of flatfoot. On one side are the advocates of metal arches and rigid shank shoes and, on the other side, of the flexible arch and soft pads. Having been brought up in the school of rigid support, I have discarded its use and have been converted to the other side. The important thing in the treatment of flatfoot is the instruction of the patient in the proper use of his feet. One can help with shoes, but until the patient learns how to bear his weight, he isn't going to have permanent relief. Students of anatomy are taught to consider the foot as the movable terminus of a fixed leg. The anatomy textbooks state that the flexor hallucis longus flexes the great toe and the plantar reflexes the foot on the leg. When the foot is fixed, however, this muscle doesn't do anything to the toes. It pulls on the bone and joint pulleys at the ankle around which its tendon turns. The foot must be studied as a weight-bearing, fixed base for the propulsion of the body as a whole. The three muscles whose tendons lie behind the inner malleolus, the long plantar muscles on the inner side, are most important in the prevention and correction of flatfoot. Each serves a different function. Each has its individual action. The tibialis posterior presses the inner malleolus forward and pulls the navicular upward and backward. The flexor digitorum longus turns through a strong ligamentous tunnel on the inner side of the talus. When the



Fig. 18.—Exercise 3: first position, starting exercise; second position, completing exercise; at right, second position from behind.

forefoot is fixed, this muscle lifts forward, upward and outward, raising the arch of the foot. The flexor hallucis longus tendon turns behind the posterior border of the talus, pressing it forward, and then runs under the sustentaculum tali of the calcaneus, exerting an upward pull on this lever arm. It not only lifts the front end of the os calcis upward and outward but pulls the heel of the os calcis inward. Dr. Diveley's insole

tips the os calcis into a like position, but the patient must learn to do it habitually. A great deal is heard about tiptoe rising exercises for flatfoot. Tiptoe rising does nothing but develop the gastrocnemius. Exercises must be directed toward development of those particular muscles which are weak in the individual under treatment. Adhesive plaster strapping and the use of flexible supports are often of temporary benefit.

DR. LEWIS CLARK WAGNER, New York: The so-called flatfoot is easily treated but there is no one definite support that can be used by all patients. Muscle reeducation is most necessary. I feel somewhat against the use of steel plates, except for children. In dealing with the high arched foot with contraction of the plantar fascia and a cavus deformity, the treatment should be combined with surgery in extreme cases in order to restore the grasping power of the toes. Structural changes and deviation from the normal in the foot are often dependent on muscular imbalance, which leads to deformity and contraction of the toes with subsequent faulty weight bearing. This type of foot is characterized by a fairly high arch with loss of normal elasticity with or without a slight equinus due to contraction of the calf muscle. The etiology may be an inherited peculiarity but most likely the remnant of some disturbance of the cerebrospinal nervous system. A mild attack of poliomyelitis or some infectious disease of childhood or congenital syphilis can be the factor in the production of such conditions. When the deformity becomes extreme, the weight is thrown on the first metatarsal head and the great toe soon loses the grasping power in walking. Painful callosities develop on the dorsum of all the toes, but most severely on the first toe. Corresponding areas are found under the head of the first metatarsal bone. Inflammation and infection are often present. The accepted methods of treatment may be conservative (stretchings, tenotomies and foot plates) or directed to the removal of the deforming influences by transplanting the extensor tendons of the foot into the metatarsal heads with arthrodesis of the interphalangeal joints. When the extensor hallucis longus is transplanted to the metatarsal head, the elevation in the metatarsal bone is secured and normal grasping power of the great toe is returned, but dorsiflexion is lost, which makes walking difficult in the bare feet because of the dropped toe. By transplanting the extensor tendon of the fifth toe to the base of the first phalangeal joint, this difficulty can be obviated and a very satisfactory foot secured. The sesamoid bone of the great toe should be removed in extreme cases, as it will often be found distorted or inflamed because of the persistent trauma in its region.

DR. J. J. KURLANDER, Cleveland: A reasonably large number of cases of foot imbalance are due to a mild infantile paralysis that is unrecognized. I treat a considerable number of feet. In applying a plaster cast to the foot and leg for a fracture or other conditions I make it a practice to mold the cast under the arch and under the metatarsal head and in this way restore the proper foot alignment, often curing or relieving a foot condition that I did not know existed at the time. A painful foot may be an early manifestation of peripheral vascular disease; for that reason no foot examination is complete without palpating for the pulsation of the dorsalis pedis artery. An absence of pulsation is often the first sign of thrombo-angiitis obliterans. Many people have a condition which I call "chauffeurs' foot," from pressing down on the brakes or accelerator of their automobiles in such a manner that the toes are forced upward and the metatarsal heads downward. A simple way to relieve this painful condition is to instruct these patients to catch the pedals behind the heads of the metatarsals. This will force the heads up and the toes down. I do not use metal arch supports. I think the rigid arch should be reserved for acute arthritis. If the arthritis is so severe that one needs a rigid support, in all probability that patient ought to be entirely off his feet, instead of walking about. Flatfoot is due to two causes (besides paralysis): (1) overuse of the muscles, with resultant fatigue and relaxation, or (2) weakness of the muscles from too little use. In mild cases of "hollow foot," the metatarsal arch should be elevated by the use of a felt pad. But in severe cases, operative procedures, such as tenotomies or fasciotomy, may be necessary.

DR. REX L. DIVELEY, Kansas City, Mo.: Many have mentioned the successful use of the Whitman plate or other rigid metal arch supports, which are inserted in the shoe. I concur in the fact that this type of support has given excellent results; but the Whitman plate was devised for use when a rigid shank shoe was not obtainable. In using a flexible shank shoe, it is necessary to use some type of an inserted steel support; however, the majority of the shoe manufacturers are now building their shoes with a rigid shank; in other words, the steel support is built into the wide shank of the shoe. I have found it more satisfactory to use the rigid shank shoe, into which I insert the sponge rubber support, which is more easily fashioned and shaped and is much more comfortable to the patient and, I feel, is just as efficient as the Whitman plate. I agree that exercises are most important. It is my practice, however, to relieve patients of their pain by properly balancing the foot with shoes and supports, and then when relief has been obtained to build up the feet with proper foot exercises. It is interesting to note the attitude of the average orthopedic surgeon toward simple foot imbalance. Last week while attending the meeting of the American Orthopedic Association I asked three representative surgeons how they treated foot imbalance. The first replied: "About the only feet I see are of women with acute metatarsalgia and I manipulate and massage these feet once and generally never see them again. They are cured." The second man said: "We don't have very much foot trouble in our part of the country, so I do not pay very much attention to that aspect of orthopedics." The third one replied: "We have very little difficulty with foot conditions, although we see quite a number. We have an excellent brace maker and I just turn the patient over to him. He knows what they need and I do not bother with them again." Considering these three typical replies, one may draw the conclusion that the treatment of simple foot imbalance is a forgotten or neglected art with most orthopedic surgeons.

ELECTROCOAGULATION OF CERVICAL EROSIONS AND ENDOCERVICITIS IN THE LATE PUERPERIUM

A STUDY OF FOLLOW-UP RESULTS IN A SERIES
OF PATIENTS DELIVERED AT THE
WOMAN'S HOSPITAL

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It is our practice in the obstetric service of the Woman's Hospital to inspect the cervix at the end of the third stage of labor. If lacerations of 1 cm. or more are found, they are immediately sutured unless there are contraindications such as shock or infection. Patients are observed in the follow-up clinic for a period of from eight to sixteen weeks following delivery. This follow up has shown an unsatisfactory condition of the cervix in about one half of these women.

Trauma of some degree exists in practically all cervixes after delivery, and it is well known that many cervixes are the seat of chronic inflammatory conditions which antedate the first pregnancy. A careful study of the cervix at the sixth week post partum shows a good involution and healing in about one half of the patients. If lacerations and erosions are unhealed at the end of the eighth week, the condition tends to become chronic with an increased growth of the glandular epithelium, secondary infection, cervicitis and endocervicitis. These conditions are frequently responsible for persistent leukorrhea, pelvic pain and sacral

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

backache along the course of the sacral lymphatics and nerves as well as for many cases of menstrual irregularity and menorrhagia due to faulty postpartal involution of the uterus.

It is the belief of many well known gynecologists that unhealed cervical lacerations, chronic cervicitis and

in which they had made a postpuerperal note to the effect that the cervix was healed.

E. Starr Judd⁵ and C. Jeff Miller,⁶ in articles dealing with this subject, concur in these opinions. Miller states that there is no doubt that endocervicitis is a condition to which that much abused word "precancerous" may be truly applied.

Culbertson⁷ and Eden have called attention to certain types of erosion showing extensive proliferation of cells, which clearly place the disease on the borderline of malignancy.

Matthews⁸ has pointed out that it is but a step from the extreme cell proliferation with orderly arrangement, which occurs in marked cystic hyperplastic endocervicitis, to the disorderly arrangement with embryonal cells found in true malignancy. Postpartal care would seem to be as important as antepartal observation. Cervical lesions should be corrected soon after delivery; if neglected, they may later need radical treatment.

H. A. Miller⁴ has shown that erosions of the cervix in varying degree are present in 80 per cent of multiparas and in 10 per cent of primiparas. Culture of the cervix in more than 10 per cent of these women yielded streptococci. To assist in preventing the sequelae of lacerations and erosions, and as a prophylactic against infection in subsequent pregnancies, he advocates the early correction of the diseased condition of the cervix.



Fig. 1 (case 1).—Laceration and extensive erosion of the cervix in a primipara, before treatment, eight weeks post partum. From life drawing.

endocervicitis, with their subsequent structural changes, furnish a favorable site for the future development of cancer.

Crossen¹ is of the opinion that it is a well established fact that cancer of the cervix comes from long continued irritation in the form of endocervicitis, usually accompanied by lacerations, erosions and cystic changes. Great pains are taken to detect the first signs of cancer so that treatment can be promptly instituted, whereas a far safer plan is to remove the chronic cervicitis early before it becomes a cancer. An important step in preventing cancer is early removal of the chronic lesions of the cervix which precede the cancer. This seems to be the only means by which a further marked reduction in the deaths from this disease can be secured. It is dangerous to allow irritation in the cervix to persist even during the child-bearing period.

Pemberton² cites 1,087 cases in which repair of the cervix was done. Cancer developed in from five to thirty-six years in only twenty-three of this group.

Norris³ mentions 1,247 patients treated for chronic cervical erosions in only one of whom cancer of the cervix was known to have developed.

H. A. Miller and his associates⁴ state that to their knowledge no case of cancer of the cervix has occurred

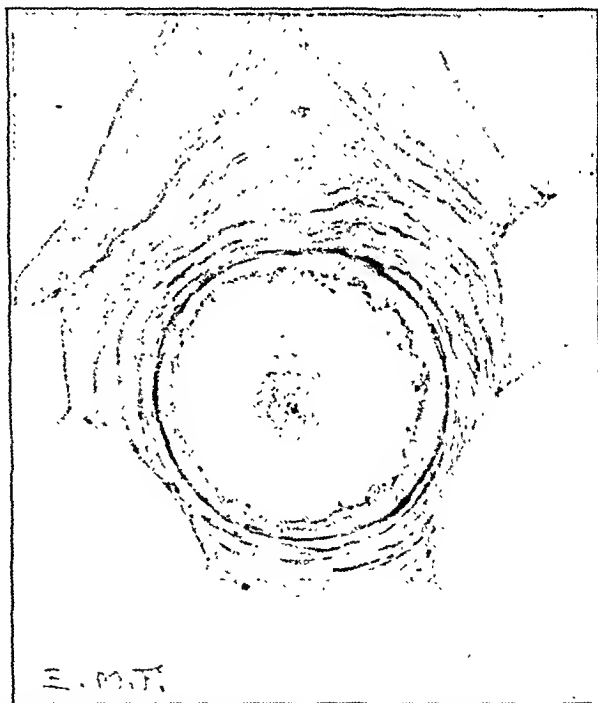


Fig. 2 (case 1).—Appearance immediately after electrocoagulation of the cervix, showing the white coagulum. From life drawing.

Goodall⁹ believes that a previously damaged and infected cervix that has not been cleared up is a fre-

5. Judd, E. S.: Surgical Treatment of Cancer, J. A. M. A. 84: 10-13 (Jan. 3) 1925.

6. Miller, C. J.: Surg., Gynec. & Obst. 46: 337-340 (March) 1928.

7. Culbertson, Carey: Erosion of the Cervix Uteri with Observations on Its Causes, Development and Results, J. A. M. A. 87: 1803 (Nov. 27) 1926.

8. Matthews, H. B.: Electric Caution Versus Sturmdorf Operation in Treatment of Chronic Endocervicitis, J. A. M. A. 87: 1802 (Nov. 27) 1926.

9. Goodall, J. R., and Wiseman, M.: Am. J. Obst. & Gynec. 16: 339 (Sept.) 1928.

1. Crossen, H. S.: Am. J. Obst. & Gynec. 26: 686-695 (Nov.) 1933.
2. Pemberton, F. A., in discussion on Crossen.¹
3. Norris, C. C., in discussion on Crossen.¹
4. Miller, H. A.; Martinez, D. B., and Hodgdon, M. E.: Prophylaxis of Puerperal Sepsis, J. A. M. A. 95: 923-925 (Sept. 27) 1930.

quent source of pelvic thrombophlebitis in subsequent pregnancies.

Brown¹⁰ and Baker¹¹ stress the importance of chronic cervical infection as a starting point for puerperal sepsis and as a focus for systemic toxemia.

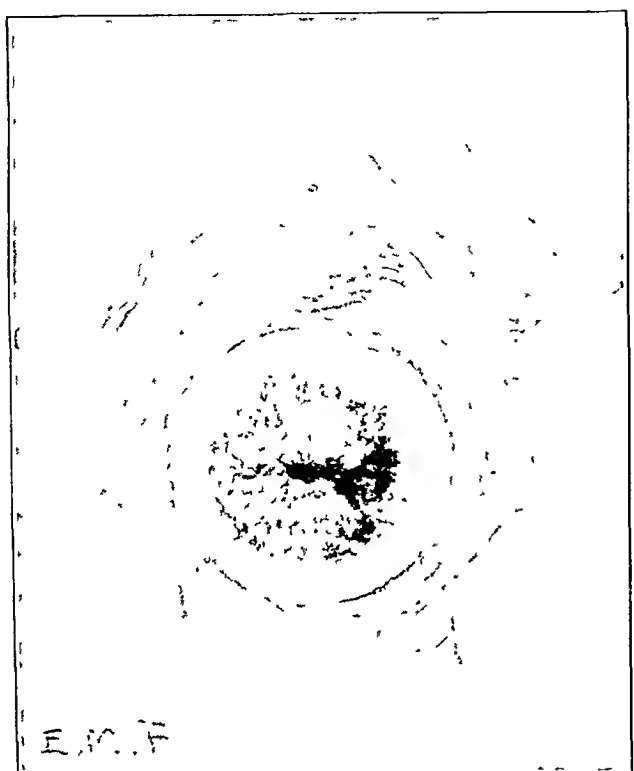


Fig 3 (case 1)—Four weeks after electrocoagulation. The coagulum has completely separated, with shrinkage of the cervix. Islands of epithelialization are noted. From life drawing.

At the Woman's Hospital it was decided to treat a series of patients with damaged cervixes during the late puerperium. The method chosen was electrocoagulation. By its use heat is generated within the tissues, penetrating deeply enough to destroy the diseased tissue and to cause instantaneous thrombosis and so prevent hemorrhage. Electrocoagulation produces a complete cellular necrosis. Ground¹² has proved that the sterilizing effect of the heat extends much farther than the visible coagulation; thus, there is a zone around the coagulated area that is lethal to micro-organisms, and yet the heat is not sufficient to destroy normal tissue cells. Electrocoagulation is unaffected by quenching in the mucus of the cervical canal and is not subject to the self limiting action of charring and carbonization that occurs with the actual cautery. This carbonization prevents uniform penetration and destruction of diseased tissue, and there is a far greater tendency to primary or secondary hemorrhage when the slough separates.

The cervix has been coagulated in a series of 120 patients who have been followed at least three months since the completion of treatment. We have treated all the cervixes by a uniform technic using an electro-

surgical diathermy machine operating on a frequency of about one million cycles a second with a corresponding wavelength of 300 meters. The voltage is low and variable; it is never more than 400 volts with any setting of this machine, the usual setting registering about 110 volts. The milliamperage used in coagulation is from 400 to 600 milliamperes.

The active electrode is an ordinary ball coagulating tip, the inactive electrode being a woven mesh strip placed about the patient's thigh. In the removal of polyps and for biopsy purposes a wire loop has replaced the ball electrode. This machine has an entirely separated patient's current, which is only inductively coupled to the oscillating current. It is therefore safe for the patient under all circumstances, because there is no direct connection between the patient's current and the electric mains.

Ende¹³ has shown that there must always be a variable factor, owing to the variation in resistance of the individual patient, caused by such factors as size and tissue density. Measurement of the individual tissue resistance is possible but not practicable, because of the technical apparatus and the time consumed.

All treatments were carried out under local anesthesia of 2 per cent nupercaine applied topically on cotton pledgets. This has given very satisfactory local anesthesia, although when the coagulation is carried out high in the canal there may be some complaint of uterine cramps. In the cases requiring coagulation high

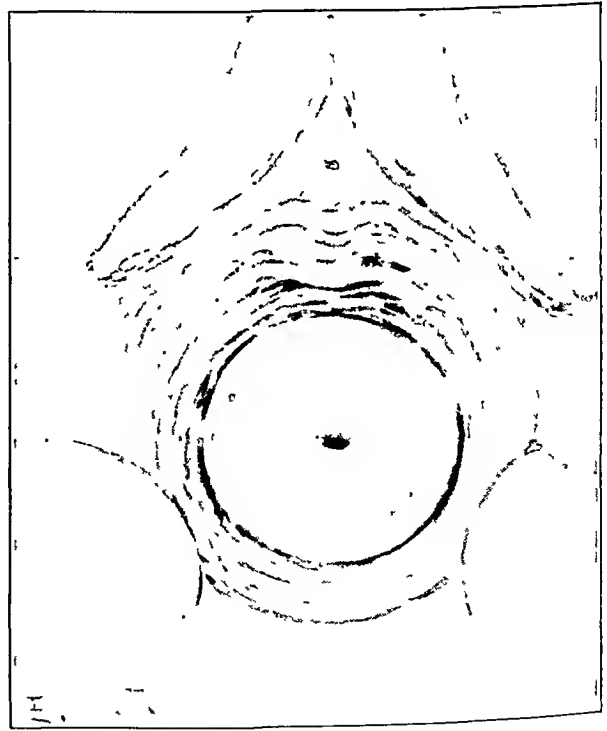


Fig 4 (case 1)—Six weeks after electrocoagulation. The cervix has a normal appearance. From life drawing.

in the canal, it is advisable that a wide dilatation of the cervix should first be done.

The coagulation is easily and quickly accomplished by a sweeping motion over the entire diseased area producing a white or grayish coagulum, carbonization,

10 Brown, G. V. South M. J. 24:122-126 (Feb.) 1931. Moench, G. L., and Schulman, A. M. J. & Rec. 131:131-133 (Feb. 5) 1930. Harriman, W. F. Am. J. Obst. & Gynec. 18:250 (Aug.) 1929.
11 Baker, H. W., and Miles, G. S. Am. J. Obst. & Gynec. 19:548-549 (April) 1930.
12 Ground, W. E. Wisconsin M. J. 30:722-726 (Sept.) 1931.

13 Ende, F. M. Am. J. Obst. & Gynec. 18:72-80 (July) 1929.

indicated by excessive sparking, being avoided at all times. Experience has taught that the best results are obtained by light rather than deep coagulation, the penetration being, as a rule, from 2 to 5 mm.

The first seven to fourteen days following coagulation there is a free leukorrhea, often blood tinged. This

TABLE 1.—Extent of Laceration

	No. of Cases	Percent- age
No laceration.....	4	3.3
Slight.....	21	17.5
Moderate.....	61	50.8
Extensive.....	34	28.3
Total.....	120	

TABLE 2.—Type of Laceration

	No. of Cases	Percent- age
Unilateral.....	4	3.3
Bilateral.....	68	56.6
Stellate.....	44	36.6
Total.....	116	

TABLE 3.—Degree of Erosion

	No. of Cases	Percent- age
Slight.....	11	9.1
Moderate (1-2 cm.).....	92	76.6
Extensive (over 2 cm.).....	17	14.1
Total.....	120	

TABLE 4.—Endocervicitis

	No. of Cases	Percent- age
Mild.....	60	50.8
Moderate.....	31	25.8
Extensive.....	28	23.3
Total.....	119	

TABLE 5.—Symptoms and Signs

	No. of Cases	Percent- age
Leukorrhea.....	112	93.3
Metrorrhagia.....	5	4.1
Hypertrophied cervixes.....	50	41.6
Subinvolution.....	20	16.6
Pelvic pain.....	8	15.0
Total.....	195	

TABLE 6.—Extent of Electrocoagulation

	No. of Cases	Percent- age
Surface and lower third of canal.....	37	30.8
Surface to middle of canal.....	46	38.3
Surface and high in canal.....	37	30.8
Biopsies.....	5	4.1
Total.....	125	

Of the 120 patients in this series, ninety were from the clinic service and thirty from private practice. Eighty-one were primiparas and thirty-nine multiparas. A second coagulation was done in only two patients in the group. Three of the patients in the group had had primary repair of the cervix at the time of delivery. All these women showed lacerations, erosions and endocervicitis of varying degree. Only two patients in this series had postoperative bleeding requiring packing, one on the eighth day and one on the fourteenth day. Healing in these two patients was not delayed in any way.

Histologic sections from cervixes following electrocoagulation have been reported by Royston,¹⁴ Kimble¹⁵ and Hyams.¹⁶ These authors agree that healing takes place without scar formation and that the healed surface is covered by normal squamous stratified epithelium.

The accompanying tables summarize the extent of cervical damage together with the chief signs and symptoms exhibited by this group of 120 patients.

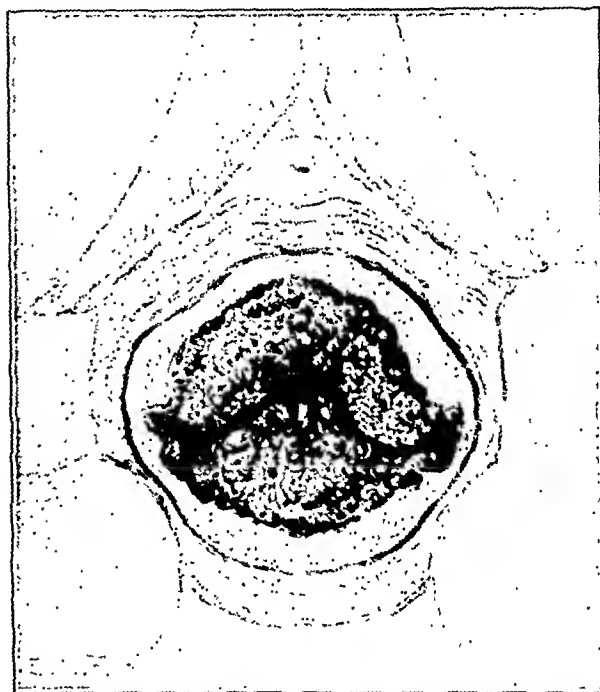


Fig. 5 (case 2).—Extensive stellate laceration, erosion and endocervicitis in a multipara eight weeks post partum. From life drawing.

All the 120 patients have completed at least three menstrual periods since the treatment. In no case is there evidence of cervical stenosis. Four patients of the private group have been delivered by the vaginal route without cervical dystocia. Four patients are now pregnant from two to six months. Two patients in the clinic group were treated by electrocoagulation while in the early weeks of an unrecognized pregnancy. The pregnancy was undisturbed. There are three women of the group of 120 who still complain of leukorrhea. Two of these patients suffer from *Trichomonas vaginalis* vaginitis and in the third patient the cause of the leukorrhea has not as yet been determined.

14. Royston, G. D., and Roblee, M. A.: *Am. J. Obst. & Gynec.* 24: 381 (Sept.) 1932.

15. Kimble, H. E.: *Arch. Phys. Therapy* 14: 550-553 (Sept.) 1933.

16. Hyams, M. N.: *Arch. Phys. Therapy* 11: 171-178 (April) 1930.

persists until the coagulum has separated, after which there is rapid healing, usually complete in from four to six weeks. By the fifth or sixth week it has been found that the cervix has shrunk to normal dimensions, lacerations are healed and all eroded surfaces are completely epithelialized.

All patients in this series were carefully selected to exclude any pelvic inflammatory disease. It is perhaps due to this careful selection that there was no lighting up of pelvic inflammatory reaction following coagulation.

In this group of 120 patients there are no unhealed cervixes and no gross pathologic conditions are evident.

SUMMARY

1. A careful study at the eighth week post partum showed unhealed cervical damage in at least 50 per cent of all women in our series.

2. Unhealed cervical lacerations and erosions favor the future development of chronic cervicitis, endocervicitis and hypertrophy.

3. Chronic cervicitis and endocervicitis with the subsequent structural changes make the cervix a favorable site for the future development of cancer.

4. A chronically infected cervix is a possible source of thrombophlebitis and general sepsis in subsequent pregnancies.

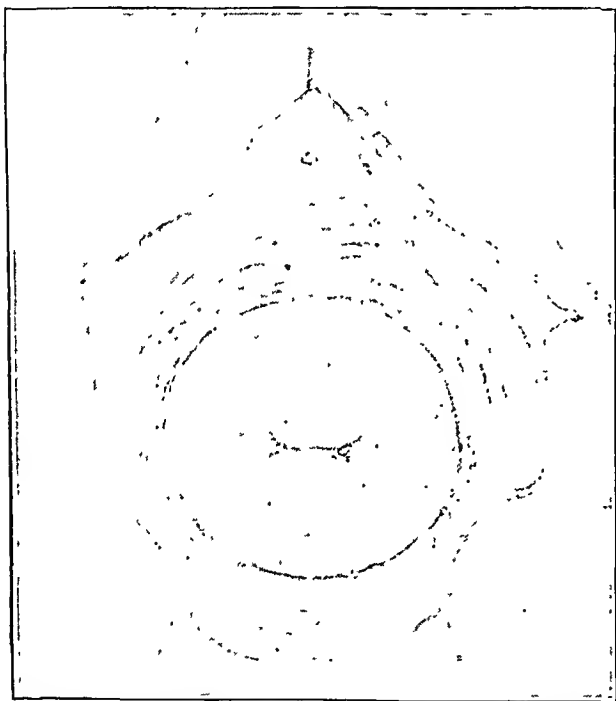


Fig. 6 (case 2).—Condition of cervix six weeks after electrocoagulation. From life drawing.

5. Cervical lacerations and erosions may be corrected safely and easily in the late puerperium by electrocoagulation.

6. Electrocoagulation, owing to its uniform penetration and destruction of diseased tissue without carbonization, is superior to cauterization in the treatment of cervical injuries in the late puerperium.

7. Healing, following electrocoagulation of the cervix, results in a smooth pliable epithelialized surface free from scar formation.

8. In a series of 120 patients, no stenosis of the cervix has occurred following electrocoagulation in the late puerperium.

9. All patients in this series were treated in the office or outpatient department. There are no unhealed cervixes and no gross pathologic changes are evident.

59 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH B. DE LEE, Chicago: Those who saw my motion picture of forceps and episiotomy on the screen yesterday will note that there was very little laceration visible to the eye. On the left side there was a tiny mucous split but, as I said, the mucosa was intact. Magnified on the screen it impressed one, but in actual life it wasn't more than an eighth of an inch in extent and possibly a sixteenth of an inch deep. But the mucosa being intact does not mean that the cervical wall muscle was intact. It wasn't. It was torn on both sides submucosally and the muscle tissue had separated and then was so thin that one could have squeezed it together to the thickness of ordinary paper. The head, in coming down after that cervix was dilated, pushed the mucosa of the endocervical region ahead of it and everted it, very much like the anus of a horse after defecation. Nature does not always pull that mucosa back into the cervix, and this is really not a laceration. It is an overdistention of the cervix. I think one ought to distinguish between actual overdistentions and destruction of the muscle submucosally, from an actual bilateral laceration. It is almost impossible to sew up such a submucous laceration. The treatment shown by Dr. Barrett is possibly the best method at present of restoring a condition of that kind to the natural.

DR. A. H. CURTIS, Chicago: I wish to bring out one point: Either correction of an important lesion of the cervix may be made with the method that has been presented, which is very efficacious, or the very extensively diseased cervix may be removed surgically. There has been a tendency, when one encounters a markedly diseased cervix suspected of harboring a cancer or in which one fears the development of a cancer, to remove a fragment or two for histologic study. In those cases in which one is morally certain that there is no malignant condition but in which a biopsy is made for the sake of safety, I believe the entire lesion should be removed. Then safety has been secured not only for that moment but for several years following; otherwise the patient will have to be kept under constant surveillance.

DR. RALPH L. BARRETT, New York: This was a carefully selected group of cases treated in the late puerperium. It was not intended to treat all cases of endocervicitis. This was a trial to see what could be done with electrocoagulation in the late puerperium. The cases were carefully selected, extensive cystic and hypertrophied cervixes were excluded. I attempted to cure those lesions which I thought had been produced by the recent pregnancy and labor. The pictures that the artist drew of these patients from life at the time of treatment and in subsequent weeks would seem to indicate that this simple procedure has corrected a large number of lesions. Very few of these cervical lesions were extensive. When biopsy was taken, an electrosurgical diathermy loop was used to obtain as much material as possible. No malignant changes were found.

DR. DE LEE: How deep do you think that slough was: how many millimeters?

DR. BARRETT: From 2 to 5 mm. as well as I could measure. I have no microscopic section made at the time.

Nature of Hodgkin's Disease.—The most important views as to the nature of Hodgkin's disease are that it is either: (1) an infection of unknown nature (lymphogranuloma) (German school, Longcope, MacCallum, Symmers, etc.); (2) an atypical form of tuberculosis (Sternberg, l'Esperance); (3) a lymphoblastoma (Mallory, Warthin); (4) a megakaryocytoma (Medlar); (5) a disease intermediate between infection and neoplasm (Lubarsch, Levin). The proper nosologic position of Hodgkin's disease is far from being, as some would have it, an almost wholly academic question. The direction of further study, with eventual practical matters of diagnostic and therapeutic importance, obviously are largely conditioned by one's attitude to such nosologic aspects. . . . While the nature of Hodgkin's disease remains obscure, the preponderance of evidence favors the infectious theory, with some promising support for its inclusion among the virus diseases.—Krumbhaar, E. B.: *Am. J. M. Sc.* 188:597 (Nov.) 1934.

ARGYREMIA

DETECTION OF UNSUSPECTED AND OBSCURE ARGYRIA
BY THE SPECTROGRAPHIC DEMONSTRATION
OF HIGH BLOOD SILVER

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Argyria, the discoloration of skin or tissues caused by silver absorption, is considered extremely rare in modern medicine, but during the past few years it has reappeared with surprising frequency. The history of the subject, known also as argyrosis or argyrism, has been adequately reviewed by Gettler, Rhoads and Weiss¹ and by David.² According to its nature, argyria is designated as local or general; according to its origin it is occupational (professional) or therapeutic. The awakened interest in the subject is due to an increased occurrence of generalized argyria of therapeutic origin.

Many new cases have been caused by the intranasal and intra-oral administration of organic and inorganic silver compounds in colloidal form.³ In these instances argyria has resulted not so much from treatment by the medical profession but from the lay practice of administering the preparations, particularly to children, as a daily routine for the prevention of colds. Other cases have developed during the silver arsphenamine treatment of syphilis.⁴ Recently, Gernez⁵ and others⁶ have described a veritable epidemic of generalized argyria in northern France, caused by the prolonged administration of capsules containing collargol (a colloidal silver preparation) in treating pulmonary tuberculosis. From these considerations it is apparent that the untoward results of silver medication deserve attention; indeed, the comments of Knack⁷ on the danger of internal silver therapy were echoed in THE JOURNAL not long ago.⁸

Thus far we have mentioned only comparatively new silver preparations and uses. In this summary must be

included those cases produced, as were the classic cases of argyria, by the oral administration of silver nitrate in tabes, epilepsy and gastritis. Although this treatment has almost been abandoned, there are still occasional reports of argyria resulting from the use of silver nitrate in gastro-intestinal disorders.⁷ These cases are a striking reminder that the practice lingers on, and it is with another instance of this kind that the present report deals, in which an unsuspected and obscure argyria is described that was detected by the demonstration of marked argyremia, or high blood silver, during a spectrographic examination of the blood.

REPORT OF CASE

A white woman, aged 33, admitted to the University Hospital, Oct. 30, 1933, complained of frontal and temporal headache, pain in the back, gastro-intestinal discomfort, weakness, and loss of weight.

The patient had a history of ill health since 1918. Her symptoms during this period were similar to those complained of by her mother, who had been "nervous" most of her life and who had been nursed by the patient for ten years. There was doubtful typhoid in the autumn of 1930.

In January 1932 the patient's gastro-intestinal symptoms became so severe that she was operated on, but no pathologic abdominal condition was found except a displaced right kidney, which was put into position at a later operation. In October 1932 most of the teeth were removed, after which she was in a semicomatose state for several months, with no evidence of postoperative sepsis. She recovered partially from this early in 1933 and from that time until admission remained in bed, complaining chiefly of pain on swallowing, constant abdominal pain, and headache. During this period her room was kept darkened. Loss of weight continued to a marked extent; the intake of food was very limited.

On admission the patient was extremely emaciated, with loss of practically all subcutaneous fat; she weighed only 72 pounds (32.7 Kg.). The skin was bound down tightly to the underlying structures, especially over the forearms, hands and feet. The skin was scaly; the hair was normal in quantity and distribution. A very peculiar ashen pallor was noted. The mucous membranes of the mouth were extremely pale and the teeth were absent, with the exception of the lower cuspids and incisors. The gingival portions of these teeth were coated with a dark calculus and were surrounded by moderate pyorrhea. In the gum margin about these teeth there was a very definite gray-blue pigmentation with a punctate distribution; this was in the gum itself and not due to the deposit on the teeth.

The extremities showed stiffening of most of the joints, especially in the wrists, fingers and ankles. The ankles were fixed in full extension. The neurologic examination was negative, and the extension of the feet was not thought to be due to muscular paralysis. The remainder of the examination was negative, except for the abdominal scars, emaciation and a marked apathy.

Laboratory reports were as follows: Urinalyses were consistently negative; blood and spinal fluid Wassermann tests were negative; gastric analysis showed the presence of hydrochloric acid. The average of several blood pictures showed hemoglobin 4.2 Gm., red blood cells 1,990,000, white blood cells 2,700, color index 0.9. The differential count was polymorphonuclears 22 per cent, polymorphonuclear eosinophils 4 per cent, small lymphocytes 52 per cent, and monocytes 22 per cent. No abnormal white cells were seen; there was a slight diffuse basophilia but no stippling. The picture suggested a secondary anemia, possibly aplastic.

Although no history of exposure to lead could be obtained and the blood picture was not characteristic, the possibility of lead poisoning was suggested by the gum line, by the anemia and, to a lesser degree, by the foot drop. Accordingly, a sample of blood was taken for spectrographic examination for lead. The results indicated only a faint, nonpathologic trace of lead, but during the examination comparatively heavy silver lines were observed.

Aided by a grant from the Hartley Corporation.

From the Department of Pediatrics of the School of Medicine, and the Biochemical Laboratory of the School of Hygiene and Public Health of the Johns Hopkins University, and the Department of Medicine, University of Maryland School of Medicine and College of Physicians and Surgeons.

1. Gettler, A. O.; Rhoads, C. P., and Weiss, Soma: A Contribution to the Pathology of Generalized Argyria, with a Discussion of the Fate of Silver in the Human Body, *Am. J. Path.* 3: 631 (Nov.) 1927.

2. David, A.: L'argyrie généralisée d'origine thérapeutique, *Bruxelles-méd.* 12: 1083 (July 24) 1932.

3. Royster, L. T.: Argyria: Report of a Case in a Patient Aged Five and a Half Years, *J. Pediat.* 1: 736 (Dec.) 1932. Woodward, M. R.: Argyria from the Use of Colloidal Silver Iodide Intranasally, *Am. J. Dis. Child.* 45: 1046 (May) 1933. Lundy, C. J.: Argyria Associated with a Heretofore Unreported Colloidal Silver Preparation, *Illinois M. J.* 63: 173 (Feb.) 1933. Berkley, H. K.: Argyria: Report of Two Cases in Children, *J. A. M. A.* 102: 202 (Jan. 20) 1934.

4. Becker, S. W., and Ritchie, E. B.: Argyria Following Excessive Use of Silver Arsphenamine, *J. A. M. A.* 97: 389 (Aug. 8) 1931. Spiegel, Leo: A Discoloration of the Skin and Mucous Membranes Resembling Argyria, Following the Use of Bismuth and Silver Arsphenamine, *Arch. Dermat. & Syph.* 23: 266 (Feb.) 1931. Cannon, A. B.: Value of Silver Arsphenamine in the Treatment of Early Syphilis: Conclusions Based on a Study of 104 Cases, *J. A. M. A.* 102: 268 (Jan. 27) 1934.

5. Gernez, C.: Quatre cas d'argyrie généralisée chez des tuberculeux traités par une méthode thérapeutique à base d'argent colloidal, *Rev. de la tuberc.* 12: 433 (April) 1932.

6. (a) David.² (b) Gernez.⁵ (c) Gernez, Houcke and Cuvelier: Sept cas d'argyrie généralisée, *Ann. méd. lég.* 12: 251 (April) 1932. (d) Langeron, L.; Dellatre, A., and Paget, M.: Modifications histologiques et chimiques au cours de l'argyrie, *Compt. rend. Soc. de biol.* 114: 132, 1933.

7. Knack, A. V.: Zur Gefahr der internen Silbertherapie, *Deutsche med. Wchnschr.* 58: 1672 (Oct. 21) 1932.

8. Danger in Internal Administration of Silver Preparations, Current Comment, *J. A. M. A.* 100: 1604 (May 20) 1933.

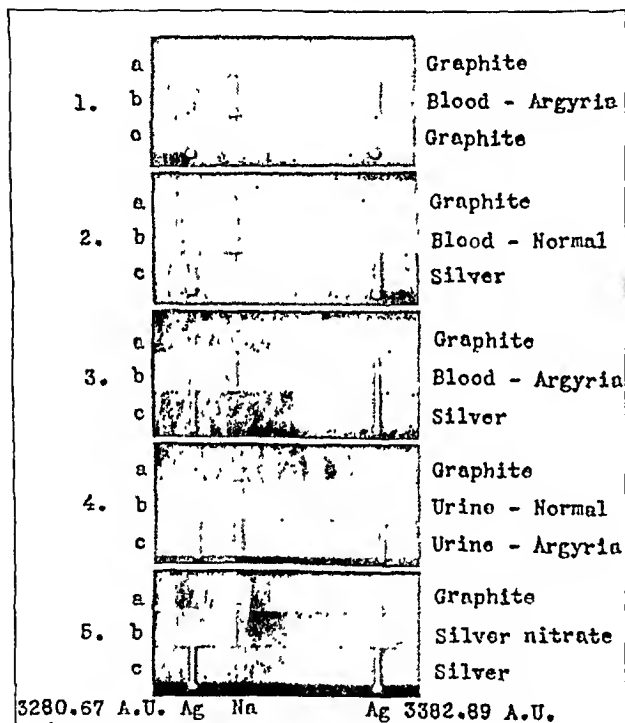
As a result of this, inquiry was made with respect to silver absorption and the possibility of argyria. It was found that for the entire preceding year the patient had been taking capsules containing silver nitrate for gastro-intestinal symptoms. Each capsule contained one-fourth grain (16 mg.) of silver nitrate, and they were taken three times a day for alternate periods of two weeks.

To the clinical impression of psychoneurosis and nutritional anemia, which were indicated by other studies, were added the diagnoses of early argyria as the cause of the gum line and peculiar pallor, and silver intoxication as a partial cause of the anemia and asthenia. As a complete summary of the clinical study of the patient is not important for this report, it is not included.

The diagnosis of argyria thus made was verified by further studies of the blood and several other body constituents.

SPECTROGRAPHIC ANALYSES

The spectrographic analyses of the blood, as well as of the other materials, were made with a Hilger E 1 large quartz spectrograph, in combination with a graphite arc. Except when



The dots mark the positions of the silver lines, the left one at 3,280.67 and the right one at 3,382.89 angstrom units. The heavy line between the two is in reality a pair of lines, caused by sodium. 1. In the first spectrogram, a is the control spectrum of the empty graphite electrodes; b is the spectrum of the blood ash from the case of argyria, taken two weeks after the end of silver absorption, and c is again the graphite. Notice that the silver reference lines are not photographed in c, because argyria was not suspected at the time. 2. a, graphite; b, normal blood ash, but with known silver salt for reference lines in c; note that the silver lines are practically absent in b. 3. a, graphite; b, argyria blood ash three months after end of absorption; note persistence of marked argyria, as indicated by silver lines in b; c, silver. 4. a, graphite; b, normal urine ash; c, argyria urine ash; note presence of silver lines in c, showing elimination of silver three months after end of absorption. 5. a, graphite; b, silver nitrate capsule, illustrating the high content of silver; c, silver.

specified otherwise, the technic followed was similar to that used in the blood lead method described by Shipley, Scott and Blumberg.⁹ This analysis requires the ash from 5 cc. of blood and may be completed within from twelve to twenty-four hours. The silver lines demonstrated were the two characteristic "raies ultimes," or most persistent lines, with wavelengths of 3,280.67 and 3,382.89 angstrom units.

Blood.—It is interesting that marked argyria, or high blood silver, apparently has never before been reported in

argyria. Particularly striking is the fact that Gernez and his co-workers,¹⁰ using a chemical method, did not even detect silver in the blood, either during or after collargol ingestion. In our case, on the other hand, it was by means of the high blood silver that the obscure argyria was recognized. Generalized argyria implies vascular transportation, and it is extremely unlikely that the metal is carried exclusively, if even appreciably, by the lymph. Consequently, silver must at some time be present in the blood, probably as the albuminate, chloride and silver ion, regardless of the form in which it is ingested.

In the spectrograms shown here it is seen that the silver lines are comparatively heavy in the blood of our patient, whereas they appear as very faint traces, or are absent, in normal controls. The spectrographic detection of traces of silver in normal blood has been reported.¹⁰ By inspecting a series of more than 200 blood analyses, we found that faint traces of silver frequently occurred, especially in children. However, in some samples it could not be detected, so we cannot consider silver a normal constituent of blood on the basis of our analyses.

By means of standard spectrograms made by adding a known amount of silver nitrate to a silver-free blood, a quantitative estimation of blood silver was made possible. In terms of absolute sensitivity, as little as 0.000005 mg. (0.005 microgram) could be detected. With the ash method, the silver lines would appear at a concentration of 0.0005 mg. per hundred cubic centimeters. By comparison with the intensity of the silver lines in the standard spectrograms, the blood silver in the case of argyria was estimated to be 0.05 mg. per hundred cubic centimeters in the earliest sample, which had been taken two weeks after absorption had ended. This value is almost as high as the figures found for blood lead in lead poisoning.¹¹ During the actual time of absorption, the blood silver concentration must have been closer to 0.1 mg. per hundred cubic centimeters.

When a rapid liquid method was employed on an oxalated sample, silver could be detected in a single drop of the patient's blood. A micromethod in which 0.1 cc. of finger-tip blood was delivered directly onto a cored graphite electrode revealed silver quite definitely; in control samples, of course, the metal could not be detected. This may be used as a thirty minute method for detecting high blood silver in peripheral blood.

The distribution of the blood silver was determined from heparinized, oxalated and clotted samples. In our case of marked argyria, as well as in the frequent normal traces, the major part of the silver resided in the plasma or serum. Since the heparinized cells still contained silver after two saline washings, it is probable that a minor part of the silver was truly adherent to the cell fraction.

In normal children we have found that the trace of silver does not appear consistently, and in some cases the occurrence has been roughly correlated with periods of administration of mild silver protein. Our patient, however, exhibited not only a marked but a persistent argyria. The high blood silver was first detected two weeks after the silver ingestion had ceased. At the time of the last analysis, made three months after the end of exposure, the blood silver showed only a small decrease. This persistence of silver in the blood was not entirely unexpected, because it has been found that the blood lead remains high for many months following lead intoxication.¹¹ However, the duration and extent of the argyria proved that the silver was consistently circulating and had not been detected during temporary transit. It appeared, therefore, that the patient's tissues contained a heavy deposit of the metal, part of which was still in a soluble form.

In order to learn more of the persistence of silver in the blood, samples were secured from three old cases of argyria in which the pigmentation had been present for more than ten years. The analyses showed only faint traces of the metal. This demonstrated the eventual departure of abnormal silver from the blood.

9. Shipley, P. G.; Scott, T. F. M., and Blumberg, Harold: The Spectrographic Detection of Lead in the Blood as an Aid to the Clinical Diagnosis of Plumbism, *Bull. Johns Hopkins Hosp.* 51: 327 (Nov.) 1932.

10. Zbinden, C.: Recherches spectrographiques sur des cendres de sangs et d'organes humains, *Mém. de la Soc. vandoise des sciences naturelles* 3: 233 (July 15) 1930. Sheldon, J. H., and Ramage, Hugh: A Spectrographic Analysis of Human Tissues, *Biochem. J.* 25: 1608 (No. 5) 1931.

11. Blumberg, Harold, and Scott, T. F. M.: The Spectrographic Determination of Lead in Blood, *Tr. Soc. Pediat. Research*, May 1, 1934; abstract to be published in the *American Journal of Diseases of Children*.

Urine.—Charcot¹² mentioned the excretion of silver through the kidney, but the observation had never been confirmed by modern analyses. Although Gernez and his co-workers^{6c} detected silver in the bile, they were unable to find it in the urine, using chemical and spectrographic methods. In our case a high urinary silver was easily demonstrated, as shown in the accompanying illustration, even three months after the last ingestion of silver. In normal urines, as well as in the urine in an old case of argyria, the metal was detected in only faint traces or not at all. These results revealed a partial silver elimination, similar to the deleading following lead intoxication.

Feces.—The feces also showed high silver, although only faint traces were present in controls and in a sample from an old case of argyria. This demonstrated that the gastrointestinal tract also aided in silver elimination.

Cerebrospinal Fluid.—A moderate trace of silver was detected in the cerebrospinal fluid, whereas in controls it appeared in only very faint traces or not at all.

Saliva.—Saliva was secured after pilocarpine stimulation; obtained in this way, the sample was less likely to be contaminated by food debris. The result showed a definite trace of silver, while the metal was present as a very faint trace or was absent in controls. Although the conditions of sampling prevent a positive statement, it appears probable that silver was contained in the salivary secretion.

Skin.—Spectrographic demonstrations of silver have been reported in excised pieces of pigmented skin in argyria,¹³ as well as in the hair and nails.^{6c} As a result of a biopsy that had been made for suspected scleroderma, we had available a very small piece of undarkened abdominal skin. After a thorough rinsing in distilled water, the skin was dried and analyzed directly without ashing. Since there had been no contamination with silver in the pathology department, the detection of heavy traces of silver proved that there was a potential argyria in the absence of the dark pigmented forms of silver, which are probably the oxide, sulphide and metallic silver, in addition to some unknown form. Control skin analyses showed only a very faint trace of the metal.

Dental Tartar.—Lacking ethical justification for biopsy, we were unable to complete our story by identifying the pigment that started the investigation—the gingival “lead” line. However, the discoloration was also present on the lower teeth; so the deposits of dark tartar were removed for analysis. This material revealed heavy traces of silver, while a control sample showed only a doubtful trace.

AMOUNT OF SILVER INGESTED

It has been estimated that signs of argyria may appear after the absorption of only 2 Gm. of silver nitrate.¹⁴ In our case, the capsule used was supposed to contain one-fourth grain of silver nitrate, and the dosage was one capsule, taken three times a day. By alternate administration for from two to three weeks, and withdrawal for two weeks, the treatment had been maintained for a year. The total ingestion, then, was approximately 10 Gm. of silver nitrate, which is equivalent to about 6.4 Gm. of silver. In comparison with the literature this figure is not high, yet it is much above the lowest amounts that may produce argyria.

COMMENT

An interesting feature of the case is that, despite the peculiar pallor, there was no obvious brown, blue, gray or black pigmentation other than the gingival lines and the nonspecific dental discoloration. The blue-gray “silver” gum line is considered an early sign of argyria, although it is absent in many cases. It might be that the generalized pigmentation would develop more clearly in the future, for Gernez³ has commented on the retarded appearance of the discoloration.

Nevertheless, it is perhaps significant that the patient was not exposed to strong light during the period of silver treatment. Since the discoloration occurs chiefly in the exposed parts of the body, that is, the face and hands, it must be assumed that light may play a rôle in the pigment production. Furthermore, Zacks¹⁵ has reported the sudden appearance of argyria after ultraviolet irradiation of a child who had received mild silver protein intranasally for a long time. We were unable to attempt prolonged irradiation of our patient for fear that the experiment would be successful. By reason of its fixative action on the silver in unpigmented skin, light would appear detrimental to the partial elimination of silver from the body. Consequently, patients who are developing argyria, or who are in danger of doing so, probably should avoid strong illumination for many months after silver absorption has ceased.

Except for the extremely undesirable pigmentation, no harmful effects of chronic silver absorption have been definitely established. Although anemia and asthenia, as well as digestive disturbances,⁵ have been noted with suspicious frequency, there is as yet insufficient evidence to consider argyria a sign of true intoxication. In view of the hemolytic action of silver, however, it is probable that the effect of the metal contributed to the anemia and asthenia in our case.

The detection of this obscure case of argyria has provided an example of the value of spectrographic analysis in diagnosing suspected intoxications. In this case of argyria the gingival line was present; the demonstration of marked argyremia enabled us to discover the cause of the line and to differentiate the pigment from the confusing gum line of lead or bismuth. When the line is not present, the peculiar pallor of early argyria would be even more difficult to recognize. We suggest the spectrographic examination of blood for high and persistent silver content as a method of guarding against argyria during the use of silver arsphenamine, silver nitrate, mild silver protein, neosilvol and other silver preparations.

Finally, we wish to reiterate the word of warning in regard to the danger of internal silver therapy. Despite the possibility of sometimes decolorizing small areas of local argyria,¹⁶ the pigmentation of generalized argyria is so extensive that it may be considered permanent and beyond remedy. The controlled use of certain preparations cannot be opposed, but there are some silver treatments that are not only inefficacious but even lack the merit of being harmless.

SUMMARY

1. The spectrographic demonstration of marked argyremia, or high blood silver, permitted the detection of an unsuspected and obscure case of argyria, resulting from the oral administration of silver nitrate for gastrointestinal symptoms.

2. The blood silver was estimated spectrographically to be 0.05 mg. per hundred cubic centimeters; in normal blood, silver appears as a very faint trace or is absent, i. e., to an amount less than 0.0005 mg. per hundred cubic centimeters.

3. The persistence of the high blood silver for more than three months after exposure indicated a heavy deposition of silver in the tissues.

12. Charcot, J. M.: *Oeuvres complètes de J. M. Charcot*, Paris 8: 419, 1889.

13. Gernez,³ Gerlach, Walther, and Gerlach, Werner: *Der Elementarnachweis im Gewebe*: III. Mitteilung: Zur Frage der Argyrosen. Insbesondere über den spectrographischen Silbernachweis in der Haut, *Dermat. Wehnschr.* 95: 1497 (Oct. 15) 1932.

14. Koelsch, F.: *Ueber gewerbliche totale Argyrie*, München. med. Wehnschr. 59: 304, 1912.

15. Zacks, M. A.: *Argyria in a Child Following Intranasal Use of Argrol*, *Laryngoscope* 43: 680 (Aug.) 1933.

16. Stillians, A. W., and Lawless, T. K.: *The Intradermal Treatment of Argyria*, *J. A. M. A.* 92: 20 (Jan. 5) 1929.

4. Abnormally high silver was also detected in the urine, feces, cerebrospinal fluid, skin, dental tartar and probably saliva. The presence of the metal in the urine and feces demonstrated that silver was being partially eliminated from the body.

5. Only faint traces of silver were present in the blood and urine in definitely pigmented cases of argyria ten years or more after exposure; this showed the eventual departure of appreciable silver from the circulation.

6. The spectrographic determination of silver in the blood, skin and other parts of the body is an aid in diagnosing obscure argyria and in differentiating it from lead or bismuth intoxication.

7. The spectrographic determination of blood silver is suggested as a method of guarding against argyria in silver therapy.

8. A warning note is again sounded on the danger of internal silver therapy.

THE ORIGIN OF THE WHITE BLOOD CELLS

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Since 1870, when hematology was first established as a branch of scientific medicine by the discovery of cells in the blood stream,¹ the polemics of the problem concerning these circulating units have centered about their origin. Each decade has witnessed an increasing volume of research and an even greater variety of interpretation in an attempt to establish some concept of the histogenesis of these cells on a sound and unassailable foundation. While complete success in reaching this objective has in no sense been attained, it nevertheless is profitable to analyze, from time to time, certain fundamental aspects of the problem which seem to be influenced or clarified by recent contributions in this field. Therefore, while recognizing the difficulties inherent in the problem and the necessity of altering interpretations from time to time as additional new facts become apparent, the present discussion will seek to analyze critically some of the more important concepts, with special attention to clarification of ideas in two directions; first, an elucidation of the position and of the separate identity of the lymphocyte in hematopoiesis, and, second, the newer evidence for the establishment of the independent origin of the monocyte from the reticulo-endothelial system.

THE EXISTING THEORIES IN EXPLANATION OF HEMATOPOIESIS

The demonstration of the mechanism whereby the white blood cells are formed depends, as in all biologic phenomena, in part on adequate experimental data and in part on interpretation. Only when the experimental evidence is adequate both in quantity and in quality does it become possible to make interpretations and draw conclusions that are convincing. So far as the origin of the white blood cells is concerned, it may be

said that the accrued mass of experimental fact has been adequate to convince the majority of hematologists on only three aspects of the problem: First, that the mother tissue for the formed elements of the blood is to be identified with a group of primitive cells designated by Aschoff and Kiyono² as the reticulo-endothelial system of fixed tissue cells. Second, that the cells of this structure by maturation and repeated division give rise to a generation of free cells with primitive nuclei and basophilic cytoplasm, which further divide and mature, thereby becoming ultimately the definitive cells of the circulating blood. Third, that the granulocytes and red blood cells exhibit different physical characteristics of the cytoplasm and nucleus, constituting maturative phenomena representative of a life cycle for each form. It may be added that the experimental data have not been adequate as yet to convince the majority of the investigators in this field on the following major points, which therefore have become highly controversial and subject to varying interpretations; first, that all cells of the reticulo-endothelial group are identical and therefore possess equal potentialities; second, that the free, primitive cell is identical with the blood lymphocyte and the latter is therefore always totipotent; third, that the life cycles of granulocyte and erythrocyte are reversible; fourth, that the monocyte is closely related to and probably identical with the clasmatocyte.

Chart 1 represents, by diagrammatic summarization, the principal theories held by the various proponents of the different schools of thought in explanation of the origin of the blood cells. The major points in conflict as well as those in agreement which were emphasized in the foregoing paragraph, are made quite evident by a study of this diagram. Extensive reviews³ which detail the experimental data that have given birth to these varying interpretations are very complete and no useful purpose can be served by repeating them here. Certain crucial aspects of the problem that have been referred to previously, however, deserve, and will receive, further elaboration.

THE SO-CALLED RETICULO-ENDOTHELIAL SYSTEM

Early in embryonic life, the diffuse mesenchyme consists of fixed star shaped cells and free mobile elements. The fixed mesenchyme (the endoderm and the ectoderm are not concerned in blood formation at any time) becomes differentiated into two cell types with different prospective potencies; the collagen-producing spindle-shaped elements become the fibroblasts of the adult tissues and probably lose all ability to reproduce cells other than themselves; the second type do not all differentiate but always there are some that retain embryonic characteristics throughout adult life. The latter elements are scattered throughout the loose connective tissue of the body and have been called resting wander-

2. Aschoff, L., and Kiyono, K.: *Folia haemat.* 15: 383, 1913.

3. These include:

- (a) Marchand, F., Krehl and Marchand: *Handb. d. allg. Path.*, Leipzig, S. Hirsch, 1924.
- (b) Cunningham, R. S.; Sabin, Florence R., and Doan, C. A.: *Pub. 361, Contributions to Embryology* 16: 125, 163, 227, 1925.
- (c) Doan, C. A.: *J. Lab. & Clin. Med.* 17: 887 (June) 1932.
- (d) Doan, C. A.: *Medicine* 10: 323 (Sept.) 1931.
- (e) Sabin, Florence R.: *Physiol. Rev.* 2: 38 (Jan.) 1922.
- (f) Bunting, C.: *Physiol. Rev.* 2: 505, 1922.
- (g) Maximow, A.: *Physiol. Rev.* 4: 533 (Oct.) 1924.
- (h) Maximow, A.: *Special Cytology*, edited by E. V. Cowdry, ed. 2, New York, Paul B. Hoeber, Inc., 1932, pp. 603 and 711.
- (i) Naegeli, O.: *Blutkrankheiten und Blutdiagnostik*, ed. 4, Berlin, Julius Springer, 1923.
- (j) Obertling, C.: *Ann. d'anat. path.* 1: 87, 1924.
- (k) Downey, Hal.: *The Occurrence and Significance of the "Myeloblast" under Normal and Pathologic Conditions*, *Arch. Int. Med.* 33: 301 (March) 1924.
- (l) Downey, Hal.: *Folia haemat.* 34: 65 (June) 145 (Aug.) 1927.

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Owing to lack of space, this article is abbreviated as it appears here. The article in its entirety will appear in the author's reprints.

Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Hewson, W.: *Phil. Tr.* 60: 368, 1770; 62: 303, 1773.

ing cells,⁴ macrophages,⁷ and rhagiocrine cells,⁶ and are described in the serous membranes⁷ under the name of clasmatoocytes. They are particularly prominent in the spleen, lymph nodes and bone marrow, where they form a syncytium, and are in close relationship to the endothelium of the venous sinuses of the spleen, bone marrow, and lymph channels of the lymph nodes. At this point differences in interpretation have arisen. These specialized endothelial cells have been thought to be, in fact, flattened reticular cells identical with the syncytial primitive mesenchyme⁸ and therefore not true endothelial cells in the usual sense; others regard them as true representatives of endothelium,⁹ which in the bone marrow, liver, spleen and lymph nodes retain the angioblastic characters of the endothelium of the blood islands¹⁰ and therefore are embryologically distinct from and in no sense identical with the reticular cells.

The evidence for the identity of reticulum and endothelium, based on functional grounds, has been concerned largely with the reaction of these cells to vital dyes. On the introduction of vital staining, Ribbert¹¹ was able to show that the reticular and endothelial cells of the spleen, lymph nodes and bone marrow, the Kupffer cells of the liver and the reticular cells of the thymus and certain other tissues had the specific power to store lithium carmine. He noted that the general vascular endothelium took the dye either very faintly or not at all. However, the first investigator to formulate clearly the concept that these specialized endothelial cells were identical with the reticular cells was Goldmann,¹² who stained them intravitaly with pyrrhol blue, called them the pyrrhol cells, and identified them with the clasmatoocytes of Ranvier,⁷ the rhagiocrine cells of Renaut,⁶ the resting wandering cells of Maximow,⁴ and the adventitial cells of Marchand.¹³ Further interpretation was given by Aschoff and Kiyono¹⁴ in 1913-1914, when reporting on the vital staining characteristics of these cells in normal and pathologic tissues and describing their reaction in health and disease. They interpreted the relationship between these cells as constituting a tissue the component parts of which function identically so far as their reactions to vital dyes and the production of new cells are concerned. They expressed and emphasized this concept by inventing the term "reticulo-endothelial apparatus" to cover this system of cells.

Although the similarity of the reticular and endothelial cells in their reaction to vital dyes is admitted, yet there are many reasons based also on functional grounds that deny their identity. Aschoff himself in a later publication¹⁵ has noted that the reticulum and

endothelial cells of the lymph nodes behave differently toward particulate matter in that the latter show much more activity than the former in storing these substances. Cunningham¹⁶ found that the endothelium of the splenic sinuses and the reticulum cells of the pulp responded differently to injections of india ink in rabbits. Perhaps the strongest evidence for the dissociation of endothelium and reticulum has been presented by Doan,¹⁰ who was able to follow the independent regenerative reactions initiated by reticulum cells and endothelium on the hypoplastic marrow of starving pigeons, when the stimulus of an adequate diet was restored. The varying reactions of these cells to tuberculophosphate¹⁷ and to other lipid substances,¹⁸ in monocytic leukemia¹⁹ and in other pathologic states²⁰ furnish additional facts tending to warrant the dissociation of these two cells. Without further elaboration it seems certain from these facts that the common identity of the cells comprising the reticulo-endothelial system is extremely doubtful on embryologic, physiologic and pathologic grounds. The importance of establishing the

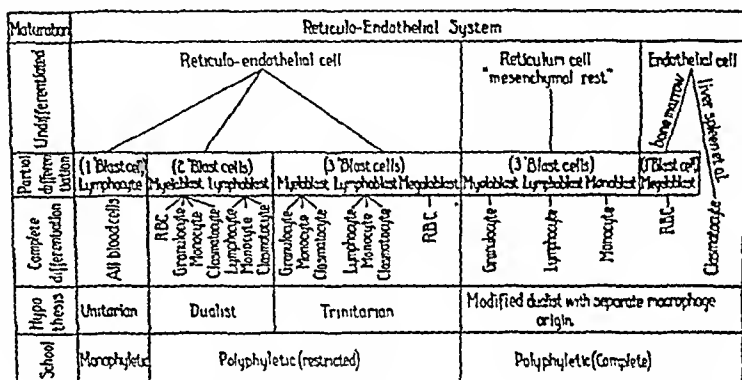


Chart 1.—This chart summarizes the principal points that are in conflict and in agreement between the various theories that have been advanced to explain the histogenesis of the blood cells. There are three levels of maturation that are common to all, in the first level primitive undifferentiated mesenchymal cells provide the blast cells of the second level, which in turn, by maturation and division, become the completely differentiated cells of the circulating blood, represented by the third level. The degree of polygenesis is determined by the number of partially differentiated (blast) cells that are believed to be necessary in order to render accordant the experimental facts and observations as interpreted by the various investigators which comprise the schools of thought shown in the lower portion of the chart. The principal difference, as indicated, is in the degree of prepotency ascribed to the blast cells, the unitarians feeling that a single common ancestor (the lymphocyte) may differentiate into any of the mature types of cells. Attributing lesser degrees of potentialities to this cell results in increasing degrees of polyphyletism, which in the extreme construction requires a separate blast cell for each of the circulating elements, and a separation of the reticulo-endothelial system of cells into its component units, each with different potentialities.

accuracy of this concept is fundamental to all hypotheses bearing on the origin of the blood cells and forms one of the basic differences between the proponents of the monophyletic and polyphyletic schools.

THE PROBLEM OF THE LYMPHOCYTE IN HEMATOPOIESIS

In all discussions involving the origin of the white blood cells, the rôle of the lymphocyte continues to occupy the central position about which all other concepts radiate. Lacking specific cytoplasmic substances that can easily be identified, such as granules, hemoglobin or vacuolar pattern, the separate existence of this cell type on a par with erythrocyte and granulocyte

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intensity or absence of basophilia and the number of mitochondria in the cytoplasm have been found regularly to vary in association with the degree of maturity of the other blood cells. 3. Finally, the signs of cell death, consisting of a pyknotic nucleus and rupture of the cell membrane, when occurring in the absence of any features of immaturity and in juxtaposition to cells in the same blood smear which show no evidence of damage as a result of the technic of making the preparation, are generally accepted as representing the end of the life cycle.

Published observations describing the maturation of granulocytes have without exception subscribed to the observation, which is confirmed daily in every laboratory where blood cells are examined, that with increasing age there is a corresponding and parallel decrease in basophilic substance and content of mitochondria in the cytoplasm of these cells. In the oldest cells, corresponding approximately to the latter half of the Arneith range, both of these characteristics disappear entirely. The final phase of the life cycle represented by the "nonmotile" leukocyte of Sabin is easily demonstrated in any living preparation and shows unmistakable evidence of the spontaneous, senile cell death already noted. Visible nucleoli are never found in these cells except in those with minimal numbers of granules representing the less mature forms. Similarly, in the red blood cell series maturation of the cell with an increasing volume of synthesized hemoglobin and a corresponding decrease of basophilic and mitochondrial substance has also been adequately demonstrated and universally accepted as a phenomenon which reflects the aging process of this cell. The terminal feature in the life history of this cell is fragmentation, as demonstrated by Rous, a disintegration phenomenon equivalent in significance to the "non-motile" cell of the granulocyte series. So well established is the belief that basophilism of the red cell is a sign of youth that the presence of polychromatophilia and increased numbers of reticulocytes are used in every clinical laboratory as indexes of regeneration in this group of cells. As in the case of granular cells, nucleoli are found in the nuclei only in those types in which there is a minimum of specific substance in the cytoplasm and a maximum of mitochondria and basophilia, the type universally recognized as the immature form. Studies²⁷ have likewise indicated that the basic observations interpreted as criteria essential to the establishment of the age of granular and of red cells are true also for the maturation cycle of the monocyte. It may thus be concluded as a demonstrated fact that those cells of the circulating blood that exhibit the elaboration of specific cytoplasmic structures before functional maturity is attained also show change in the nonspecific substances (mitochondria and basophilia) that parallel immaturity. This concept is, of course, identical with that of a life cycle, as it is obviously impossible for cells to become progressively older without including this concept.

A consideration of these facts will make it apparent that any demonstration of an aging process (life cycle) for the lymphocyte must be secured by an analysis of the nonspecific characteristics of the cell. Logic also dictates that the finding of parallel decreases in mitochondria and basophilia in a series of these cells may

best be interpreted, by inference and analogy, as possessing a significance similar to that which has been proved for all the other blood cells. Previous work²⁸ has demonstrated that, in the lymphocytes, changes in mitochondria and basophilia parallel each other. Both of these characteristics range from a maximum concentration in cells in which the vesicular nuclei exhibit large nucleoli to minimal quantities in cells with nuclei devoid of visible nucleoli or to complete absence of mitochondria and basophilic substance in cells, which shows a pyknotic nucleus or a ruptured cell membrane. These facts were interpreted, therefore, as evidence of the existence of a life cycle for the lymphocyte comparable in most respects to those of the other cells of the circulating blood. To date, no other interpretation of these phenomena has been published.

Recent additional work in this laboratory has tended to strengthen this position.²⁹

The evidence given for the existence of a life cycle and separate identity, as developed in this experimental

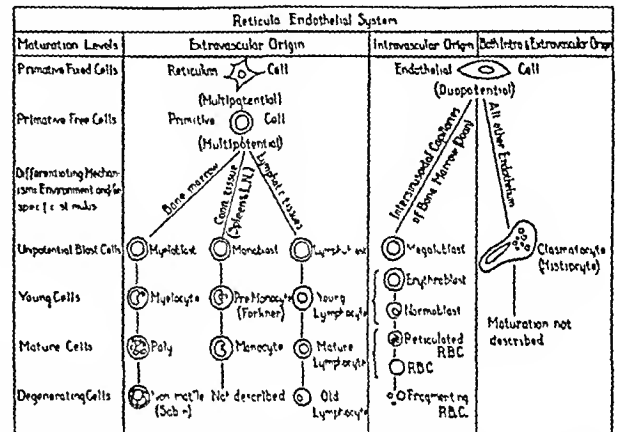


Chart 3—This chart is a graphic representation of the principal facts of blood formation as interpreted by proponents of the school of complete polyphyletism. This concept involves the separation of the reticulo-endothelial system into reticulum and endothelial cells, each with different prospective potencies. From the reticulum cell is derived a wandering cell of multipotential qualities, which in the presence of suitable stimulus and/or environment differentiates into one of the three blast cells of the white blood cell series. After a certain period of time, only one of these blast cells remains fixed, a only into more mature cells of its steps through the various phases of the red blood cell series are derive intersinusoidal capillaries of the bone marrow by the progressive steps illustrated. The endothelial cells throughout the reticulo endothelial system (including the bone marrow) are also the source of the large macrophage or clasmatocyte (histocyte) and may disquamate either into the tissues or directly into the blood. The relationship between the monocyte and the clasmatocyte is controversial and is explained in full in the text. Many adherents of the polyphyletic school of thought believe that the unitarians are confusing the primitive free cell of the former with the lymphocyte of the latter. If this is true, most of the differences between the two groups of investigators would be eliminated. The tissue lymphocyte of the unitarians would then be identical with the free primitive cell of the polyphyletists, and the blood lymphocytes would be identical save in potency. The proof for a tissue lymphocyte with multipotential qualities separate and distinct from a blood lymphocyte with highly restricted potencies would, in fact, erase most of the differences between these two groups of hematologists.

work and dependent on nonspecific characteristics, would appear to be the only avenue of approach available at this time to a solution of the problem of the separate identity for the lymphocyte.

THE ORIGIN OF THE MONOCYTE AND ITS RELATIONSHIP TO THE CLASMATOCYTE

One of the more difficult problems in the histogenesis of the white blood cells has been concerned with the origin of the monocyte. This no doubt has resulted

28. (a) Wiseman, B. K.: *J. Exper. Med.* 54: 271 (Aug.) 1931; (b) footnote 25a.

29. Experimental data substantiating this position are omitted in this publication but appear in the author's reprints.

27. Cunningham, Sabin and Doan²⁸ Doan, Sabin, Florence R.; Doan, C. A., and Forkner, C. F. *J. Exper. Med.* (suppl. no 3) p 52 (Dec.) 1930

largely from the difficulties (more apparent than real) in separating them from the lymphocytes on the one hand and from the clasmatocytes on the other. Largely devoid of specific cytoplasmic structures as observed in fixed sections, and possessing active phagocytic powers similar to the clasmatocyte, it is not surprising that the literature reflects the general confusion that relates to this cell. Originally described by Ehrlich as a "large mononuclear leukocyte" or "transitional form," the lack of definite conviction as to the separate identity of this cell that these terms suggest prevailed until Schilling³² and Naegeli³¹ established it as an independent cell strain. Its close relationship to lymphocytes in both origin and identity has been strongly maintained, largely on a basis of tissue culture work, by Maximow,³³ Weidenreich,³⁴ Downey,³⁵ Bloom,³⁶ Bergel³⁷ and others. Using similar methods of investigation, however, the Lewises,³⁸ Parker and Rhoades,³⁹ Carrel and Ebeling,⁴⁰ Hirschfeld⁴¹ and others have denied the conversion of lymphocytes to monocytes. To mention only a few of the widely divergent views, Turk⁴² thought them to be peculiar to the spleen and named them splenocytes; Möllendorff⁴³ derives them from the fibrocytes, Jolly⁴⁴ from the endothelium of the lymph node sinuses, Mallory⁴⁵ and McJunkin⁴⁶ from the vascular endothelium, Permar⁴⁰ from lung endothelium, Naegeli³¹ from the myeloblast, Cunningham, Sabin and Doan⁴⁷ and Forkner⁴⁷ from a specific stem cell, the monoblast.

Additional evidence bearing on this problem has been obtained by the analysis of the tissue reactions in two pathologic states. In the study of the chemical fractions of the tubercle bacillus isolated by Anderson⁴⁸ and biologically tested by Sabin and her group it was found that the lipid content of the bacillus possessed the specific ability to stimulate the formation of monocytes,⁴⁹ the protein and carbohydrate being entirely inert in this respect. It was possible, with the aid of the supravital technique in the areas in which acid-fast bacilli were located, to follow the maturation of typical monocytes from a primitive undifferentiated cell corresponding in all details with the monoblast of these and other investigators through to the epithelioid cell. It thus became evident that the fibroblast, endothelium and lymphocytes did not partake in the histogenesis of this cell when exposed to the specific monocyte-stimulating substances of the tubercle bacillus.

The establishment of monocytic leukemia as a specific pathologic entity by Reschad and Schilling in 1913⁵⁰ has made possible the study of a second patho-

logic state that has been especially important in contributing to the solution of the problem of the origin of the monocyte. A review of the literature shows that in almost every case of monocytic leukemia in which the pathologic changes of the tissue have been reported there has been a prominent hyperplasia of the "reticulo-endothelial system." Some of these authors have reported reticulum hyperplasia as predominating.⁵¹ In our experience with eight cases of this disease, we have been particularly fortunate in observing a case of chronic monocytic leukemia in which the tissue elements were not so densely packed as in the acute types, so as to defy the careful study of the origin of these cells. In this case it was possible to follow the steps of the maturation of this cell throughout its entire life cycle. These observations with photographs have been reported in detail elsewhere^{19a} so I will not repeat them here except to say that we can confirm the finding of reticular (not endothelial) hyperplasia described by some authors. We could also identify a specific blast cell corresponding to the monoblast of Sabin and follow its maturation into the typical blood monocytes. In this case no signs of hyperplasia of the various other elements, said to give origin to monocytes, were observed, although careful examination was made for them.

The evidence furnished by monocytic leukemia and tuberculosis, two conditions in which there is a specific stimulation of the monocyte strain of cells, has added considerable weight to the hypotheses of Sabin and her co-workers. It would therefore appear that the balance of evidence at this time strongly supports the conception that the origin of the monocyte is by means of a specific primitive stem cell, the monoblast, which in turn takes origin from the reticulum cell, as represented in chart 3.

Much less certain is the relationship of the monocyte to the true clasmatocyte or histiocyte. That there are rather marked morphologic differences in their reaction to the vital dyes neutral red and trypan blue is confirmed by every student of the subject. The monocyte is characterized primarily by a rosette of fine vacuoles about the cytocentrum, which always stain a uniform salmon pink. The clasmatocyte exhibits vacuolization of an entirely different character; the vacuoles are scattered throughout the cytoplasm without definite arrangement, vary greatly in size and display the varying pH of the intravacuolar fluid by reacting with the neutral red throughout its color range. It is also usual for the clasmatocytes to take up the trypan blue copiously, whereas the monocytes either refuse this dye completely or stain very faintly. Other minor differences pertaining to cytoplasm and nucleus tend to emphasize the morphologic dissimilarity, so that usually there is no difficulty in discriminating between these two cells in the supravital preparation.

Thus, while there can be no question concerning the separate identification of two phagocytic mononuclear cells based largely on the magnitude of their phagocytic powers, certain other facts make it more difficult to dissociate entirely their respective life cycles. Morphologically the shape, staining reactions and structure of the nucleus of the two cells are, if not identical, at least indistinguishable. Each has the same type of motility, subserves the same function and, in general, the two are

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44. Mallory (footnote 9); *J. Exper. Med.* **3**: 611, 1898.

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49. Sabin, Doan and Forkner.²⁷ Sabin and Doan.^{29a}

50. Reschad, H., and Schilling, V.: *München. med. Wchnschr.* **60**: 1981, 1984, 1913.

51. Bingel, A.: *Deutsche med. Wchnschr.* **42**: 1503 (Dec. 7) 1916. Hannema, L. S.: *Nederl. Tijdschr. v. Geneesk.* **1**: 2281 (May 3) 1928. Hittmair, A.: *Folia haemat.* **37**: 321 (Dec.) 1928. Wyshegorodzena, W. D., *ibid.* **38**: 355, 1929. Schwirtschawskaja, B.: *Virchows Arch. f. path. Anat.* **267**: 456, 1928.

closely associated in most pathologic states in which the stimulus to phagocytosis is dominant. For example, in experimental studies of tuberculosis it has been shown that not only may both monocytes and clasmatocytes form epithelioid cells⁵² but giant epithelioid cells may be composed in part of monocytes and in part of clasmatocytes. Furthermore, the presence in the blood stream of both monocytes and clasmatocytes in large numbers as a feature of monocytic leukemia has been reported.⁵³ Finally it may be said that the entire evidence of tissue culture,⁵⁴ the work of the Clarks⁵⁵ using the web of the frog, the Sandison⁵⁶ window in the ear of the rabbit, and various studies of inflammatory exudates,⁵⁷ tends to make probable the concept that the clasmatocyte, at least in some instances, may be derived from the monocyte by hypertrophy and intense development of the phagocytic apparatus preexisting in a modified form in that cell.

This of course does not deny the proved fact, admitted by nearly all authors, that at least in the spleen, lymph nodes, bone marrow, omentum and liver clasmatocytes arise chiefly by mitotic cleavage of the endothelial cells of the reticulo-endothelial system located in those tissues. As recently pointed out by Doan,³⁰ it probably is best to regard the origin of the highly phagocytic clasmatocyte as threefold: from the endothelium, from monocytes and from preexisting clasmatocytes.

COMMENT

It is apparent from the foregoing survey that, while radically different positions may be and often are taken by certain extremists who have studied and contributed to the solution of the problem of the origin of the blood cells, the more important concepts involved in this biologic enigma are identical. All, or nearly all, students of the problem derive the white blood cells from the same mesenchymal structure. All, or nearly all, identify a primitive cell that becomes detached from this mother structure and serves as a blast cell for the subsequent derivation of the mature cells that are observed in the circulating blood. Certain groups (the so-called polyphyletic adherents) believe that there is a stage between that of the primitive free cell with multipotential characteristics and the fully differentiated blood cells in which certain immature cells with restricted potencies may be identified and be designated as specific blast cells for specific strains or lineages. Other groups (the so-called monophyletic adherents) deny the evidence for the existence of this intermediate stage of multiple blast cells, defending and supporting the position that the transition from immature to relatively more mature stages may be immediate without interposition of more involved phascs. The first group reserves the term "lymphocyte" for the indifferent round cell of the blood; the second group regards all indifferent round cells of mesenchymal origin, whether in blood or in tissues, as "lymphocytes," thereby including under this term the "lymphocytes" and all the blast cells of the polyphyletic proponents.

It is quite obvious that the various theories differ. if one considers only the essential major tenets of the

various schools of thought. only in determining how far back in lineage it is necessary to go before a common cell ancestor can be identified. Very few workers in this field, however they may differ in certain details, doubt the evidence for the existence of a single immature cell that has the inherent potencies for the production of any of the several white blood cells. Nearly all workers of both schools of thought believe that the direction of differentiation is determined or mediated by the influences of local environment and/or by a specific stimulus of unknown type.

The many and conflicting detailed explanations that have been advanced in an attempt to explain more fully the mass of experimental and objective observations pertaining to these cells in terms of life histories represent the transition phase of uncertainty between the well established facts of the present and the ultimate certainty of the future. The solution, in all its details, to the problem of the origin of the white blood cells which will be acceptable to all can be a realization only of the more distant future. It is probable that the development of present technical methods of investigation or the acquisition of new ones must precede the final disposition of the problem.

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ABSTRACT OF DISCUSSION

DR. CHARLES A. DOAN, Columbus, Ohio: The results that have been presented today testify to the ingenuity and logical sequence of Dr. Wiseman's studies and to their potential clinical significance. With the establishment of criteria on which one may base the general conclusion that the lymphocyte is a separate and distinct entity with an independent life cycle has also come the means of appraising the efficiency of production of these elements. In our laboratory we are using every day the so-called Wiseman qualitative differential of the lymphocytes, because it gives a far more accurate interpretation of the activity of the lymphopoietic system than the quantitative data alone. Even as Arnetz and Schilling established the differential qualitative changes in the granulocytes, which are now indispensable to the intelligent understanding of the response to infection, so qualitative changes in the lymphocytes are proving to be far more important than any quantitative variations alone. We have already applied the principles outlined by Dr. Wiseman to a study of both experimental and clinical tuberculous disease. The various adenopathies and the leukemias involving the lymphatic system are being approached with such qualitative studies of the peripheral lymphatic elements with complete verification of the original hypothesis. Warburg studies of cellular respiration are now being correlated with definite age range variations in the lymphocytes, which bid fair to shed further light on their functional specificity and capacities. I believe that this recognition of the lymphocyte as a physiologic entity, established on a morphologic basis, has been a necessary prerequisite to the further study and solution of some of the many clinical problems involving these cells. Any evaluation of the blood picture in disease is now incomplete without the inclusion of the data on the qualitative appraisal of the lymphocyte.

Psychoses in Pernicious Anemia.—The actual incidence of psychotic changes in pernicious anemia is widely estimated by different observers, probably on account of the individual differences of opinion as to what constitutes a psychosis. Thus Cannon and Hayes in a recent textbook of psychiatry state that 5 per cent of patients with pernicious anemia develop distinct mental changes, while L  ufer found only one case of insanity in 190 cases of this anemia, and he quotes various authorities who have found the incidence even less than this. The differences in individual conceptions of psychotic changes become plain when the symptoms described as occurring are reviewed. —Parfitt, D. N.: Psychoses Associated with Pernicious Anemia, *J. Neurol. & Psychopath.* 15:12 (July) 1934.

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THE EFFECT OF INITIAL TUBERCULOUS INFECTION ON SUBSEQUENT TUBERCULOUS LESIONS

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AND

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MINNEAPOLIS

The effects of tubercle bacilli on experimental animals under various conditions have been reported on, but the lifetime of the animals used is so short compared with that of man and the resistance and susceptibility of the different species vary so much that it is impossible to determine in them all that is needed to be known about tuberculosis in the human body. It has been believed for some time that tuberculous lesions that appear in the bodies of children are of two types, namely, the first infection and the reinfection types, but very little work has been done to determine the effect of one on the other. In 1921 we undertook a longitudinal study of tuberculosis in the bodies of children. Since that time we have examined and studied 12,095 children and have observed each type of tuberculosis in its various stages of development, as well as the relationship of one type to the other.

FIRST INFECTION TYPE OF TUBERCULOSIS

Tuberculous lesions which develop in tissues that are not sensitive to tuberculo-protein are designated as primary lesions, first infection type of lesions, or, if in the lung, childhood type of tuberculosis. These lesions usually begin microscopically, and the first indication of their presence in the living body is the positive tuberculin reaction. Their location is never detected during life in the majority of cases. In a minority of patients, however, in whom the lesion is near the surface of the body, it may be located by the usual methods of examination. When in a part of the body which lends itself well to roentgen examination, such as the lung, it may become sufficiently large to cast a shadow that is visualized on the x-ray film. If it was observed early on roentgen examination, we have seen it pass through a stage known as the inflammatory or pneumonic stage, which persists several months to a year or more before resolution is complete. At some later time, varying from months to years, lime deposits may make their appearance in the region of the original primary lesion. One of the characteristics of the first infection type of tuberculosis is that the regional lymph nodes nearly always become involved and their disease passes through the stages already mentioned almost simultaneously with the first infection focus itself.

The diagnosis of the first infection type of tuberculosis is made primarily by the tuberculin test. The roentgenogram plays a minor rôle, while symptoms and physical signs are of little value.

Although we have been cognizant of the fact that the tuberculin test is not infallible and that there are on record a number of cases of frank tuberculosis, even

presenting tubercle bacilli in the sputum, which react negatively to the test, we feel that these are very exceptional cases and that, generally speaking, when the test is negative no tuberculosis exists. We are now using the new tuberculin known as purified protein derivative, prepared on Dorset's synthetic medium and purified by the method of Long and Seibert. This promises to be even more specific than old tuberculin. Thus, we look on the intracutaneous tuberculin test as a very fine screen and recommend it strongly as the initial phase of every examination for tuberculosis. It appears that a number of physicians have confused it with the subcutaneous test and regard the former as dangerous to use among patients who may have clinical tuberculosis. We have never seen any flare up of either a first infection or a reinfection type of tuberculosis that could be attributed to the intracutaneous test. Therefore, we consider it entirely without harm when properly administered. Dr. Edith Boyd of the department of anatomy kindly consented to make the statistical analyses of the incidence of reactions to the tuberculin tests with the technical assistance in computations of two Civil Works Administration workers.

Of the first 1,000 children examined, 41.6 per cent reacted positively to the test. As the epidermal (Pirquet) test was used at that time and only one test was given, we are of the opinion that our incidence of positive reactors was too low. This statement is based on subsequent comparisons between the epidermal and the intradermal tests. However, the incidence decreased until in 1933 only 23.6 per cent reacted positively. Thus, between 1921 and 1933 there has been a decrease of almost one half of the positive reactors (chart 1).

Apparently, there has been considerable decrease in the incidence of positive reactors among children in various parts of the country, as shown by Slater, Tice and Hruby, Chadwick, Peck and others. If the tuberculosis activities continue, it is obvious that the time is not far distant when the child who reacts positively to the tuberculin test will be a rarity. Already in some parts of the country instead of saying, as was formerly said, that approximately 95 per cent of girls and boys have been infected by the time they reach the teen ages, it is now possible to say that approximately 90 per cent of such girls and boys have not been contaminated by the time they reach this age period.

The next step in the diagnosis of tuberculosis in children is the roentgenogram of the chest. During the early period of our work at the Lymanhurst School we did not make roentgenograms as a routine, but as time passed we recommended stereoscopic films of the chest of every child. This included both negative and positive tuberculin reactors. At the close of ten years of work we had found so little evidence of tuberculosis in the chests of children who reacted negatively to the test that we decided to make films of only the positive reactors, being thoroughly cognizant of the fact that there would be an occasional failure. Moreover, we came to the conclusion that a single film of the chest suffices save for the exceptional case.

The value of making roentgenograms as a routine, regardless of the tuberculin reaction, is that other chest conditions may be detected. In chart 2 the incidence of abnormalities found in both the negative and the positive reactors is seen. This includes not only tuberculous lesions of first and reinfection types but also pleurisy, bronchiectasis, pneumonia, increased bronchovascular markings, cardiac changes, and the like.

Prepared with the aid of a grant from the Medical Research Fund of the University of Minnesota.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934. From the Lymanhurst School for Tuberculous Children, Minneapolis and the Departments of Preventive Medicine and Internal Medicine, University of Minnesota.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

The roentgenogram of the chest in the diagnosis of the first infection type of tuberculosis is of far less value than was formerly believed. At one time there was a tendency to look on the child who had negative roentgen signs as one possessing no lesion of significance, but observation and analysis of cases soon led us to

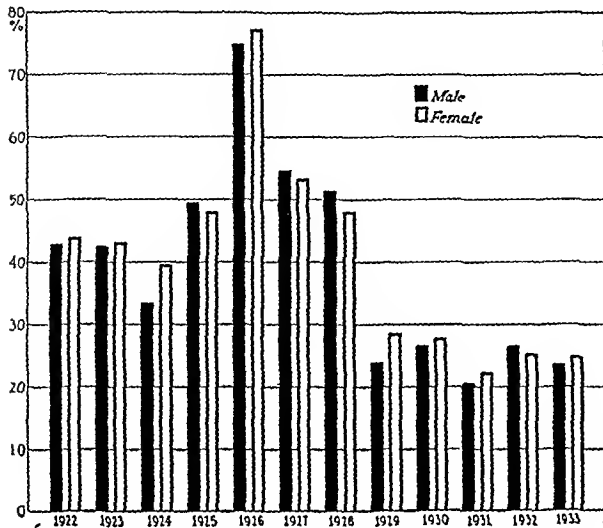


Chart 1.—Annual incidence of positive tuberculin tests in 10,775 cases.

conclude that the roentgenogram is a very crude method of inspecting the body for first infection type of foci. Therefore we now rate the child who reacts positively to the tuberculin test and has negative roentgen signs as one with a definite focus of tuberculosis somewhere in the body. We no longer make exposures in lateral and oblique diameters in order to visualize deposits of calcium in the posterior mediastinum, nor do we make exposures through the cervical and abdominal regions to discover such deposits. The positive tuberculin test tells us that at least one first infection focus is present. The postmortem studies of Miller have shown that, when the first infection focus is located in the chest, the roentgenogram fails to reveal its location in 75 per cent of the cases. Other workers have found that it fails in even a higher percentage.

Observations on young adults who first become infected with tubercle bacilli have shown that they also develop a very benign first infection type of disease, just as is seen in the infant and child. This is one of the most encouraging facts that have been added to the knowledge of tuberculosis in recent times, since it completely breaks down the opinion so long held that the young adult who has not previously received a so-called protective dose of tubercle bacilli develops a rapidly progressive type of disease with the first infection. Thus, the program of prevention has been sound. The longer one can postpone the first infection with tubercle bacilli, the better. The ultimate goal is so to reduce the foci of infection that all persons will be able to pass through the span of life without contamination with tubercle bacilli. This the veterinarian has accomplished for cattle.

REINFECTION TYPE OF TUBERCULOSIS

The reinfection type of tuberculosis develops on tissue that is sensitive to tuberculin. In nature, so far as is known, such sensitiveness is produced in the

human tissues only by a first infection type of tuberculosis.

Reinfection foci have quite a different effect on the tissues than do those of first infection. While it is true that many of them are brought under control, it is also true that they tend to be destructive. They may be divided into two groups, acute and chronic. The best examples of acute reinfection types of tuberculosis are miliary disease and diffuse meningitis. Both develop on sensitive tissues and are highly destructive. Meningitis usually results from a focus in or near the central nervous system, which discharges bacilli directly or indirectly into the subarachnoid space. Miliary tuberculosis also results from a previously existing focus, often a tuberculous lymph node, which through rupture or otherwise discharges into a blood vessel or a large lymphatic duct, thus feeding the blood stream with tubercle bacilli. Without the previously existing focus that renders the tissues allergic and then feeds the blood stream with bacilli, miliary tuberculosis does not develop.

Good examples of the chronic form of reinfection type of tuberculosis are disease of the bones, joints and lungs. In the lungs the two main characteristics are fibrosis and cavitation. In the diagnosis of the reinfection type of pulmonary tuberculosis the tuberculin test is of little value, since it becomes positive with the development of the first infection type. However, among persons who have never previously been examined, the test is of great value. One must constantly bear in mind that it gives no information regarding the presence of a reinfection type of lesion. Symptoms and physical signs are usually late manifestations of the reinfection type of pulmonary tuberculosis. Here the roentgenogram is the most valuable diagnostic agent.

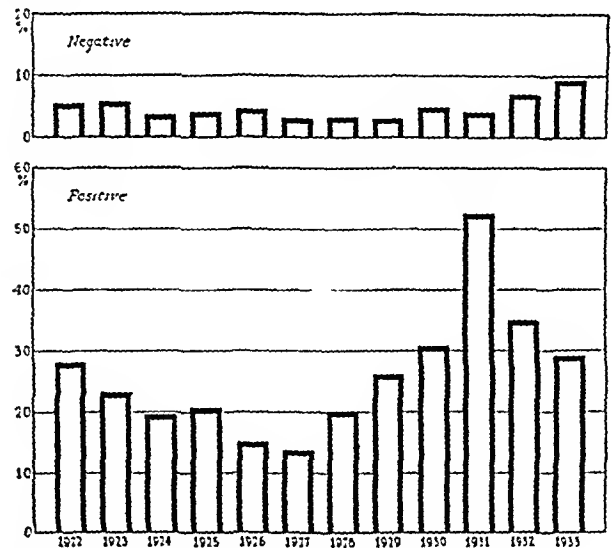


Chart 2.—Incidence of positive roentgenograms according to tuberculin tests.

Although this type of tuberculosis may be present in the lung a long time before it is sufficiently large to cast a shadow visualized on the x-ray film, it will be detected by the film in most cases earlier than by any other method of examination.

The question often arises as to which groups of children especially need roentgen examinations of the chest.

For several years at the Lymanhurst School we made stereoscopic films of all the negative as well as the positive tuberculin reactors but found that the test rarely failed when unmistakable tuberculous lesions were revealed by other phases of the examination. In fact, among 4,148 negative reactors there were only two who had definite evidence of the reinfection type of pulmonary tuberculosis. We concluded that, since only one case of frank reinfection type of pulmonary tuberculosis was missed by the tuberculin test in 2,074 examinations, we were hardly justified in using the taxpayers' money to make roentgenograms of the chests of negative reactors.

Under the age of 10 years, the chronic reinfection type of pulmonary tuberculosis is not a common disease. In fact, among the 12,095 children examined at the Lymanhurst School the reinfection type of pulmonary tuberculosis was found in sixty-two cases at the first examination. In this group, one was 6 years old, two were 7 years old, three were 9 years old, and the remainder were older. Thus, a patient with the reinfection type of pulmonary tuberculosis under the age of 10 years was found only once in each 2,016 examinations. Since roentgenograms are considered of value mainly in the detection of the reinfection type of disease in the lungs and since it was found so rarely in our group of children under 10 years of age, we have decided not to make roentgenograms of the chests even of the children who react positively but have not yet reached the tenth year unless there is some special indication. The cost is too great to justify the small finding. This also applies to private practice, among children of parents who cannot afford frequent roentgenograms. This finding seems to us to be of great practical significance, since a vast number of roentgenograms have been made and larger numbers are being recommended for children in this age period when pulmonary tuberculosis of the reinfection type is so rare. We find, however, that after the age of 10 years, the incidence of the reinfection type of tuberculosis in the lungs increases and is usually said to reach its peak at about the age of 25 years, after which it slowly decreases, but it still remains the first cause of death in this country until the age of 40 or 45 years. Therefore, in instructing parents of our clientele and in directing case-finding surveys and the like, we are able to call attention to the period of greatest danger during which roentgenograms should be made periodically. From the group we have observed, this period begins about the age of 10 or 11 years. In fact, in the remaining fifty-six children who were found to have the reinfection type of pulmonary tuberculosis at the first examination, the average age was 14.2 years.

Seventy-four children had nonpulmonary reinfection types of tuberculosis when they first came to us for examination.

At the first examination of 12,095 children the reinfection forms of tuberculosis were present in 136.

RELATIONSHIP BETWEEN THE FIRST INFECTION AND REINFECTION TYPES OF TUBERCULOSIS

The effect of the first infection type on the reinfection type of tuberculosis has in recent years been studied by five main methods.

The fourth method consists of observing groups of children or adults who are negative to the tuberculin test through periods of exposure, after which the tuberculin test becomes positive, then, over a period of years to determine the types of lesions which appear. This

has been carefully done in sufficiently large numbers of children, as well as students of nursing and medicine, that in the same bodies can be seen the complete evolution of tuberculosis from the time the tuberculin test was negative, through the exposure, the first appearance of the positive reaction, the later demonstrable first infection type of lesion on the x-ray film, and still later the reinfection type in the minimal, moderately advanced and far advanced stages.

Incidence of Reactions to Tuberculin Tests and of Clinical Tuberculosis on First Examination and on Subsequent Examinations *

First 4,000 Children Examined (1922-1926)			
1,816 untraced 1930-1934	819 positive	.....	45.1 ± 1.17
	927 negative	.....	51.0 ± 1.17
	70 no test	.....	2.9 ± 1.43
2,176 traced 1930-1934	1,017 positive 46.7 ± 1.07	35 had reinfection type on first examination.....	3.4 ± 0.57
		43 developed reinfection type subsequently.....	4.2 ± 0.63
		31 died, nontuberculous cause.....	3.1 ± 0.54
2,084 traced 1930-1934	1,058 negative 48.6 ± 1.07	5 had reinfection type on first examination.....	0.5 ± 0.20
		8 developed reinfection type subsequently.....	0.8 ± 0.26
		32 died, nontuberculous cause.....	3.0 ± 0.53
34 not tested 1.1 ± 0.20	69	6 had reinfection type on first examination.....	6.0 ± 2.40
		2 developed reinfection type subsequently.....	2.0 ± 1.41
		1 died, nontuberculous cause.....	1.0 ± 1.60
Second 4,000 Children Examined (1926-1930)			
1,014 untraced 1930-1934	511 positive	.....	50.4 ± 1.57
	484 negative	.....	47.7 ± 1.57
	19 no test	.....	1.9 ± 0.42
2,084 traced 1930-1934	1,169 positive 59.2 ± 0.89	40 had reinfection type on first examination.....	3.4 ± 0.53
		16 developed reinfection type subsequently.....	1.4 ± 0.35
		9 died, nontuberculous cause.....	0.8 ± 0.28
34 not tested 1.1 ± 0.20	1,781 negative 59.7 ± 0.90	4 had reinfection type on first examination.....	0.2 ± 0.10
		4 developed reinfection type subsequently.....	0.2 ± 0.10
		12 died, nontuberculous cause.....	0.7 ± 0.20
None untraced 1930-1934	665 positive 23.6 ± 0.66	1 had reinfection type on first examination.....	0.3 ± 3.59
		0 developed reinfection type subsequently.....	0.0 ± 4.00
		0 died, nontuberculous cause.....	0.0 ± 4.00
Third 4,000 Children Examined (1930-1934)			
4,065 traced 1930-1934	3,107 negative 78.5 ± 0.64	30 had reinfection type on first examination.....	5.1 ± 0.56
		3 developed reinfection type subsequently.....	0.3 ± 0.17
		1 died, nontuberculous cause.....	0.1 ± 0.10
16 not tested 0.4 ± 0.10	665	1 had reinfection type on first examination.....	0.03 ± 0.00
		1 developed reinfection type subsequently.....	0.03 ± 0.00
		3 died, nontuberculous cause.....	0.10 ± 0.65
None untraced 1930-1934	16	1 had reinfection type on first examination.....	6.3 ± 6.05
		0 developed reinfection type subsequently.....	0.0 ± 0.00
		0 died, nontuberculous cause.....	0.0 ± 0.00

* Percentage incidence, with its standard error indicated thus: 0.0 ± 0.00.

The fifth method consists of studying groups of children, both positive and negative reactors, over a period of years to determine which group provides more clinical cases of tuberculosis. This we have done at the Lymanhurst School for Tuberculous Children since 1921. Recently we have attempted to trace the children who have been examined in this institution. The accompanying table shows that, of 3,992 examined from 1922 to 1926, 1,816 have not yet been traced, of whom 819

were positive, 927 were negative and 70 were not tested when first examined. Of the 2,176 who have been traced since 1930, 1,017 had positive reactions, 1,058 negative, and ninety-nine were not tested on first examination. Of the 1,017 who had positive reactions, thirty-five already had the reinfection type of tuberculosis when first examined and forty-three others have developed this type of disease subsequently. Of the 1,058 negative reactors on first examination, five had the reinfection type of disease at that time and eight have developed it subsequently. Of the five who were negative to tuberculin but showed evidence of the reinfection type of disease on first examination, two had tuberculosis of the bones and joints, two had pulmonary tuberculosis, and one had both pulmonary and bone and joint disease. Of the eight who were negative when first examined but subsequently developed tuberculosis, six had pulmonary disease, one had pleurisy with effusion, and another had tuberculosis of the bone. Between the time we first saw them and when they were next seen with clinical disease, there was an average interval of six and one-half years. One of these children who was negative to the test in 1922 showed a positive reaction in 1926. At that time there was no evidence of clinical disease. However, in 1927 this child had tuberculosis of the sternum. Another child was negative in 1925; in 1926 the test had become positive but there was no evidence of clinical disease. In 1930 this child returned with pulmonary tuberculosis. Thus, an average period of six and one-half years existed between the time of our original examination and the development of pulmonary tuberculosis, which is ample time for children to become exposed, pass through the first infection type of disease and develop the reinfection type. Therefore, from the group of 1,017 who were originally positive to the tuberculin test, 4.22 per cent have developed clinical tuberculosis subsequent to our first examination, while 3.44 per cent had clinical disease on the first examination, making a total of 7.66 per cent who have died or already have clinical disease. Whereas, from the group of 1,058 who were originally negative reactors, only 0.75 per cent have developed clinical tuberculosis, while 0.47 per cent had clinical disease on the first examination, making a total of 1.22 per cent. Thus, the chances of positive and negative reactors having clinical disease or developing it in the next few years are seven to one in favor of the positive group.

If one divides the first group in the table into fourths, some rather interesting figures come to light. In the first fourth 3.73 per cent of the patients had the reinfection type of disease on first examination, while 5.8 per cent have developed it subsequently. Thus, 9.53 per cent of this group are already ill or have died from tuberculosis; whereas, of those traced who reacted negatively on first examination none had the reinfection type when first examined and only 1.08 per cent have subsequently developed it. The average age of the first fourth is now 20.8 years. Here the chances of positive and negative reactors having clinical tuberculosis or developing it by the time they have reached the age of 21 years is nine to one in favor of the positive reactors. Of the last fourth in the group included in the table 2.32 per cent had the reinfection type on first examination, while 3.19 per cent developed it subsequently. Among those traced who originally reacted negatively to the test, 0.66 per cent had the reinfection type of disease at the first examination and none has since developed

it. The present average age of the last quarter of the first group included in the table is 15.86 years.

Of those in the table who developed the reinfection type of disease subsequent to the first examination, forty had pulmonary tuberculosis. The average age at which this group of forty was diagnosed was 18.15 years. This finding would seem to be very significant when one considers that the mortality from tuberculosis does not reach its peak until about 25 years and continues to be the leading cause of death until 40 or 45 years. Therefore, there is ample time for considerable more destruction among this group of girls and boys.

The table shows that, of 3,998 children examined from 1926 to 1930, 1,014 have not yet been traced, of whom 511 were positive to tuberculin, 484 negative, and nineteen were not tested on the original examination. Of the 2,984 who have been traced, 1,169 had positive reactions, 1,781 had negative reactions, and thirty-four were not tested at the first examination. Of the 1,169 who had positive reactions, forty already had the reinfection type of tuberculosis when first examined and sixteen have developed it subsequently. Of the 1,781 negative reactors at the first examination, four had the reinfection type of disease when first examined and four have subsequently developed it. Thus, among those who had positive tuberculin reactions at the first examination, 3.42 per cent already had the reinfection type and 1.36 per cent developed it subsequently, making a total of 4.78 per cent who are ill or have died of tuberculosis, whereas among 1,781 who had negative tuberculin reactions at the first examination, 0.22 per cent had the reinfection type when first examined and 0.22 per cent later developed it, making a total of 0.44 per cent with clinical forms of tuberculosis. Here again one must take into consideration the average age of these children at the present time. In the first quarter of the second group in the table the average age is now 15.74 years; the second quarter, 14.19 years; the third quarter, 13.25 years, and the fourth quarter, 12.36 years. Thus, this group is well below the age when the reinfection type of tuberculosis becomes most destructive.

The table also shows that, of 4,088 children examined from 1930 to July 1934, 965 reacted positively, 3,107 reacted negatively, and sixteen were not tested. Of the 965 positive reactors, thirty had the reinfection type of disease at the first examination and three later developed it, whereas, of the 3,107 negative reactors, one had the reinfection type of disease at the first examination and one developed it subsequently. The children in the first, second, third and fourth quarters of this group are now respectively 11.93 years, 10.89 years, 9.49 years and 8.5 years of age. Thus, this group is far below the age when the reinfection type of tuberculosis becomes very destructive in the human body.

Dr. Edith Boyd has made the following explanation of the statistical constants and interpretation of the incidence of reactions to the tuberculin tests and the presence of clinical tuberculosis in the three groups included in the table:

When the difference between two percentage incidences is three times its standard error (standard error of first per cent \pm standard error of second per cent $2\frac{1}{2}$), such a difference would occur by chance for similar sized samples drawn from the same population only six in a thousand times. Hence, in conservative statistical practice, a difference which is three or more times its standard error is assumed to be significant; i. e., the samples probably came from different populations, and

one which is less than three is not significant; i. e., the samples probably came from the same population. In less conservative practice, the ratio of 2, which indicates five chances in a hundred, is taken as the dividing line.

Using the more conservative criterion, the percentage incidences in the table may be interpreted as follows:

In the first group of 4,000 children examined, the proportion of positive and negative tuberculin tests and no tests made are not significantly different in the untraced and traced groups; therefore, the traced group is probably a reasonable sample of the children at first examination. As would be expected, the 3.4 per cent incidence of clinical tuberculosis on first examination in the positive tuberculin group was significantly higher than the 0.5 per cent incidence in the negative tuberculin group. The latter probably represents faulty technic in administering the tuberculin or errors in reading or recording the test. In the group of children with positive tuberculin tests but without clinical tuberculosis on reexamination, eight years later 4.2 per cent had developed clinical tuberculosis, while in the comparable group with negative tuberculin tests only 1.0 per cent developed clinical tuberculosis.

In the second group of 4,000 children examined, the traced group contained an unduly low proportion of positive tests as compared with the untraced group, indicating some unaccounted for selective factor. Nevertheless, the proportion of clinically active cases in the groups with positive and negative tests at first examination remains the same as in the first group examined. The proportion of clinical cases occurring on reexamination among the group with positive tuberculin tests on first examination is significantly lower than in the first group, probably due to the short time interval between examinations.

In the third group of 4,000 children examined, when all children were traced about two years after the first examination, the percentage of clinically active cases in the positive cases on first examination remains the same as in the first and second groups while the incidence on reexamination is significantly lower than in the second group. In this total group the incidence of positive tests has been significantly reduced, so the number of cases of clinical tuberculosis in children at first examination has been reduced, even though the proportion in the positive tests remains the same.

In summary, during the past twelve or thirteen years the incidence of positive tuberculin tests in school children averaging 8 years of age has significantly decreased from 41.6 to 23.6 per cent. The proportion of the children with positive tests who had clinical disease on first examination has remained approximately 3.4 per cent. In the children with positive tuberculin tests on first examination, clinical tuberculosis had developed in 4.0 per cent of the first group reexamined about eight years later, in 1.4 per cent of the second group reexamined about six years later, and in only 0.3 per cent of the third group reexamined about two years later. In the children with negative tuberculin tests, less than 0.8 per cent developed clinical tuberculosis at a subsequent time. The incidence of clinical tuberculosis occurring in a group of children about eight years after their tuberculin tests were known to be positive is about five times as great as in a group known to have negative tuberculin tests.

Thus, from five methods of study used in recent years, we have come to look on the first infection with tubercle bacilli, as manifested by the positive tuberculin reaction, as a double health liability. First, because it has been shown that once tubercle bacilli are taken into the body and become encapsulated, they remain alive and virulent over long periods of time. Evidence has led to the suggestion that nature may defeat her purpose in that she first encapsulates with fibrous tissue and sometimes with calcium and even true bone but later resorbs this material and thus sets free the formerly imprisoned bacilli. Thus, apparently little or no control is possible over the foci of bacilli once they are allowed to develop in the human body. If one considers this fact alone and completely overlooks the possibilities of exogenous reinfection, there is enough evidence to sup-

port whole-heartedly the present campaign which aims at the prevention of the first infection of the human body with tubercle bacilli.

The second health liability is the allergy produced by the development of the first infection type of disease, which is manifested by the positive tuberculin reaction. Krause, Rich and others have called attention to the fact that allergy is a dangerous element from the standpoint of subsequent tuberculosis development. Rich says:

The damage done by allergy in this disease is very serious, indeed. A great part of the tissue destruction in tuberculosis is due to hypersensitivity to the protein of the tubercle bacillus. . . . Allergy converts the comparatively harmless protein of the tubercle bacillus into a virulent poison.

Wingfield says:

For a great number of our successfully treated cases one of the important factors in their prognosis, then, is their degree of sensitiveness. If this is high they are in greater danger than if it is low.

Chadwick says:

We know that the adult type of this disease can develop only in sensitized tissue made so by a preceding infection, and that the lesions caused by that early infection are often the source of the bacilli that produce the pulmonary tuberculosis of later years.

Thus, the tuberculosis control program which the medical profession has practiced in close cooperation with the National Tuberculosis Association and its component organizations has been sound, since its chief aim has been to protect the infant, the child and the adult against contamination with tubercle bacilli. We formerly thought it was good for a child to receive what we called a small dose of bacilli. At that time, we eased our consciences by saying that we were preventing massive doses but still allowing the child to receive small so-called protective doses. Obviously, any such teaching today would be looked on as absurd, since there is no measure or control of dosage and since even a small dose of bacilli, which leads to the first infection type of disease, produces a double health liability.

SUMMARY

1. The incidence of positive tuberculin reactors among children examined at Lymanhurst decreased 18 per cent from 1921 to 1934.

2. The first infection type of tuberculosis begins to develop on tissue that is not sensitive to tuberculo-protein. The immediate reaction is not specific but may be likened to that of a foreign body of the particulate type. The first infection type of tuberculosis observed from its early appearance over many years has not been seen to cause significant destruction. It is benign and is brought well under control in the majority of cases by the protective mechanism of the body. This is true not only in the bodies of children but also in young adults when they first become infected with tubercle bacilli.

3. The tuberculin test is the only fine screen available in the diagnosis of the first infection type of tuberculosis in children. It detects the presence of the disease long before other methods of examination are of any avail and in the majority of cases remains the sole diagnostic agent during life.

4. The roentgenogram fails to locate the lesion of first infection type in 75 per cent or more of the children who react positively to the tuberculin test. In the 25

per cent or less located by roentgen examination the lesions usually are not of clinical significance. Therefore the film gives no information of value beyond that provided by the tuberculin test. History of symptoms and physical examination are of little avail.

5. The reinfection type of tuberculosis develops on sensitized tissue, which meets it with a specific reaction. Good examples of the acute forms of the reinfection type of disease are tuberculous meningitis and miliary tuberculosis. Chronic forms are frequently seen in the lung parenchyma, bones and joints. Although chronic forms of reinfection type of tuberculosis may come under control, they have a strong tendency to progress and cause much destruction of tissues and result in illness and death.

6. The tuberculin test gives no aid in the diagnosis of the reinfection type of tuberculosis. However, this type of disease develops only among positive tuberculin reactors, made so by previous first infection type of disease.

7. The roentgenogram is the most valuable aid in the detection of the reinfection type of pulmonary tuberculosis. Usually it reveals the lesion months and even years before symptoms or abnormal physical signs are present and before tubercle bacilli can be detected by laboratory methods.

8. Children and young adults with negative tuberculin reactions so rarely show other evidence of tuberculosis as to make roentgenograms of all negative reactors unpractical as far as the finding of tuberculosis is concerned.

9. The chronic reinfection type of pulmonary tuberculosis is not commonly seen under the age of 10 years. In the present group it occurred only once in each 2,016 examinations. Therefore, to make roentgenograms of the chests of children under the age of 10 years is not practical when funds are limited, from either public sources or private families. After the age of 10 or 11 years, roentgenograms should be made periodically of the chests of all positive reactors.

10. The effect of the first infection type of tuberculosis on the reinfection type has in recent years been studied by five main methods:

(a) By animal experiments, which have shown that the animal tissues react to the first infection with tubercle bacilli as to a foreign body of the particulate type. After the tissues have been sensitized, however, reinfections are met by a specific reaction which often results in the destructive type of lesion.

(b) By postmortem examinations. When carefully performed, postmortem examinations have shown that a first infection type of lesion can nearly always be demonstrated in the bodies of persons who have had the reinfection destructive type of disease. This is true of acute forms of the reinfection type, such as meningitis and miliary tuberculosis, as well as chronic forms, such as pulmonary tuberculosis.

(c) By roentgen studies. Here is sought in frank cases of reinfection type of pulmonary tuberculosis roentgen evidence of the first infection type of disease. In from 50 to 75 per cent of cases the coexistence of the two types in the same chest is seen. This is very significant when one considers that the roentgenogram is a crude method of detecting the first infection type of lesion in the chest.

(d) By observing negative reactors after they become positive. This method has made it possible for one to observe the evolution of tuberculosis in the bodies of

human beings from the time when there is no evidence except the positive tuberculin test until the individual has far advanced pulmonary disease. In these cases the first infection type of disease always precedes the destructive clinical type.

(e) By observing children, both positive and negative reactors, over years to determine which group affords more cases of clinical tuberculosis. Of all the children traced who were previously examined at the Lymanhurst School, we have found that five times as many who had positive tuberculin reactions at the first examination have subsequently fallen ill as those who had negative reactions at the first examination. Among a group of children first examined in 1921 and 1922, of those who were recently traced, it was found that 9.53 per cent of the original positive reactors either had at the time of the first examination or have subsequently developed clinical tuberculosis, while among the negative reactors only 1.08 per cent have clinical disease. Therefore, in this group the chances of positive tuberculin reactors having or developing clinical tuberculosis in the next ten or twelve years is approximately nine times as great as among the negative reactors.

11. The first infection type of tuberculosis carries a double health liability, first, because in the foci of this type of tuberculosis tubercle bacilli remain alive and virulent over long periods of time and often for the lifetime of the individual. Whenever they are set free on allergic tissue they are capable of producing reinfection destructive type of disease, either acute or chronic, depending on the location and conditions. Second, because allergy results, which is a very dangerous factor, since it is responsible for a great part of the tissue destruction in tuberculosis and since it "converts the comparatively harmless protein of the tubercle bacillus into a virulent poison."

12. The program of tuberculosis control in this country is sound, because it aims to prevent the first infection type of tuberculosis from developing in the bodies of children and adults. To protect against this condition with its double health liability is a much sounder policy than any method aimed at immunization, which at best is questionable and which allows subsequent contamination.

ABSTRACT OF DISCUSSION

DR. HORTON R. CASPARIS, Nashville, Tenn.: There is no doubt that there must be a first infection before tuberculosis can develop. Ideally, the problem is to prevent the first infection; but from the practical standpoint Dr. Wallgren produces tuberculous infections in an attempt to immunize or carry a relative degree of immunity against subsequent infection. Practically all experimental data suggest that an infection that does not produce disease immediately carries with it a relative degree of immunity. Dr. Myers speaks of the double health liability in all of these infected individuals. There is no doubt about the first health liability, that is, that the presence of infection is potential tuberculosis, but as far as the second health liability is concerned, I think there is some question as to that. It seems rather remarkable that probably 30,000,000 or 40,000,000 persons have this infection with the sensitization of tissue, and that no more have manifested tuberculosis. It is evident that many from time to time receive subsequent inoculations of tubercle bacilli without manifesting any demonstrable reaction to those. In the cases that Dr. Myers showed, naturally those children who were infected when he saw them would be the group that would have more tuberculosis later on, because they were exposed to tuberculosis. I should like to ask him how much precaution was taken to prevent reexposure or reinfection in those positive

children. Any immunity that goes with tuberculosis is only relative. That can be overcome if a subsequent reinfection is sufficiently severe. It is my opinion that many persons have tubercle bacilli taken into their bodies, probably many times, without ever showing any manifestation of that reinfection.

DR. W. AMBROSE MCGEE, Richmond, Va.: Dr. Myers' study represents a large number of children observed over a long period of years. His ideas are more or less unusual and his excellent work should stimulate others either to prove or to disprove his conclusions. I am glad to hear Dr. Myers say that he has discarded the Pirquet tuberculin test in favor of the intradermal or Mantoux test. Contrary to some opinions, the intradermal test is usually positive even in such overwhelming infections as tuberculous meningitis. A practical and economical idea advanced by Dr. Myers is that the roentgen examination in children with negative tuberculin tests is not necessary. In those with positive tuberculin tests of the first type of infection also he has found the x-rays of little necessity. A few months ago I was able to make a comparative study of the Schilling differential count and sedimentation test in a few children with various stages of tuberculosis, from suspected cases to far advanced adult type. All of the children, of course, had positive tuberculin tests. The summary of the small material collected was that in cases of tuberculosis in which activity was apparent or far advanced the two tests paralleled each other, but in those of very slight activity or in the group observed as suspected tuberculosis the Schilling differential count was by far the better and was much more practical for children and more sensitive to even slight physical changes. If that test was used in a routine way by a competent hematologist it might aid one in dividing those children who have positive tuberculin tests in the first type of infection into two groups, those that by clinical observation and the Schilling differential fail to show evidence of any infection, and those that show some evidence of possible latent infection. From a broad view of allergy, it seems reasonable to feel theoretically that a first infection makes the child more prone to sensitiveness to the tuberculo-protein. The occurrence of only one reinfectious type of pulmonary tuberculosis in 2,306 cases certainly shows the low incidence in children who come within the age limits of pediatricians. The common idea that it was good for a child to receive a small dose of tubercle bacilli has certainly received a jolt, judging from Dr. Myers' observations. His conclusion that in reexamining tuberculous skin tested children the prognosis is much poorer when they had previously given a positive reaction appears in keeping with his statistics. If this finding is substantiated by subsequent observers, children with positive skin tests will have to be regarded as a double health liability. The children studied by Dr. Myers may have come from homes where tuberculosis was prevalent. If this is true, I wonder whether he has made a study of another group of children from surroundings more or less free from tuberculosis.

DR. J. A. MYERS, Minneapolis: In each case an attempt has been made to break contact just as soon as possible by isolating the parent or other source of infection. That is, an attempt is made to protect the child against subsequent exposure in every possible way. Of course, I have not succeeded in all cases. There is the occasional patient who absolutely refuses to protect the children and other members of the family. I have not questioned the statement that some immunity develops. I think its presence has been proved conclusively by a number of experimental workers. However, the allergy that nearly always develops is the dangerous factor, as it allows destruction to occur in the presence of immunity. I am inclined to believe from my observations that at least 10 to 20 per cent of children with positive tuberculin reactions at some time during life will suffer or die from clinical tuberculosis, for already more than 9 per cent of the positive reactors traced among the first 1,000 children examined have fallen ill, and several of them have died. It must be kept in mind that the average age of this group now is only 20.8 years, and that the peak of tuberculosis mortality is not reached in this country until about 25 years and that it remains high; in fact, it is the first cause of death in this country until about the forty-fifth year. Therefore, a good many years remain during which more children may fall ill with clinical tuberculosis.

Clinical Notes, Suggestions and New Instruments

THE BARBITURATES A SAFE PRELIMINARY MEDICATION FOR SURGICAL OPERATIONS

JAMES T. GWATHMEY, M.D., NEW YORK

Evidence that the barbiturates antagonize the toxic effects of procaine, both in the laboratory and in the clinic, indicates their preliminary medication for local and spinal anesthesia. The use of a preoperative barbiturate reduces the postoperative use of morphine by 28 per cent and vomiting by 15 per cent, as compared to the usual morphine preliminary, which requires 82 per cent postoperative morphine with 60 per cent vomiting.¹

Exactly which barbiturate is best or whether any of the barbiturates is better than the original barbital is, as yet, undecided. Theoretically, that particular barbiturate would be best which is most analgesic and is followed by the least nausea and vomiting. For children and also in obstetrics, nembutal is decidedly superior to any other barbiturate.

As a general proposition, all anesthetics should be so heavily premedicated (i. e., patient asleep) that the terminal anesthetic should never have to be pushed. The inhalation anesthetic should be supplementary to the preliminary medication, as this procedure reduces the amount of the inhalation anesthetic used and allows an increase in the oxygen, with pulse, respiration and blood pressure more normal than when any inhalation anesthetic is used without preliminary medication. Preliminary medication banishes fear and anxiety, thus conserving energy. Hooper and Gwathmey have shown that lung lesions occur with all inhalation anesthetics in laboratory animals not given a preliminary but do not occur when medicated.²

For these reasons, I have been using for some time for preliminary medication some one of the barbiturates. For the past two years I have been using sodium ipral. This is efficient in producing a quiet sleep, either before an inhalation or oil-ether colonic anesthesia. This special barbiturate seems to be unusually safe, as the following case will show:

A bottle of sodium ipral (the sodium salt of ethylisopropylbarbituric acid) containing forty-six tablets³ of 4 grains (0.26 Gm.) each was given to a nurse with directions to give three tablets to a patient (the usual dose) one hour before operation. This was done and the patient was asleep at the time of operation. Later, before returning the bottle, the nurse, in a despondent mood, on Monday, April 4, 1932, at 9:30 p. m., took forty-three tablets (4 grains each, 172 grains, or in all 11 Gm.) of sodium ipral, one at a time, with a swallow of water, using a glassful of water altogether. The tablets were taken as rapidly as possible in an estimated total time of fifteen minutes. Previously, at irregular intervals, the nurse had taken one tablet for insomnia and found that this produced a sleep of six hours with no after effect, but she had not formed a habit for the drug. The forty-three tablets did not seem to the nurse to put her to sleep quicker than the one tablet on previous occasions. She went to sleep in about the same way and time as with one. No throbbing of the heart or unpleasant sensation occurred.

She was discovered by friends the following day, April 5, at 1 p. m., sixteen hours after she had taken the 172 grains. Three tablets (12 grains, 0.8 Gm.) is the maximum dose as a basal induction anesthetic. Bernard Fantus states that the fatal dose of the barbiturates is from "fifteen to thirty times the therapeutic dose." Fifteen times three (the therapeutic dose) would be forty-five tablets, so forty-three tablets would not be a fatal dose, although the patient had every reason to believe it would be; i. e., the observation of the effects of three tablets on different patients. The fatal dose of Sodipral is unknown at this time.

I was called in consultation by the attending physician, as I had given the nurse the bottle of tablets. The stomach was washed out at 1:30 with warm water very thoroughly; respira-

1. Bartlett, Willard: Personal communication to the author; Surg., Gynec. & Obst. 50: 775 (April) 1930; 51: 217 (Aug.) 1930.

2. Nelson's Looseleaf Surgery 1: 514, 515.

3. A full bottle contains fifty tablets. I had used four tablets before giving the bottle to the nurse.

tion was considerably improved, although slightly labored but deep. The pulse was 84. The lid reflex was quite active. The color was good. She was now removed to Bellevue Hospital and sent to the emergency ward.

On admission, the pulse was 80. The temperature was 97 F. and rose to 103 the third day in the hospital but fell to nearly normal in a few days, with slight fluctuations afterward. The treatment following her admission and during the period of her unconsciousness consisted of colon irrigation, elysis, coffee enemas, and caffeine sodiobenzoate, 7 grains (0.46 Gm.) every four hours. The treatment followed precisely that outlined by Fantus.⁴ She regained consciousness the morning of April 9, four days after her admission to the hospital and five days after taking the forty-three tablets (172 grains).

The patient resumed nursing one month after her dismissal from the hospital. It is now over a year since this occurred. A thorough examination by her physician indicates no pathologic changes and, to all outward appearances, she is in perfect strength and health, and, best of all, has a cheerful and contented disposition.

133 East Fifty-Eighth Street.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed.

THERAPY OF GLAUCOMA

OUTLINE BY SANFORD R. GIFFORD, M.D.

Definition.—A sufficient increase in intra-ocular tension to damage the contents of the eyeball. Differentiation must be made between (a) Acute primary glaucoma, (b) chronic primary glaucoma, (c) secondary glaucoma and (d) absolute glaucoma.

Diagnosis.—The tonometer and the perimeter must be used as a routine whenever there is even a suspicion of glaucoma, which arises when in a person over 40 years of age there occurs a sudden failure in the amplitude of accommodation, a temporary loss of some or all vision, hazy or foggy vision, or the appearance of colored halos around artificial lights. In the normal eye the tension is between 15 and 25 mm. of mercury as measured by the tonometer (Schiotz).

ACUTE GLAUCOMA

Acute glaucoma is an emergency condition, most commonly arising during the latter part of the night with severe pain in the head, possibly nausea and vomiting, conjunctival congestion, "steamy" and anesthetic cornea, dilated and immobile pupil, discolored iris, rapid loss of vision, and hardness of the eyeball. Tonometric measurement should be taken at once and repeated at intervals to observe the effect of treatment. The patient should be hospitalized as soon as possible.

For differentiation from acute iritis, see "Therapy of Iritis."

Treatment aims at reduction of the intra-ocular tension to normal. This may be secured by:

1. *Miotics.*—Physostigmine Salicylate (1 per cent solution, prescription 1) should be instilled at once into the affected eye several times at intervals of a minute and then at half hour intervals. Morphine sulphate, 0.015 Gm., is injected hypodermically as soon as possible, for it at one and the same time increases the effect of the miotic and relieves pain.

PRESCRIPTION 1.—Physostigmine Eye Drops

R Physostigmine salicylate 0.10 Gm.
Saturated solution of boric acid 10.00 cc.

M. Label: One to two drops in eye every minute several times, then at half hour intervals (in acute glaucoma). This solution does not keep well; when it becomes pink or red it should be discarded.

2. *Saline Purgative.*—Also magnesium sulphate, 30 Gm. in concentrated solution (60 cc. of water), should be given at once.

3. *Hypertonic Dextrose Phlebotomy.*—The slow intravenous injection of from 250 to 500 cc. of 25 per cent dextrose solution should be instituted at once after admission of the patient to the hospital. Unless the tension subsides to the normal within a few hours, the patient should be taken to the operating room and receive a retrobulbar injection of procaine-epinephrine.

4. *Procaine-Epinephrine Retrobulbar Injection.*—To the syringe containing 1.5 cc. of a 4 per cent solution of procaine one adds 0.25 cc. of the Solution of Epinephrine and retrobulbar injection is performed, after preliminary application to the conjunctiva of 2 per cent butyn solution. It is not uncommon to find, ten or fifteen minutes after such an injection, the tension reduced by 10 to 20 mm., or even to normal. At the same time, good local anesthesia has been secured by it. Preoperative drastic reduction of intra-ocular tension is highly desirable to lessen the chance of hemorrhage following operation on the eye.

5. *Surgical Decompression.*—(a) Iridectomy: The eye should be held in downward rotation either by toothed fixation forceps which grasp the tendon of the superior rectus through the conjunctiva or else by a thread placed through this tendon. Incision is made with the keratome from 0.5 to 1 mm. back of the sclero-corneal junction, the blade being parallel with the iris surface. An incision 4 mm. long is sufficient. A small conjunctival flap may be made by picking up the conjunctiva with the point of the keratome before it is inserted, or a larger one by previous dissection with scissors. The iris is grasped at the pupillary border and drawn out of the wound. A radial cut is made in the iris at one side of the forceps. Then by gentle traction the iris root is separated from its attachment over an extent of 20 degrees. A second radial cut completes the iridectomy. The cut edges are replaced and the conjunctival flap is smoothed out with the spatula. One or two stitches in the conjunctival flap may be employed. The eye should be protected by a dressing and a rigid shield for a week.

(b) Paracentesis of the Eyeball: This procedure may be successful in aborting an acute attack when operation is impossible or must be delayed too long for safety. This simple paracentesis may be done at home and in the patient's bed with no other equipment than a syringe of 2 per cent cocaine solution, a speculum, fixation forceps and a small, sharp cataract knife. After physostigmine has been pushed for an hour, a marginal paracentesis is done and the physostigmine continued.

4. Fantus, Bernard: The Therapy of the Cook County Hospital: Barbiturate Poisoning, J. A. M. A. 103: 749 (Sept. 8) 1934.

CHRONIC GLAUCOMA

Chronic glaucoma may have no other subjective symptoms than a gradual loss of vision and contraction of the visual fields. There may be intermittent pain in one or both eyes, but this is often absent. Ophthalmoscopic examination shows cupping of the disks, and examination with the tonometer reveals a definite, but not extreme, increase in intra-ocular tension (from 30 to 45 mm. Schiötz).

1. *Miotics*.—These are successful in most cases in reducing tension to normal for a time. In a certain number of cases this effect may continue indefinitely. It is important, however, to check progress in each case by frequent field determinations and to remember that the tension varies during the day in glaucoma patients, so that one whose tension is always normal when seen in the office may have a higher tension at other times, especially during the night, which will cause gradual deterioration of the fields. Tension should therefore be taken at various times of the day and especially early in the morning before any miotics have been used. The danger of miotics is of overconfidence in their effect, and a patient using them must be under constant surveillance.

PRESCRIPTION 2.—*Pilocarpine Eye Drops*

R Pilocarpine nitrate 0.10 Gm.
Boric acid 0.20 Gm.
Distilled water to make 10.00 cc.
M. Label: Drop into eye from one to five times daily (in chronic glaucoma).

PRESCRIPTION 3.—*Pilocarpine Eye Salve*

R Pilocarpine nitrate 0.20 Gm.
Distilled water 1.00 cc.
Hydrous wool fat 2.00 Gm.
White petrolatum 7.00 Gm.
Mix with careful trituration and dispense in collapsible tube with eye tip.

Label: Apply to affected eye at bedtime (in chronic glaucoma). If collapsible eye ointment tube is not available, a glass rod may be used to apply salve to lower lid, which is then permitted to close. Gentle massage of lids helps to distribute ointment over the conjunctiva.

(a) Physostigmine 0.2 per cent (prescription 1, with reduction of alkaloid to 0.02 Gm. to each 10 cc.), or

(b) Pilocarpine 1 per cent solution (prescription 2); nitrate is preferable to hydrochloride, which is very deliquescent. Boric acid may be added for isotonicity and preservation of solution. Because of nocturnal tendency to rise of tension, an eye salve (prescription 3), which has a more enduring action, is preferable at bedtime.

2. *Epinephrine*.—Of the Solution of Epinephrine, about four drops is placed on a cotton pledget under the upper fold of the conjunctiva for four minutes. This may be useful in cases that are almost but not quite controlled by miotics. As there is some danger of an acute rise of tension caused by the epinephrine mydriasis, one should always precede it by a drop of 0.2 per cent physostigmine solution instilled three times at ten minute intervals and then every half hour for the next two hours or long enough to keep mydriasis from occurring, the danger of which is over in from six to eight hours. Miotics are then continued and tension may remain normal for longer than a week, in some cases for longer than a month. A number of cases may be kept under control for from eight to twelve months by repetition of the treatments, but in many cases later treatments are less effective and most cases finally come to operation. A few cases are unaffected by epinephrine and, when one attempt has failed, nothing is to be gained by further attempts. Epinephrine is contraindicated in types of glaucoma accompanied by inflammation. In glaucoma following cataract operation or

discission, however, the same objection does not seem to hold; and in a number of such cases it has controlled the tension until normal drainage has been reestablished without operative intervention.

3. *"Salt Free and Acid Ash" Diet*.—Elimination of sodium chloride from the diet, with the substitution of potassium chloride used freely as table salt, with a diet designed to have an acid ash, may cause edematous tissues to give up water in a manner sometimes surprising. Ammonium chloride is also given in doses of 6 Gm. a day to lessen further the alkali reserve. This plan may be carried out in those cases of chronic glaucoma in which the tension hovers slightly above normal in spite of miotics, as it may reduce tension to normal.

4. *Surgery*.—When the use of miotics and the general measures that have been mentioned fail to control tension and fields, one should employ operation. More harm is done in glaucoma by delaying surgery than by operations even when improperly performed. A filtering operation is the only form of procedure that offers an excellent chance of permanently reducing tension. Whether one chooses corneoscleral trephining, sclerectomectomy according to Lagrange, or iridencleisis will depend on one's training, but every ophthalmologist should be the master of at least one of these three procedures. Iridencleisis has the advantage of being less liable to certain well known complications than trephining. It is so much easier to perform that it should commend itself to the surgeon of limited surgical material. It seems ideal in buphthalmos. In cases of chronic glaucoma presenting a tension above 45 to 50 in spite of miotics, a recurrence of tension is more likely than after corneoscleral trephining and the latter procedure is to be preferred in such cases.

(a) *Trephining*: Fixation on the superior rectus is secured as for iridectomy. A large thin flap of conjunctiva is carried to the margin of the cornea and, if possible, a little beyond. This necessitates slight splitting of the corneal fibers. By means of a trephine, 1.5 mm. in diameter, an opening is made into the anterior chamber at the sclerocorneal junction and a bit of the iris is excised as it presents in the wound. The conjunctival wound is sutured.

(b) *Sclerecto-Iridectomy*: In this procedure, fixation and the preparation of a large conjunctival flap are the same as for trephining. Here the cornea is not split. The incision is made with a narrow Graefe knife, which cuts the sclera obliquely so as to come out 2 mm. behind the limbus, leaving a tongue of sclera. This is cut off with full curved scissors or a special punch. Iridectomy is performed, usually including a full sector of iris, and the conjunctival flap is carefully replaced.

(c) *Iridencleisis*: Fixation is done and a conjunctival flap made as for sclerecto-iridectomy. An incision 4 mm. long is made with the keratome 1 mm. back of the limbus. The iris is drawn out and one radial cut is made in the pupillary border. The piece of iris grasped by the forceps is allowed to remain out beneath the conjunctival flap, the inner pigmented side being turned outside. The straight conjunctival incision is closed with a running suture. (Another form of iris inclusion operation, "iridotaxis," is similar to the foregoing except that the iris is not cut, the pupillary border being left out under the conjunctival flap.)

SECONDARY GLAUCOMA

One speaks of primary glaucoma when no signs of previous inflammation or other pathologic changes are seen in the eye, and of secondary glaucoma when signs

of inflammation are found or when a dislocated lens, tumor, anterior synechia or other definite cause is present.

1. Whenever systemic infection can be demonstrated, whether it is "rheumatic," tuberculous or syphilitic, it should receive appropriate treatment alongside the therapy dictated by the dangerous rise of intra-ocular tension. Eradication of foci of infection is usually so disappointing in chronic glaucoma that only very obvious foci, such as dental root abscesses, should be taken care of. Mere suspicion is no indication here for removal of teeth or tonsils.

2. In iritis (q. v.) with secondary rise of tension, treatment with salicylate and foreign protein injections and elimination of the cause should form the background of the therapy, while the intra-ocular tension is kept within safe limits until the inflammation is controlled. As miotics are usually contraindicated in iritis, this may possibly be accomplished by ergotamine tartrate (gynergen), 0.25 mg. of which (one-half ampule) injected subcutaneously twice daily may succeed in reducing the pressure to the requisite degree. The effect must be carefully observed, as in certain cases it proves absolutely ineffective. Paracentesis, repeated after several days if necessary, is a safe and effective means of controlling tension for the brief period until treatment of the inflammation has become effective.

3. In cataract operation or discission, followed by glaucoma, epinephrine may prove of great value. Atropine should be avoided, Homatropine being used when mydriasis seems absolutely necessary. When the glaucoma resists this treatment, cyclodialysis is the operation of choice.

ABSOLUTE GLAUCOMA

When, possibly because of neglect of appropriate treatment, the eye has become stony hard, its sight lost, and it is a constant source of pain to the patient, enucleation of the eyeball is called for.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

SOUTHERN DAIRIES CREAMED BUTTERMILK WITH 150 VITAMIN D UNITS (STEEN- BOCK) (400 UNITS U. S. P.) ADDED PER QUART

The Southern Dairies, Inc., Asheville, N. C., submitted to the Committee on Foods a bottled pasteurized whole milk inoculated with a lactic acid producing culture, fortified with vitamin D (vitamin D concentrate prepared from cod liver oil) called "Southern Dairies Creamed Buttermilk with 150 Vitamin D Units (Steenbock) Added per Quart."

Analysis (submitted by distributor).—

Milk fat not less than 3.8 per cent.

Acidity as lactic acid 0.9 per cent.

Discussion of Name, Label and Product.—The name "Creamed Buttermilk" for a whole milk inoculated with a lactic acid producing culture misinforms the purchaser as to the true nature of the food. It is not a buttermilk with added cream as indicated. An appropriate name is "Lactic Acid Milk (Cultured)." Descriptive food names should be correctly informative and not misleading in any particular.

The label states the vitamin D content of the product but not the source of the vitamin. Since vitamin D from different

sources may have unlike nutritional values, the label should declare that the vitamin D was obtained from cod liver oil. No report of clinical studies on the human antirachitic value of this vitamin D fortified product was furnished. Without such studies, there can be no sound evidence on which to base any antirachitic advertising claims.

The distributor was advised of the recommendations and criticisms of the Committee but is unwilling to take action to correct the name and label, or determine the human antirachitic value of the food. This product will therefore not be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

DAWN FRESH MUSHROOMS

FANCY BUTTONS—PIECES AND STEMS—SLICED

Packer.—Michigan Mushroom Co., Niles, Mich.

Description.—Cooked mushrooms, whole, sliced, or pieces and stems, with added water, salt and citric acid (U. S. P.); the same as Excelsa Mushrooms, Fancy Buttons, Pieces and Stems, and Sliced (THE JOURNAL, Aug. 4, 1934, p. 342).

(1) LIBBY'S PETER PAN UNSWEETENED EVAPORATED MILK

(2) COMET UNSWEETENED EVAPORATED MILK

(3) TARGET UNSWEETENED EVAPORATED MILK

Distributors.—(1) Libby, McNeill and Libby, Chicago, and (2) and (3) Union Condensed Milk Company, Chicago.

Packer.—Libby, McNeill and Libby, Chicago.

Description.—Unsweetened, sterilized evaporated milk, the same as Libby's Sterilized Unsweetened Evaporated Milk (THE JOURNAL, June 13, 1931, p. 2037).

(1) HEBE STERILIZED UNSWEETENED EVAPO- RATED MILK

(2) MT. VERNON STERILIZED UNSWEETENED EVAPORATED MILK

Manufacturers.—(1) Hebe Company, Milwaukee and Seattle, and (2) Mt. Vernon Milk Company, Seattle, subsidiaries of the Carnation Company, Oconomowoc, Wis.

Description.—Unsweetened, sterilized evaporated milk, the same as Carnation Sterilized, Unsweetened Evaporated Milk (THE JOURNAL, June 14, 1930, p. 1919).

(1) QUAKER BRAND UNSWEETENED BAKING CHOCOLATE

(2) NARRAGANSETT BRAND COOKING CHOCOLATE UNSWEETENED

Distributors.—(1) Lee & Cady, Detroit, and (2) Narragansett Wholesale Grocery Co., Providence, R. I.

Packer.—Moffat, Inc., Boston.

Description.—Ground cacao nibs or "chocolate liquor" in cake form. Same as Moffat Cooking Chocolate Unsweetened (THE JOURNAL, Jan. 20, 1934, p. 213).

Claims of Manufacturer.—Conforms to the United States Department of Agriculture definition and standard.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 17, 1934

UTILIZATION OF VITAMIN A
AND CAROTENE

Among students of metabolism it is an axiom that food materials or therapeutic substances are not effectively in the body until they have passed from the gastro-intestinal tract into the blood or lymph. Many factors ordinarily exert an influence on materials in the intestinal tract, and absorption and subsequent utilization are to a great extent dependent on them. The action of the digestive enzymes is, in the main, looked on as a sine qua non to normal nutrition; yet hydrolysis by the proteases frustrates the oral administration of insulin. In the presence of acid the absorption of calcium is favored, whereas an alkaline reaction in the intestine tends to precipitate calcium not only as the phosphate but also as insoluble soaps of the fatty acids of the food, thus doubly robbing the body of dietary essentials. In the opinion of certain students of the subject, the hypothesis that beriberi is of infectious origin rather than caused by a deficiency of vitamin B can be disposed of by pointing out that gastro-intestinal disturbances themselves infectious prevent the usual absorption of foods containing vitamin B, thus obscuring the real cause of the disease. Again, it has been shown¹ that in the absence of bile from the intestine there is apparent difficulty in the absorption of vitamin D. In rachitic animals with obstructive jaundice, cod liver oil fails to promote calcification.

In a recent study, Dutcher and his associates² have added to the foregoing thesis in considerable detail. In an attempt to elucidate the reported difference between the utilization of vitamin A from butter and that from cod liver oil in the presence of liquid petrolatum, they studied the behavior of the pigment carotene under similar circumstances. Groups of experimental animals were given adjusted quantities of liquid petrolatum together with various amounts of butter fat, carotene, cod liver oil and an extremely potent concentrate of

cod liver oil. When cod liver oil was given in minimal quantity together with a relatively large amount of liquid petrolatum, utilization of the vitamin A was inhibited; however, increasing the amount of cod liver oil led to favorable results. The potent concentrate of cod liver oil was well utilized despite the liquid petrolatum. When butter was the source of the vitamin A potency, liquid petrolatum exerted a retarding influence on its absorption to an appreciable extent. With the pigment carotene providing the sole source of vitamin A, there was a marked retarding effect on its utilization. These observations are generally in accord with other observations³ made under somewhat different conditions.

In an effort to determine the mechanism whereby the utilization of carotene is prevented by liquid petrolatum, an antioxidant was added. The results indicated that there was no destruction of the pigment by oxidants in the liquid petrolatum. By careful extraction of the feces of the experimental animals to which liquid petrolatum and carotene had been fed, the pigment was recovered, indicating that the utilization of carotene was almost completely prevented by the liquid petrolatum. In like manner it was demonstrated that the vitamin A concentrate did not appear in the feces.

The investigation just described clarifies a confused situation. There is little doubt that vitamin A can be absorbed from the intestine despite the presence of liquid petrolatum. On the contrary, the pigment carotene, which usually accounts for the vitamin A potency in plants and plant products and which in the animal body is transformed to vitamin A itself, is absorbed from a solution in liquid petrolatum to little if any extent. The previous confusion with reference to butter arises from the fact that both carotene and vitamin A occur in butter and the relative quantities vary.⁴ Liquid petrolatum will therefore vary in its effect on different samples of butter. The action of liquid petrolatum on carotene is merely one of preferential solvent; the pigment is apparently more soluble in the liquid petrolatum than in the lipides of the intestinal and pancreatic juices or the lipides of the food residues.

These studies emphasize the unique contrast in external behavior between two structurally related compounds which, once they are inside the body, behave identically. They should also help to clarify the status of liquid petrolatum, which has had a considerable vogue among physicians as a therapeutic agent. In practice, as has been pointed out,⁵ the usual manner of taking liquid petrolatum, i. e., apart from a meal, virtually eliminates the danger of loss of vitamin A or its precursor (carotene) by the mechanism here discussed.

1. Greaves, J. D., and Schmidt, C. L. A.: Univ. California Pub. Physiol. 8: 43, 49, 1934.
2. Dutcher, R. A.; Harris, P. L.; Hartzler, E. R., and Guerrant, N. B.: J. Nutrition 8: 269 (Sept.) 1934.
3. Rowntree, J. L.: J. Nutrition 2: 345 (Jan.) 1931. Jackson, R. W.: Nutrition 4: 171 (July) 1931; 7: 607 (June) 1934.
4. Baumann, C. A.; Steenbock, Harvey; Beeson, W. M., and Rupel, I. M.: J. Biol. Chem. 105: 167 (April) 1934.
5. Jackson.³

CHIROPRACTORS AND NATUROPATHS DEFEATED

Chiropractic and naturopathy received a noteworthy setback, November 6, when the people of Arizona, California and Oregon decisively defeated at the polls measures for the aggrandizement of those cults submitted under the initiative system of legislation.

In Arizona the naturopaths wanted an independent naturopathic examining and licensing board. They wished to have naturopaths exempted from the requirements of the basic science law and authority for every licensed naturopath to exercise every right and privilege given by law to any practitioner of the healing art.

In California a schism in the chiropractors of the state sought by an initiative measure to add to chiropractic prerogatives a monopoly of the right to practice physical therapy, by providing for the issue to licensed chiropractors only of licenses to practice physical therapy, authorizing the holders "to practice obstetrics; to use, prescribe and practice prophylactic hygiene and sanitation and dietetics, including, in any form, herbs, oils and all animal and vegetable foods; and to use all systems, methods or instruments in diagnosis, including the use of roentgen rays." Under the chiropractic initiative all licensed chiropractors in the state were to constitute a public corporation, with officers elected by the members, with power to regulate chiropractic practice, to levy dues on its members and to discipline its members. The dominant group of chiropractors in the state publicly denounced the measure, saying that the chiropractic initiative measure of 1922 had vested in them all authority necessary to enable them to practice legitimate chiropractic. Another California naturopathic initiative sought to establish naturopathy by law as a distinct school of healing, with its own independent examining and licensing board. It proposed to organize all licensed naturopaths in the state into a self-governing public corporation. Naturopathy was defined by the measure as including "physiotherapy, physical therapy, phytotherapy, biochemistry, the use of antiseptics, anesthetics, applied therapeutics and prophylactic hygiene and sanitation; the science and art of diagnosis, which enables the naturopathic physician to direct, advise, prescribe, dispense or apply food, water, roots, herbs, plants, oils, lights, heat, color, exercises, active and passive, manipulations, correcting vital tissue, organs or anatomical structures by manual, mechanical or electrical treatment, instruments and appliances, x-ray, or any and all other natural agencies that have been used in the past, that are now in use, or that may be used in the future, to assist nature in restoring a physiological and psychological interfunction for the purpose of restoring and maintaining a normal state of health, mentally and physically."

In Oregon, chiropractors and naturopaths already have their independent examining and licensing boards. A basic science law that went into effect Jan. 1, 1933,

however, seems to have given alarm to chiropractors and naturopaths generally, and particularly to a struggling chiropractic school in the state, whose graduates, under the basic science law, were threatened with the necessity of having to show that they had been adequately instructed in anatomy, physiology, chemistry, pathology and hygiene, before an independent board, before they could appear before the chiropractic board for examination. The chiropractors of the state therefore combined with the naturopaths in proposing as an initiative measure an amendment to the state constitution that would have abolished the examinations in the basic sciences under the basic science law. The measure was so worded as to permit the governing board of the chiropractic and naturopathic bodies to enlarge the scope of practice of their adherents in such a way as to permit them to use drugs and possibly even to enter into the general practice of obstetrics and surgery.

Through the effective work of the state medical associations of Arizona, California and Oregon, and with the aid of many public spirited citizens both individually and in organizations, the people of these states were kept informed as to the dangers threatened by the proposed initiative measures. As has been mentioned, decisive defeats resulted in each state. The people of Arizona, California and Oregon are to be congratulated on maintaining their standards of medical care. Apparently the majority of the voters recognized the necessity for protection against ignorance, superstition and incompetence in medical care.

RAMÓN Y CAJAL

Spain's great medical scientist Ramón y Cajal has died, leaving an illustrious group of students to carry on in the Instituto Cajal in Madrid. Born in an isolated mountain village, Cajal inherited a strong will from his father, who was a surgeon, and a talent for art, music and philosophy. Too early the father showed a determination to develop in the son a talent for medicine, and in several attempts under coercion the young son did not succeed. A love for drawing and painting occupied much of his time, yet in school his teachers declared that his drawings had little merit. They found him indifferent and said that he had no memory. Twice he was removed from school altogether and apprenticed to a barber and a cobbler. Then he became absorbed in painting and in the perusal of novels. The despairing father again undertook to start Ramón on the way to a medical career, teaching him osteology. The artist in young Ramón took to making pictures of bones from every angle and at last he became a skilled anatomist. To these modest lessons on human bones Cajal attributes his ultimate development into a morphologist. He then went to Zaragoza in Aragon, where the father had been appointed professor of anatomy in the university and Ramón, without any indications of brilliance, obtained a medical degree in

1873. As a student at Zaragoza, he acquired a mania for gymnastics, developing his own exercises, to which he devoted much time. His physical prowess, no doubt, helped him gain admittance to the medical corps of the Spanish army and he sailed for service in Cuba in 1874, to be assigned to an isolated infirmary at Vista Hermosa, where he soon acquired malaria and dysentery. Cajal was very sick when his resignation was accepted in 1875 but he arrived home in Zaragoza improved by the voyage and went to Madrid to be examined for a doctorate. There he first saw a microscope. He was appointed in turn an assistant demonstrator at the University of Zaragoza, to the chair of anatomy and as director of the anatomic museum. He developed pulmonary tuberculosis, which necessitated living outdoors most of the year 1878, and in 1879, against the advice of friends, he married on a small salary. Garrison's translation of Cajal's account of meeting his future wife illustrates his simplicity and candor:

Returning one evening from a walk to Torrero, I encountered a young girl of modest appearance, accompanied by her mother. Her blushing, springlike face suggested Raphael's madonnas or, better still, a German colored engraving of Marguerite in Faust. Attracted no doubt by the sweet, pleasant disposition apparent in her features, her slender figure, her large green eyes veiled by long lashes, her abundant hair, I was even more impressed by the air of childlike innocence and melancholy resignation which emanated from her whole being. Unseen, I followed the young girl to her home, learned that she was the orphaned daughter of a modest employee and enjoyed a reputation for honor, modesty and domestic tastes. I made her acquaintance and after a time, against the collective advice of my family, married her, not without due consideration of the mental characteristics of my fiancée, which were complementary to my own. My resolution was discussed by acquaintances in clubs and cafés as an act of madness: Poor Ramón is lost forever. Goodbye to study, science and general ambitions. . . . And yet, although eulogies do not flow readily from my pen, I take pleasure in saying that, with beauty which seemed predestined to shine in promenades, visits and receptions, my wife cheerfully condemned herself to the obscurity of my lot, remaining simple in her tastes and with no other aspirations than tranquil contentment, order and system in the management of the home, and the happiness of her husband and children.

In 1884 Cajal accepted the chair of anatomy at Valencia, where an epidemic of cholera developed the next year. He was the first in Spain to establish by a staining method of his own the relation of the comma bacillus to cholera. He was presented with a fine microscope by the Central Committee, and with it he began to investigate the degenerative processes in the protoplasm of the comma bacillus. Now at the age of 32, he fitted up a small laboratory in his home and added to his meager salary by coaching graduate students. A neuropsychiatrist of Madrid, Dr. Luis Simarra, told Cajal of Golgi's chrome silver stain, which method Cajal improved and applied to the entire nervous system. His study of the histology of the nervous system really began in 1887 with his transfer to the chair of anatomy at the University of Barcelona, where he began to publish his microscopic studies and

then to send communications to foreign journals. He was invited to discuss his work before the members of the German Anatomic Society in Berlin in 1889. They were skeptical at first, but after Cajal's demonstration of beautiful preparations of axons of granule cells of the cerebellum, of the bifurcations and ascending and descending branches of the sensory spinal roots, and of the long and short collaterals of the tracts of the white substance and of the terminations of the retinal fibers in the optic lobes, Kölliker, the patriarch of German histology, introduced him to many notable German histologists and embryologists and returned to Würzburg to try out Cajal's methods. Kölliker was able to substantiate Cajal's work. Having established a wide reputation, he was invited to become a professor at the University of Madrid in 1892, where he undertook arduous investigation incompatible with the social distractions of Madrid. In 1894 Cajal delivered the Croonian lecture before the Royal Society of London, and honorary degrees were conferred on him by Oxford and Cambridge. Although his country had just been at war with the United States, he was invited in 1899 to Clark University for the decennial celebration, where he gave three lectures on "The Comparative Study of the Sensory Areas of the Human Cortex." These lectures are important contributions to the subject. At this time, Garrison¹ says, Cajal was a handsome figure with the abstract mien of a laboratory worker, in the prime of life and of international reputation. The scientific world now acclaimed him. Cajal had already gained the Rubio, Fauvelle and Martinez Molina prizes. He was awarded the Moscow prize at the International Congress of Medicine in Paris in 1900, and in 1904 the Helmholtz medal of the Royal Prussian Academy. In 1906 Cajal was summoned to Stockholm to receive the Nobel prize, jointly with Golgi. The subject of his address on this occasion was "Structures et connexions des neurones." Although now at the pinnacle of scientific recognition, his life work was only well begun. Cajal advanced now, Addison² says, from methods for demonstrating the neurofibrils within the neurons into new methods for showing the structure of the neuroglia more definitely. His pupils, among whom have been such men as Nicolas Achucarro, Pio del Rio Hortega, Francisco Tello, de Castro, Villaverde, Sanchez and Llorente de No, have exhibited great enthusiasm. The Spanish School of Neurohistology has contributed as much to the knowledge of the neuroglia as of the neurons. In 1906 Spain offered Cajal the ministry of public instruction, which was declined. In 1913-1914 he published his great work on degeneration and regeneration of the nervous system. Garrison has listed chronologically, beginning in 1880, the scientific achievements of Cajal.

1. Garrison, F. H.: Ramon y Cajal, *Bull. New York Acad. Med.* 5: 483 (June) 1929.

2. Addison, W. H. F.: Ramon y Cajal—An Appreciation, *Scient. Monthly*, August 1930, p. 178.

His masterpieces are his encyclopedic treatises on neurohistology (1897-1904) and on degeneration and regeneration in the nervous system (1913-1914). His actual contribution is the ultimate developmental and structural basis of the dynamics of the neuron, of transmission of impulse, of localization of function, and of degeneration and regeneration of the neurons and axons of the nervous centers.

Cajal the philosopher is at his best in *Chácharas de Café*, a series of aphorisms and anecdotes to which editorial notice was given in *THE JOURNAL*³ in 1921, and in which he said:

Every gratuitous burden of responsibility is essentially immoral.

A woman venerates her parents, esteems her husband but adores only her sons.

When I clapped for the waiter in a café, it was greeted by the wretched pianist as applause.

We disdain and hate from lack of self comprehension and we understand in proportion as we study ourselves.

Try to honor your children lest they dishonor you.

Those who have not been a little wild in youth are in danger of being so in age, excepting always the mentally defective, the weak willed and the prematurely old.

The highest happiness almost always coincides with forgetfulness of ourselves and of others. This beatific alienation of frivolous or disagreeable things is attained when we ask our servant: Have I eaten?—an unequivocal criterion of vocation.

Do you wish to be invisible to men? Be poor. To women? Be old.

In the future, children will be for the poor a resource, for the plutocrat a mode of ostentation, for the bureaucrat and small rentist a sacrifice.

Current Comment

PROTECTION AGAINST DUSTS

As a direct result of the work of such men as Gardner at Saranac Lake, Sayers of the U. S. Public Health Service, Lanza of the Metropolitan Life Insurance Company and Pancoast of the University of Pennsylvania, the clinical and pathologic aspects of the silicosis problem are slowly but surely becoming clarified. In the prevention of silicosis in the mining industry, the physician has long advocated less dust in the air breathed, but the practical mining man has been unable to achieve adequate cleanliness and still continue his industrial operations. In many phases of mining and other industries, however, signal advances have been made in dust control. The Bureau of Mines has always been at the front in the formulation of such improvements. Through its Pittsburgh experiment station the Bureau of Mines now offers a new routine¹ for the testing and certifying of respirators or dust masks for protection against the inhalation, by workmen, of harmful dusts, fumes and mists. It will be recalled that it was this station which pioneered in the development of the U. S. Army gas mask at the time of America's entry into the war. Since then the bureau has formulated a series of schedules for testing and

certifying industrial gas masks. So useful have the certifications become that purchasers are loath to buy masks which lack this certificate. Until the publishing of the new schedule 21 there was no federal or private testing code to which the manufacturer of respirators could turn for certification of his product. The result has been an unfortunate promiscuity in the manufacture and sale of inferior protective devices. The new schedule gives a series of examinations and tests sufficiently exacting for the most fastidious. The purchaser of industrial respirators for protecting workmen will do well to demand articles with the Bureau of Mines' stamp of approval.

Association News

THE CONFERENCE ON ECONOMIC SECURITY

The Committee on Economic Security announced a national conference on the subject to be held in Washington, D. C., November 14, at the Mayflower Hotel. Round table conferences were held on unemployment insurance with Prof. Joseph H. Willets, University of Pennsylvania, presiding; on child welfare with Grace Abbott, University of Chicago, presiding, and on provision of employment. There were also conferences on old age security and on medical care. The conference on medical care was under Livingston Farrand, president of Cornell University, as presiding officer, and the discussion was led by Drs. Henry A. Luce, Detroit; Nathan B. Van Etten, New York; George E. Follansbee, Cleveland, and Mr. Michael M. Davis of the Julius Rosenwald Fund, Chicago. A reception by the President for the conferees was held at the White House at 5 o'clock and the conference was concluded with the dinner at 8 o'clock, before which Harry L. Hopkins, Federal Emergency Relief Administrator, and Frances Perkins, Secretary of Labor, were speakers.

Following the conference on November 14 the various advisory boards met on November 15 and 16. The advisory board on medicine was under the chairmanship of Dr. Harvey Cushing, the members included being Walter L. Bierring, Des Moines, Iowa; James Alexander Miller, New York; Robert B. Greenough, Boston; James D. Bruce, Ann Arbor; Rexwald Brown, Santa Barbara; Thomas Parran, Albany; George W. Crile, Cleveland; Stewart R. Roberts, Atlanta, and George M. Piersol, Philadelphia.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Abstract of Minutes of Business Meeting Held at Chicago, October 27

The Council members present were Drs. Ray Lyman Wilbur (chairman), Reginald Fitz, Merritte W. Ireland, Charles E. Humiston, Frederic A. Washburn, J. H. Musser, Fred Moore and the secretary, Dr. William D. Cutter. In attendance also was Dr. Walter L. Bierring, President of the American Medical Association. Members of the Council's staff included Drs. Fritjof H. Arestad, Oswald N. Andersen, Carl M. Peterson, H. G. Weiskotten and Mr. Homer F. Sanger.

The following resolutions were adopted and other business transacted as indicated:

Resolved, That the minutes of the business meeting of June 10, 1934, be approved.

Resolved, That the minutes of the meeting of the Council's Subcommittee on Medical Education, held in New York, Sept. 15, 1934, be approved.

The proposal to send a communication to all hospitals approved for the training of interns, notifying them of the resolution adopted by the House of Delegates at the Cleveland session by which membership on the staffs of such hospitals

3. A Spanish Medical Philosopher, *Current Comment*, J. A. M. A. 76: 595 (Feb. 26) 1921.

1. Procedure for Testing Filter-Type Dust, Fume, and Mist Respirators for Permissibility, Schedule 21, United States Bureau of Mines.

will be restricted to members of medical societies that are component parts of the American Medical Association was approved.

The tentative program for the forthcoming annual congress was approved.

Resolved, That the problem of the recognition of specialists in fields related to internal medicine requires further study and that the Council is not prepared to take action at this time.

Resolved, That the Council will extend its approval to such special examining boards as may furnish satisfactory evidence of the reliability of their procedure in the examination and certification of candidates and who conform to the standards adopted by the House of Delegates.

Resolved, That the lists of pathologists and radiologists as submitted be approved.

Resolved, That the Council assist and encourage state medical societies in offering postgraduate courses of instruction by (a) a study of the methods proposed at the Nashville meeting of the Association of American Medical Colleges, (b) a discussion at the meeting of state secretaries and (c) presentation of papers at the next annual congress.

Resolved, That the acceptance of well qualified graduates of foreign medical schools by hospitals approved for internships should not jeopardize the standing of the hospitals with the Council, provided suitable graduates of American medical schools are given first opportunity.

Resolved, That the ophthalmic service in registered hospitals be under the direction of a qualified ophthalmologist and that assistants and technicians be under his supervision.

Resolved, That the lists of hospitals for approval or otherwise be acted on in accordance with the recommendations of the staff.

WILLIAM D. CUTTER, Secretary.

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next two broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

November 22. Eat, Drink and Be Merry.
November 29. Holiday. No Broadcast.
December 6. Keep Fighting Diphtheria.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

November 20. The Doctor of Tomorrow, W. W. Bauer, M.D.
November 27. Dollars and Disease, Morris Fishbein, M.D.
December 4. The Quick Lunch, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Symposium on Heart Disease.—The heart committee of the San Francisco County Medical Society will hold its fifth graduate teaching course on heart disease, November 21-22. Sessions will be held at Mount Zion, San Francisco, University of California and Stanford University hospitals and the headquarters of the society. The final evening session will be in the nature of a clinical pathologic conference on heart disease, followed by a discussion of thyrotoxicosis in the treatment of congestive failure and angina pectoris.

Personal.—Dr. Miley B. Wesson, San Francisco, was awarded a silver medal by the Carnegie Hero Fund Commission, it was announced, October 27.—Dr. Albert J. Sipple has been appointed health officer of South Pasadena, succeeding Dr. Edward J. Johnston, and Dr. Gilbert B. Furness, health officer for Visalia, succeeding Dr. Addison W. Preston.

Graduate Medicine.—The University of California School of Medicine is conducting graduate instruction in Sacramento, Santa Rosa, Fresno, Eureka and San Jose, in response to the demand of physicians in the state for extramural teaching. Members of the medical faculty direct these sessions on alternate Fridays and Saturdays of each month during the teaching year.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended November 3, indicate that the highest mortality rate (21.5) appears for Wilmington, and the rate for the group of cities as a whole, 10.6. The mortality rate for Wilmington for the corresponding period last year was 11.3 and for the group of cities, 11.1. The annual rate for eighty-six cities for the forty-four weeks of 1934 was 11.3 as against a rate of 10.8 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

Hospital Abandons Laboratory "Practice of Medicine."—The custom of charging private patients in its university hospital for "purely professional services" by the laboratory departments will be abandoned by George Washington University School of Medicine, in accordance with a resolution which the faculty adopted in October. This action was taken in order that such purely professional fees may be handled directly between the consultant and the patient. Professional services such as the interpretation of roentgenograms and supervision of administration of roentgen therapy are the responsibility of the consultant, the resolution further points out. On the other hand, the faculty regards the technical work of its laboratories as purely nonprofessional and approves in principle the levying of charges to any person or patient for technical services rendered and for the use of its laboratory facilities. Concluding the resolution, the faculty submits the thesis that the practice of medicine in public or private laboratories, staffed by non-professional people, begins only, if at all, at the point at which such technical data are interpreted and applied to the patient for the diagnosis, treatment and prognosis of disease processes.

FLORIDA

Dengue Fever.—According to newspaper reports, October 18, dengue fever was continuing in Tampa, between seventeen and twenty-four cases being reported daily. A campaign was initiated against the disease in Macon, Ga., October 17.

Personal.—Dr. and Mrs. George A. Davis, DeLand, observed their fiftieth wedding anniversary, October 22.—Dr. Harrison A. Walker, Miami Beach, was recently elected president of the Florida East Coast Medical Association, succeeding Dr. Leigh F. Robinson, Fort Lauderdale.

Society News.—At a meeting of the Dade County medical and dental societies, October 5, Dr. Frank R. Morrow and J. Harold Klock, D.D.S., Miami, discussed the relation of medicine to dentistry.—The first fall meeting of the Duval County Medical Society in Jacksonville, October 2, was devoted to a discussion of medical economics.—A symposium on carcinoma of the cervix and body of the uterus was a part of the program of the Pasco-Hernando-Citrus County Medical Society, recently. The society was entertained by Dr. George R. Creekmore, Brooksville. The speakers were Drs. William P. Adamson, Joshua C. Dickinson, Robert G. Nelson and William M. Rowlett, all of Tampa.

ILLINOIS

Southern Illinois Meeting.—At the sixtieth annual meeting of the Southern Illinois Medical Association in Mount Vernon, November 1-2, the following speakers were included on the program:

Dr. James J. Donahue, East St. Louis, Obstruction at the Pylorus.
Dr. Gershom J. Thompson, Rochester, Minn., Transurethral Prostatic Resection.
Dr. Percy H. Swahlen, St. Louis, Obstetrics.
Dr. Fred Z. Havens, Rochester, Minn., Malignancies About the Face.
Dr. Charles S. Skaggs, East St. Louis, What Is the Future of Medicine?
Dr. Frederick O. Fredrickson, Chicago, Analysis of Gastro-Intestinal Complaints with Reference to Diagnosis.
Dr. Harry Phillips, Anna, Modern Advances in Serology.
Dr. John B. Moore, Benton, Fractures.
Dr. Duncan D. Monroe, Edwardsville, The Home Treatment of Tuberculosis.
Dr. James S. Johnson, Cairo, Eye Injuries.

Society News.—The Christian County Medical Society was addressed in Taylorville, October 24, by Dr. Max S. Wien, Chicago, on "Relation of Dermatology to General Medicine."—At a meeting of the Will-Grundy County Medical Society, October 24, Dr. Edwin W. Hirsch, Chicago, discussed "Pathology, Diagnosis and Treatment of Prostatic Hypertrophy."—Speakers before the Pike County Medical Society in Barry,

October 25, were Drs. Edwin P. Sloan on thyroid deficiencies and Andrew J. Casner, types of pneumonia and their significance; both physicians are from Bloomington.—Members of the faculty of the University of Iowa College of Medicine, Iowa City, presented the program before the La Salle County Medical Society in Ottawa, October 18; Drs. Dean M. Lierle discussed the common cold and Nathaniel G. Alcock, diathermy in treatment of enlarged prostate.—Speakers before the Tri-County Medical Society (Warren, Knox, Henry) in Monmouth, October 18, were Drs. Julius H. Hess on "Present Status of Serum Therapy in Pediatrics"; William R. Cubbins, "Fractures Around the Knee Joint," and Frederick H. Falls, "Management of Eclamptogenic Toxemia." All are from Chicago.—The Kane County Medical Society adopted a resolution, October 11, declaring itself "opposed to the schemes grouped under the label of sickness insurance." Dr. Herman L. Kretschmer, Chicago, addressed the meeting on "Prostatic Obstructions."

Chicago

Personal.—A dinner was held in honor of Dr. Henry S. Houghton, director of clinics and associate dean of the Division of Biological Sciences, University of Chicago, November 5. Dr. Houghton recently resigned to become advisory representative of the China Medical Board of the Rockefeller Foundation. Speakers at the dinner included Frederic C. Woodward, LL.D., vice president of the university; Frank R. Lillie, dean, and Dr. Dallas B. Phemister, professor of surgery in the division.

Society News.—Speakers before the Chicago Gynecological Society, November 16, included Drs. Gustav Kolischer and Arthur H. Curtis on pathologic features of the female urethra and bladder, respectively.—Dr. Bernard H. Nichols, Cleveland, addressed the Chicago Roentgen Society, November 8, on "Value of Roentgenologic Examination in Right Abdominal Pain," and Dr. William E. Anspach, "Atelectasis, Bronchiectasis and the Triangular Shadow in Children."—At a meeting of the Chicago Pathological Society, November 12, speakers included Dr. H. Gideon Wells and Maud Slye on "Tumors of Islet Tissue with Hyperinsulinism in a Dog."—Dr. Carl E. Badgley, professor of surgery, University of Michigan Medical School, addressed the Chicago Orthopedic Club, November 16, on "The Value of the Thrust Graft in Atrophic and Sclerotic Nonunion." Dr. Maurice A. Bernstein also spoke on "Cysts of the Semilunar Cartilage." A dinner in honor of Dr. Badgley preceded the meeting.—Dr. Clifford G. Grulee will give a public lecture, November 22, one of a series sponsored by the Chicago Heart Association; his subject will be "The Spoiled Child in Heart Disease." Dr. Newell C. Gilbert opened the series, November 8, with a discussion of the principal causes of heart disease.

INDIANA

Hospital News.—The Smith-Esteb Memorial Tuberculosis Hospital was dedicated at Richmond, October 7. Speakers included Murray Auerbach, executive secretary of the state tuberculosis association. A gift of \$100,000 by Mrs. David Esteb was largely responsible for the hospital, it was stated.

Personal.—Dr. and Mrs. Charles Titus, Wilkinson, entertained the Hancock County Medical Society at dinner, October 4; the occasion was the couple's twentieth wedding anniversary. Speakers were Drs. Rollin H. Moser and Louis H. Segar, Indianapolis, on "Diagnostic Interpretation of Gastro-Intestinal Symptoms" and "Recent Advancement in Pediatrics," respectively.

IOWA

Personal.—Dr. Fred L. Wells, Des Moines, medical director of the Equitable Life Insurance Company of Iowa, was elected president of the Association of Life Insurance Medical Directors at its annual convention in New York, October 20.—Dr. Edward H. Files was elected secretary of the Cedar Rapids Symphony Orchestra recently.

Tilton Restrained from "Practicing."—A permanent injunction restraining Lester J. Tilton, Clinton, from practicing medicine has been obtained by the state, according to the Des Moines Tribune. It was stated that while he did not have a license to practice medicine he had worked up a large cancer cure business. Early this year Tilton was sentenced to jail for thirty days for nonpayment of a \$1,000 fine imposed in federal court for violation of the federal food and drugs act.

Public Health Meeting.—The Iowa Public Health Association held its ninth annual meeting in Des Moines, October 26. Speakers included Drs. Garner M. Byington, medical

director, W. K. Kellogg Foundation, Battle Creek, Mich.; Orianna McDaniel, Minneapolis, of the Minnesota State Department of Health, and Earle G. Brown, Topeka, executive secretary, Kansas State Board of Health. Their subjects were, respectively, "The Michigan Community Health Project as Sponsored by the W. K. Kellogg Foundation," "Observations on an Outbreak of Virulent Smallpox in the Middle West," and "Kansas Accident Facts." The evening meeting was a joint session with the Des Moines Academy of Medicine and the Polk County Medical Society, at which the guest speaker was Dr. Russell L. Cecil, New York, on "Influenza and the Common Cold."

MARYLAND

Personal.—Francis M. Root, Ph.D., associate professor of medical entomology, Johns Hopkins School of Hygiene and Public Health, died at the Johns Hopkins Hospital, Baltimore, October 21, at the age of 45. Dr. Root was well known for his work in identifying insects carrying malaria and yellow fever and had led many expeditions into the interior of South America and other tropical sections to study mosquitoes and to devise methods of combating these diseases at the source. He was managing editor of the *American Journal of Hygiene*. A graduate of Oberlin College, Dr. Root had received the degree of doctor of philosophy from Johns Hopkins University.

MINNESOTA

Sentenced for Practicing Without License.—James A. Enright, Minneapolis, pleaded guilty, August 30, to practicing healing without a basic science certificate and was sentenced to thirty days in the Minneapolis Workhouse and placed on probation for one year. Enright's claims that he was a doctor and a graduate of the University of California were found to be untrue. According to the state board of medical examiners, he has no medical education, but during a strike in Minneapolis he received money for treating and caring for injured truck drivers.

Dr. Webb Gives First Bell Lecture.—Dr. Gerald B. Webb, Colorado Springs, formerly president, National Tuberculosis Association, will deliver the first John W. Bell Lecture, December 3. This lectureship was recently established by the Hennepin County Tuberculosis Association in the Hennepin County Medical Society (THE JOURNAL, August 18, p. 496). Dr. Bell, who died in 1933, was a member of the House of Delegates of the American Medical Association. He also served as president of the state medical association, the Hennepin County Medical Society and the Minnesota Academy of Medicine, and was a member of the state senate from 1891 to 1895. He was emeritus professor of medicine and at one time professor of physical diagnosis and clinical medicine at the University of Minnesota Medical School. Dr. Webb is president of the Colorado State Board of Medical Examiners and past president of the state medical society.

MISSOURI

Tuberculosis Surveys.—The state tuberculosis association and the state department of health are cooperating in surveys throughout the state. Work in Morgan County, which included a tuberculosis and tuberculin testing study, has just been completed by the local tuberculosis association, and a similar survey is in progress in Johnson County. The Nodaway County medical and tuberculosis associations recently finished a survey of open cases. Plans are now being made to give the tuberculin test in contact cases.

Medical Section in Science Academy.—A medical section will be created at the meeting of the Missouri Academy of Science in Columbia, December 6. Dr. Dudley S. Conley, dean, University of Missouri School of Medicine, Columbia, is chairman of the new section. Charter members will be exempt from the entrance fee of \$1. Initial dues are \$1.50. Other sections to be formed at this meeting will be mathematics, physics, chemistry, astronomy, geology and geography, zoology, botany, anthropology, psychology, sociology, economics, history, philology, engineering, philosophy and political science.

Society News.—The St. Louis Neuropsychiatric Society will be addressed, November 26, by Dr. Louis L. Tureen on "Varicosities of the Vein of Galen."—Speakers before the St. Louis Medical Society, October 23, were Drs. Grayson L. Carroll on "Progress of Urology," and Waltman Walters, Rochester, Minn., on "Ureterosigmoidal Transplantations and Other Plastic Procedures for Congenital Abnormalities of the Genito-Urinary Tract." The program was given by the Southwestern Branch of the American Urological Association.—Dr. James H. Forsee, Denver, addressed the Boone County

Medical Society, October 2, on "Surgical Treatment of Pulmonary Tuberculosis."—Dr. J. Isfred Hofbauer, Cincinnati, addressed the Kansas City Obstetrical and Gynecological Society, September 27, on "Recent Views on the Etiology and Etiologic Treatment of the Late Toxemias of Pregnancy."—Dr. Dayton I. L. Seabaugh, Jackson, discussed the diagnosis and treatment of pneumonia before the Cape Girardeau County Medical Society, October 8.

NEBRASKA

Society News.—Dr. Ernest L. MacQuiddy, Omaha, addressed the Hall-Merrick-Howard Counties Medical Society, Grand Island, October 25, on "Allergic Problems in Everyday Practice."—At a meeting of the Third Councilor District Medical Society in Beatrice, October 16, speakers included Drs. William W. Waddell, Beatrice, on "Treatment of Pneumococcal Pneumonia"; John C. Thompson, Lincoln, "The Irritable Bowel and Its Treatment"; Melvin W. Binger, Rochester, Minn., "Hypertension," and Karl S. J. Hohlen, Lincoln, state medical relief administrator, "The Set-Up of the NERA with the Physician."—The Southwest Nebraska Medical Society held a meeting in McCook, November 12, with the following speakers: Drs. James E. M. Thomson, Lincoln, on "Fixed Traction with Kirschner Wire, Used in Treatment of Certain Fractures"; Carl R. Carlson, Wauneta, "Pertussis," and Carroll W. Dewey, Danbury, "Cyclic Vomiting in Children."

NEW YORK

Personal.—Dr. Herbert U. Williams, professor of pathology and bacteriology at the University of Buffalo School of Medicine, has retired after forty years of teaching. Dr. Kornel Ludwig Terplan, research professor of pathology since 1930, succeeded Dr. Williams.

Society News.—Drs. William F. Rienhoff Jr., Baltimore, and Edgar Mayer, Saranac Lake, addressed the Medical Society of the County of Nassau, October 30; on "Total Unilateral Pneumectomy" and "Treatment of Lobar Pneumonia by Artificial Pneumothorax," respectively.—A symposium on the eye was presented before the Buffalo Academy of Medicine, October 31, by Drs. Harry M. Weed, Ivan J. Koenig and Herbert H. Glosser.—Dr. George W. Crile, Cleveland, addressed the Medical Society of the County of Monroe, Rochester, November 1, on "Newer Methods of Treatment of Peptic Ulcer, Spastic Constipation and Indigestion."—Henry F. Vaughan, Dr.P.H., of Detroit, will address the Medical Society of Westchester County, White Plains, November 20, on "The Family Physician and Preventive Medicine."

New York City

The Brickner Lecture.—Dr. Moses Swick gave the fourth Walter M. Brickner Lecture at the Hospital for Joint Diseases, November 8. His subject was "Radiopaque Media in Urology."

Hospital News.—The program of the regular clinical society meeting at New York Polyclinic Medical School and Hospital included addresses by Drs. Damaso de Rivas, Philadelphia, on "Amebic Dysentery"; Francis G. Blake, New Haven, Conn., "Artificial Pneumothorax in the Treatment of Lobar Pneumonia," and Dr. Charles W. Stiles, Washington, D. C., "Medicozoological Aspects of the Race Problem."

Hospital Appointments Available.—The Hospital for Joint Diseases announces that an examination will be held December 26 at the hospital to fill six places on the general service, three to begin July 1, 1935, and three, Jan. 1, 1936, for two years' rotating service. The hospital provides maintenance and uniforms. Graduating students and graduates (unmarried men) of class A medical schools are eligible. Applications should be addressed to the director of the hospital, Madison Avenue and One Hundred and Twenty-Third Street.

NORTH CAROLINA

District Meetings.—At the annual meeting of the Seventh District Medical Society in Lincolnton, October 30, speakers included Drs. Paul R. MacFadyen, Concord, on "Idiopathic Epilepsy"; William G. Bandy, Lincolnton, "Coronary Thrombosis"; James M. Northington, Charlotte, "The Need for Vigorous Medical Leadership"; William M. Roberts, Gastonia, "Reconstruction of the Infantile Paralytic Cripple," and Addison G. Brenizer, Charlotte, "Ureteral Transplantations—Simplification of Methods." Dr. Paul P. McCain, Sanatorium, president of the Medical Society of the State of North Carolina, made an address at the banquet in the evening. Dr. Lester

A. Crowell Jr., Lincolnton, was elected president.—Drs. John Shelton Horsley, Richmond, Va., and Stewart R. Roberts, Atlanta, were guest speakers at the fall meeting of the Tenth District Medical Society, in Asheville, October 24. Dr. Horsley discussed "Symptoms, Diagnosis and Treatment of Cancer of the Colon and Rectum"; Dr. Roberts, "The Tachycardias and the Great Tachycardia." Dr. J. Rufus McCracken, Waynesville, was elected president.—Dr. Isaac H. Manning, Chapel Hill, was the guest speaker at the semiannual meeting of the Eighth District Medical Society at Elkin, October 16, on group hospitalization. Speakers on the scientific program included Drs. Kenneth B. Geddie, High Point, on "Prophylactic Immunization"; James H. McNeill, North Wilkesboro, "Artificial Fever Therapy," and Fred K. Garvey, Winston-Salem, "Tuberculosis of the Genito-Urinary Tract."

OHIO

Fifty Years of Service.—Dr. George D. Lummis, health commissioner of Middletown for forty-four years, was guest of honor at a banquet given by physicians of Middletown, October 24, celebrating his completion of fifty years as a physician. Dr. Bryan Sharkey was toastmaster and speakers included Mr. George M. Verity and Mr. B. F. Harwitz, Middletown; Dr. Ben R. McClellan, Xenia; Dr. Arthur O. Peters, Dayton; Dr. Mark Millikin, Hamilton; Dr. Elroy T. Storer, Middletown, and Dr. Lummis. Dr. Edward O. Bauer presented a watch to Dr. Lummis as a token of appreciation from his fellow physicians.

Memorial to Dr. Probst.—A memorial plaque honoring the late Dr. Charles O. Probst was dedicated at the Ohio State Sanatorium, Mount Vernon, October 27, the twenty-fifth anniversary of the founding of the hospital. Dr. Leslic L. Bigelow, Columbus, made the presentation speech and the plaque was accepted by John McSweeney, state director of public welfare. A scientific program of addresses on tuberculosis was presented by Drs. Henry Kennon Dunham, John H. Skavlem, Cecil W. Hickam and James N. Christensen, Cincinnati. Dr. Probst, who died in 1933, was for twenty-five years secretary of the state board of health, for ten years professor of hygiene, Starling Medical College, Columbus, and served as president of the Ohio Society for the Prevention of Tuberculosis and of the American Public Health Association.

OKLAHOMA

Clinical Conference in Oklahoma City.—The fifth annual conference of the Oklahoma City Clinical Society was held October 29-November 1 with headquarters at the Hotel Biltmore. About 600 physicians attended. Among guest speakers were:

Dr. Russell L. Cecil, New York, Modern Treatment of Lobar Pneumonia; Diagnosis and Treatment of Chronic Arthritis.
Dr. George Pinness, Los Angeles, Allergy as Diagnostic Problem in Respiratory Disease.
Dr. Temple S. Fay, Philadelphia, Treatment of Head Injuries.
Dr. Howard L. Beye, Iowa City, Intestinal Obstruction.
Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, Acute Diseases of Blood-Forming Organs.
Dr. Otto H. Schwarz, St. Louis, Late Toxemia of Pregnancy.
Dr. Myrie G. Peterman, Milwaukee, Acute Infections in Infancy.

A public health meeting was held October 31, at which Dr. Bierring discussed history of medicine; Dr. Fay, headaches; Dr. Beye, pain in the abdomen; Dr. Peterman, children's crying; Dr. Albert Soiland, Los Angeles, cancer, and Dr. John J. Shea, Memphis, Tenn., care of children's eyes.

OREGON

Annual Registration Due December 1.—All practitioners of medicine and surgery holding licenses to practice in Oregon are required by law to be registered annually on or before December 1, with the secretary of the board of medical examiners, and at that time to pay a fee of \$5. A practitioner failing to register is subject to a penalty of \$1 for each thirty days of default, and his failure to reregister within ninety days after December 1 is a misdemeanor.

PENNSYLVANIA

Personal.—Dr. Enoch H. Adams, Berwick, has been appointed surgeon in chief to the Center County Hospital, Bellefonte.—Dr. James Norman White, Scranton, has been named surgeon in chief to the Moses Taylor Hospital, Scranton.—Dr. Oscar Paul Holmer, assistant director of the state bureau of mental health, Harrisburg, has been named psychiatrist to the Berks County Mental Health Clinic, on a part time basis. He succeeds Dr. Ronald B. McIntosh, who resigned to become clinical director of Norristown State Hospital.—Dr. William Frederick Herbst has been chosen chief of the

medical department of Allentown Hospital to succeed the late Dr. Joseph M. Weaver.—Dr. Walter W. Hammond Jr., of the U. S. Public Health Service has been assigned as surgeon to the U. S. Northeastern Penitentiary at Lewisburg, replacing Dr. Russell Thomas, who has been transferred to Baltimore.

Philadelphia

Newbold Lecture.—Dr. Walter Bradford Cannon, Boston, delivered the thirty-third annual Mary Scott Newbold Lecture of the College of Physicians of Philadelphia, November 7, on "Stresses and Strains of Homeostasis."

Personal.—Dr. William Taylor, chief of staff of the Orthopedic Hospital, was the guest of honor at a reception given by the staff executives and the board of managers of the hospital, October 16, in appreciation of his fifty years of service to the hospital.

Portrait of Dr. Flick.—Friends of Dr. Lawrence F. Flick recently presented a portrait of him to Jefferson Medical College, from which he was graduated in 1879. Dr. Flick is still engaged in active practice. He is a former director of the Henry Phipps Institute and is the author of two books as well as of many articles on tuberculosis.

Hospital News.—Dr. Frank E. Leivy delivered the second of a series of nine health lectures for the public at Mount Sinai Hospital, October 24, on "Diet and Health"; Dr. Maxwell Scarf will deliver the next lecture, November 28, on arthritis and rheumatism, and Dr. Eugene Rush will speak, December 26, on "How to Keep Your Children Healthy."

Society News.—Dr. Austin T. Smith addressed the Philadelphia Laryngological Society, November 6, on "Bone Lesions of the Nose and Sinuses, with Special Reference to Hypertrophic Changes and Tumor Formation."—Dr. Herbert Lund, among other speakers, presented before the Pathological Society of Philadelphia, November 8, a paper on "The Incidence of Malignant Tumors at Philadelphia General Hospital, 1867-1934, with Special Reference to Primary Cancer of the Lung."—Speakers at a meeting of the Philadelphia Psychiatric Society, November 9, were F. Gilman Spencer, Esq., on "The Psychiatrist and the Law" and Raymond M. Remick, Esq., on "Wills and Testamentary Capacity."—Sir Harold Gillics, London, addressed the Philadelphia Academy of Surgery, November 5, on "Plastic Operations and Their Psychologic Effect," and Drs. John Stewart Rodman and William G. Leaman Jr., on "Surgical Risks, with Special Reference to the Cardiovascular System."

Pittsburgh

Society News.—Speakers before the Pittsburgh Academy of Medicine, October 23, were Drs. John D. Singley, on "Value of the Omentum in Abdominal Surgery, Particularly with Reference to Free Omental Grafts"; Henry C. Flood, "Congenital Defects," and Frederick B. Utley, "Treatment of Peptic Ulcer and Carcinoma of the Stomach."—The Allegheny County Medical Society has prepared a series of newspaper articles on diet and reducing, which are appearing in the Pittsburgh *Sun-Telegraph*.

WISCONSIN

Scarlet Fever in Milwaukee.—Scarlet fever cases in Milwaukee reached a high point of 961, October 29 newspapers reported. Dr. John P. Koehler, city health officer, asked the state board of health to reduce the quarantine period from four to three weeks in order to relieve crowded conditions at the South View Isolation Hospital, and the city common council appropriated \$10,000 as an emergency fund to help fight the epidemic. A campaign to locate carriers among school children was begun, October 16.

Society News.—Diagnosis and treatment of goiter were the subject of addresses at the annual meeting of the First Council District of the Medical Society of Wisconsin, Beaver Dam, October 10, by Drs. Marshall O. Boudry and David J. Twohig, Fond du Lac, and Arnold S. Jackson, Madison.—Drs. Alfred Blalock, Nashville, Tenn., and John P. Koehler, health commissioner of Milwaukee, were speakers before the Medical Society of Milwaukee County, October 12; their subjects were "Circulatory Changes in Shock" and "What Is Wrong with the Health Department?" respectively.—Dr. Emile F. Holman, San Francisco, addressed the Milwaukee Society of Clinical Surgery, October 13, on "Clinical and Experimental Observations on Pulmonary Suppuration."—Drs. Charles R. Marquardt and Herman A. Heise addressed the Milwaukee Academy of Medicine, September 18, on "Injection Treatment of Hydrocele" and "Alcohol in Relation to Automobile Accidents," respectively.—Dr. Ejvind P. K.

Fenger, Oak Terrace, Minn., addressed the Fond du Lac County Medical Society, Fond du Lac, October 16, on early diagnosis of tuberculosis.

GENERAL

Licenses Stolen.—Dr. David Hershkowitz, New York, reports that his diploma and two licenses issued by Maryland and Louisiana were stolen from his office during the week-end of October 20. A license and certificate of registration with the Los Angeles Health Department, together with a receipt for 1934 annual registration have been reported lost by Dr. Edgar Frank Mauer, Los Angeles.

Board of Psychiatry and Neurology Organized.—The American Board of Psychiatry and Neurology was organized at a meeting in New York, October 20, with the following officers: Drs. H. Douglas Singer, Chicago, president; Charles Macfie Campbell, Boston, vice president, and Walter Freeman, Washington, D. C., secretary. Other members are Drs. Lewis J. Pollock, Chicago; George W. Hall, Chicago; Franklin G. Ebaugh, Denver; Lloyd H. Ziegler, Albany, N. Y.; James Allen Jackson, Danville, Pa., and Adolf Meyer, Baltimore. A committee was appointed to consider plans for examinations, credentials and forms for application blanks. It is proposed to send application blanks to candidates soon after January 1935, and the first examination will probably be held in New York in June 1935. Further information may be obtained from the secretary, Dr. Freeman, 1726 Eye Street, Washington, D. C.

Society News.—The American Nurses' Association announces that recommendations for the Walter Burns Saunders Memorial Medal for distinguished service in nursing may come from persons other than nurses. Recommendations must be on file with the association, whose address is 50 West Fiftieth Street, New York, by December 31.—Dr. Ross V. Patterson, Philadelphia, was reelected president of the Association of American Medical Colleges at the annual meeting in Nashville, Tenn., October 29-31. Under a new plan, Dr. John H. Wyckoff, New York, was chosen president-elect. Other officers are: Drs. Thurman D. Kitchin, Wake Forest, N. C., vice president; Fred C. Zapffe, Chicago, secretary, and Basil C. H. Harvey, Chicago, treasurer; the next annual meeting will be held in Toronto, Oct. 28-30, 1935.—Dr. Leonce J. Kosminsky, Texarkana, was elected president of the Tri-State Medical Society (Arkansas, Louisiana, Texas), at its annual meeting, October 17, and Dr. George W. Parson, Texarkana, was named secretary. The next annual meeting will be held in Texarkana.

National Committee on Contraceptive Legislation.—The organization of a National Medical Committee on Federal and State Contraceptive Legislation has been announced. Its objective is the repeal of state and national laws restricting the freedom of the physician to prescribe contraceptive methods and devices, when it is his judgment that he deems it the proper treatment. Created by a local group of physicians in Washington, D. C., it bears no relationship to any medical society. It proposes to remain entirely independent of and unassociated with any lay groups advocating so-called birth control legislation and will not accept any financial aid from these sources. The committee has not yet selected a chairman, but other officers chosen are: vice chairman, Dr. Palmer Findley, Omaha; secretary-treasurer, Dr. Prentiss Willson, Washington, D. C. Dr. Everett D. Plass, Iowa City, was named chairman of the executive committee, Dr. Frederick C. Holden, New York, vice chairman, and Dr. Willson, secretary. Other members of the executive committee include the following physicians: Robert L. DeNormandie, Boston; James R. McCord, Atlanta; Fred J. Taussig, St. Louis; Owen Jones Toland, Philadelphia; George Gray Ward, New York; Frank W. Lynch, San Francisco; Henry C. Macatee, Washington; Adolf Meyer, Baltimore; Charles Jefferson Miller, New Orleans; Joseph C. Placak, Cleveland; William Allen Pusey, Chicago, and Frederick C. Warnshuis, San Francisco.

CORRECTION

Chiniofon Therapy in Amebiasis.—In his article in *THE JOURNAL*, October 20, page 1226, Dr. Alfred C. Reed stated that "Craig believes that chiniofon therapy requires bed rest, administration both by mouth and by rectum, and a careful diet." Dr. Reed desires to make clear that this statement refers to Dr. Craig's views as expressed in his article in *THE JOURNAL*, April 28, 1928. Dr. Craig's later views, expressed in an article in the *Southern Medical Journal* in December 1932, were that chiniofon is very effective without adjuvant treatment for carriers or those presenting slight symptoms of amebiasis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 20, 1934.

The Protection of X-Ray and Radium Workers

With the object of preventing casualties to x-ray and radium workers, the British X-Ray and Radium Protection Committee was formed in 1921 as the result of cooperative action of the Royal Society of Medicine, the Roentgen Society, the British Association for the Advancement of Radiology and Physiotherapy (now the British Institute of Radiology incorporated with the Roentgen Society) the Institute of Physics, the Radium Institute and the National Physical Laboratory. The chairman of the committee is Sir Humphry Rolleston, and its members are leading radiologists and physicists. Its first recommendation was issued in 1921, and revised ones followed in 1923 and 1927. At the instance of the British committee, international recommendations for x-ray and radium protection were adopted at Stockholm in 1928 by the second International Congress of Radiology. These were largely based on the British proposals. The problem of the adequate protection of the x-ray worker has been substantially eased by the introduction of the self-protected tube and more recently by the "shock-proof" tube and equipment. The committee has now issued a fourth report, which follows in the main the form of the International Recommendations and contains a number of alterations and additions based on the experience of the committee and the National Physical Laboratory, in its inspection and testing work carried out in association with the committee.

The present report lays down that the dangers of overexposure to x-rays and radium can be avoided by provision of adequate protection and suitable working conditions. The effects to be guarded against are (1) injuries to the superficial tissues and (2) derangements of internal organs and blood changes. The evidence available at present suggests that under satisfactory working conditions a healthy person can tolerate exposure to x-rays to an extent of about 0.2 roentgen daily. On the basis of continuous irradiation during a working day of seven hours, this figure corresponds to a dosage of 10⁻⁶ roentgen per second. No similar tolerance dose is at present available for the gamma rays of radium.

WORKING HOURS AND OTHER CONDITIONS

The following are recommended for whole time x-ray and radium workers: 1. Not more than seven working hours a day. No other hospital service. 2. Not more than five working days a week, the off days to be spent outdoors as much as possible. 3. Not less than four holidays a year, preferably consecutive. 4. No one to be employed whose blood or general health is unsatisfactory. Before work or training is begun, the normal leukocyte level should be found by making three afternoon counts. If none of the total counts reach 6,000 and none of the lymphocytes 1,200 the applicant should not be accepted for service. Periodic total and differential counts should be made every six months in the case of the x-ray worker and every three months in the case of the radium worker; but the six months period may be considerably extended for x-ray workers in departments that otherwise comply with the recommendations. A decided and sustained drop in total or lymphocyte counts indicates cessation of work and treatment for an adequate period. On resumption of work the circumstances should be reviewed to prevent recurrence.

GENERAL X-RAY AND RADIUM RECOMMENDATIONS

1. X-ray and radium departments should not be below the ground floor, and damp rooms should be avoided. 2. All rooms

should be provided with good natural lighting and facilities for admitting fresh air and sunshine. 3. They should be provided with adequate exhaust ventilation. 4. They should preferably be decorated in light colors. 5. A working temperature of from 18 to 21 C. (64.4 to 69.8 F.) is desirable. 6. The rooms should be large enough for convenient lay out of equipment. A minimum of 25 square meters is recommended for x-ray rooms and 10 square meters for dark rooms. Ceilings should not be less than 3.5 meters high. 7. X-ray generating apparatus employing mechanical rectifiers should preferably be in a separate room from the tube.

X-RAY PROTECTIVE RECOMMENDATIONS

1. The operator should on no account expose himself to a direct beam of the rays. 2. He should place himself as far as practicable from the tube. 3. The tube should be self protected with material of adequate lead equivalent. 4. For diagnostic work with other than completely protected tubes, the operator should be protected from stray radiation by a screen of minimum lead equivalent of 1 mm. 5. Screening examinations should be conducted as rapidly as possible with minimum intensities and apertures. The material of the diaphragm should be equivalent to not less than 2 mm. of lead. To prevent lateral escape of direct radiation, the diaphragm should be fitted within a protective enclosure. Palpation with the hand should be reduced to a minimum. 6. If small, the fluorescent screen should be provided with a protective "surround" for protection in all positions. 7. Screening couches and stands should provide arrangements for protecting the operator against scattered radiations from the patient. 8. Protective gloves should be lined with material of a minimum value of $\frac{1}{8}$ mm. of lead and protective aprons of 0.5 mm. 9. A calibrated ionization dose meter for use during treatment is strongly recommended. 10. During treatment the operator should be outside the x-ray room, behind a protective wall of lead equivalent to not less than 2 mm. for a single tube excited by voltages up to 200 kilovolts and proportionately increased for higher voltages. 11. Inspection windows in screens and walls should be of protective value equal to that of the surrounding screen or wall. 12. There should be protection against omission of a metal filter in treatment.

RADIUM PROTECTION

Protection is required against the effect of beta rays on the hands and gamma rays on internal organs. 1. For protection of the hands, reliance should be placed in the first place on distance. The radium should be manipulated with long-handled forceps and carried from place to place in long-handled boxes lined with at least 1 cm. of lead. All manipulations should be as rapid as possible. 2. When not in use, radium should be stored in a safe as distant as possible from the personnel. The safe should be provided with separate drawers individually protected. The thickness of lead varies from 8.5 cm. for 0.2 Gm. of radium element to 17 cm. for 10 Gm. 3. A separate room with exhaust fan should be provided for the make up of screened tubes and applicators, and occupied only during such work. 4. For protection against gamma rays during handling, a screen of not less than 2.5 cm. of lead should be used, and proximity to the radium should occur only during the actual work and for as short a time as possible. 5. For measurement there should be a separate room. 6. Nurses should not remain in proximity to patients being treated with quantities of radium exceeding 0.5 Gm.

RADON

Protection against the beta and gamma rays has likewise to be provided. 1. The handling of radon should be, as far as possible, during its relatively inactive state. 2. The escape of radon should be guarded against and the room in which it is

prepared provided with an exhaust fan controlled from the outside. 3. When radon is likely to come in direct contact with the fingers, thin rubber gloves should be worn. Otherwise the protective measures for radium salts should be carried out. 4. The pumping room should preferably be in a separate building. The radium in solution should be heavily screened.

A Change in the Law Dangerous to the Medical Profession

A recent change in the law, which allows survival of an action for damages after death has caused some concern in the medical profession. Formerly the law was *actio personalis moritur cum persona*. If a man died as the result of injury due to negligence, his relatives could not continue any suit pending at the time of death or begin a suit. But in the middle of the last century an act was passed allowing those dependent on the deceased, such as his children, to bring an action if death was due to negligence. This right was not only limited to dependents but was restricted in other ways. The action must be brought within a year of death and the amount of compensation must have reference to the degree of dependence. The law has been altered. An action can now be brought for personal injury caused by negligence, notwithstanding the death of the victim, and whether the death was caused by the negligence complained of or not. Further, the action may be brought at any time within six years of the injury. The *British Medical Journal* considers that the change in the law is fraught with grave danger to the medical profession and instances the case in which a patient dies on the operating table. He may have submitted to the operation knowing that it was his only hope and be the last person in the world to charge the surgeon with negligence. Yet the surgeon is exposed for six years to the risk of an action at the suit of those who are interested in the estate of the deceased. They need not have been in any way related to him or dependent on him. Again, a patient who has submitted to treatment or to an operation may subsequently die from some supervening injury or disease. His physician remains for six years exposed to the risk of an action, although the patient had no intention of bringing one and had no ground of complaint. The new law does show consideration for those liable to be affected by it by restricting the amount of damages. However, these must not be exemplary and damages to the estate which are merely the result of the death must not be awarded. For example, if an annuitant were to die, the resulting loss to his estate must not be considered. But the great grievance of the medical and other professions remains—that actions pending at the time of the death may be continued not merely for the benefit of dependents but for the benefit of any one interested in the estate.

Clinical Research at Guy's Hospital

Guy's Hospital has accepted the invitation of the Medical Research Council to cooperate in the establishment of a new unit for scientific research in clinical medicine. The council will provide the salary of a whole time director and his assistants, with the cost of all apparatus and research material. The hospital will provide the laboratory accommodations and maintain beds at the disposal of the director of the unit, who will ex officio be a member of the visiting staff with a seat on the medical committee and on the committee of the medical school. Dr. Ronald T. Grant, heretofore working in the service of the council in the department of clinical research at University College Hospital, has been appointed director of the new unit. The invitation was issued to Guy's Hospital by the Medical Research Council in accordance with its general policy of improving the facilities available in this country for the scientific study of disease in man, by means of increasing the number of higher appointments for whole time workers.

The money required for the purpose was released when the senior post formerly maintained by them at University College Hospital, held by Sir Thomas Lewis, received permanent endowment from the Rockefeller Foundation.

The London Medical Schools

At a dinner of the Knights of the Round Table Club, held in honor of London University, Sir Ernest Graham-Little (dermatologist and member of parliament for the university) referred to the new buildings at Bloomsbury of the university as the most ambitious program since the time of Wren. There were twelve famous medical schools in London, constituting the faculty of medicine of the university. The fame of these schools was enhanced by the fact that the ancient universities of Oxford and Cambridge sent their medical students to them for their clinical education. The facilities for medical education in London were unequaled anywhere else in the world. Two relatively new additions indicated the uninterrupted progress of the university. The London School of Hygiene and Tropical Medicine, founded ten years ago as the result of a gift of nearly \$2,500,000 from the Rockefeller Trust, had already established itself as the premier school of tropical medicine in the world. The newly created postgraduate school at Hammersmith, which was the joint responsibility of the government, the university and the London County Council, filled the most conspicuous gap that existed in the opportunities which London offered.

Centenarians

The deaths of thirteen reputed centenarians were registered in Scotland in 1933, all being women. The registered age was verified in five cases and disproved in three, while in the remaining five no evidence was available either to support or to disprove the claim. Of those verified, two were aged 100, two 101 and one 103. The practice of endeavoring to verify the ages of reputed centenarians was begun in 1910. Since that date 331 such deaths have been registered, 51 of men and 180 of women. Of the 331, 171 were verified and 54 disproved, while for 106 no evidence was available.

PARIS

(From Our Regular Correspondent)

Oct. 29, 1934.

The French Surgical Congress

The forty-third annual meeting of French surgeons has just been held in Paris. Every year, three subjects are chosen by the members of the congress to be discussed during the following year's session. Two members are designated to make a thorough survey of the literature of the subject assigned to them and to include any work that they may have contributed. The subjects chosen for this year were "Pathogenesis and Treatment of Proliferating and Stricture-Forming Proctitis," "Treatment of Suppurative Arthritis of the Knee (War Injuries Excepted)" and "Surgery of the Suprarenals." These papers are sent in book form to the members about a month before the congress, thus enabling them to be better prepared to take part in the discussions.

PATHOGENESIS AND TREATMENT OF PROLIFERATING AND STRICTURE-FORMING PROCTITIS

Gatellier of Paris and Weiss of Strasbourg reached the following conclusions on the first of these subjects: A proliferating and stricture-forming proctitis is only one of the clinical manifestations of a much more generalized condition, characterized essentially by a lymphangitis, which may have its origin simultaneously or individually (in only one location) in the lymph vessels of the perineal, anorectal or inguinal region, genitalia or iliac fossa. In the majority of cases, such a proctitis is due to the virus of the Nicolas-Favre disease. It is

proposed by the authors to abandon the term "benign lymphogranuloma" and to adopt the terms "disease of Nicolas-Favre, inguinal poradenitis or poradéno-lymphite inguino-ilio-périnéale" following the work of Frei and others during the last ten years on this so-called fourth venereal disease. One can exclude syphilis, gonorrhea and the mycoses as etiologic factors. Tuberculosis can be considered only as a rare cause. The review of 139 reports of operations for inflammatory strictures of the rectum demonstrates that surgical treatment is of no avail because recurrence is the rule, even when resection is performed at a level where the tissue appears normal. This failure is due to a proctitis, which is constantly advancing by way of the lymph vessels. This proctitis results in the formation of a diffuse fibrous induration progressively involving the perirectal, perineal, ischiorectal and subperitoneal tissues. The subjacent progressive lymphangitis is found even in apparently normal tissue.

Nonoperative measures and a colostomy, only when obstruction occurs, are recommended, instead of resection, until the time when some specific treatment for the virus of the Nicolas-Favre disease has been found.

TREATMENT OF SUPPURATIVE ARTHRITIS OF THE KNEE

Of the second subject chosen for discussion, Huet of Paris and de Fourmestraux of Chartres gave an equally thorough review. Every wound in the vicinity of the knee in civil practice should be explored and disinfected as a prophylactic measure. The cases in which acute suppuration is evident can be divided in adults into moderate and severe. In the former, one can try simple exploratory puncture. If the fever persists or the general condition of the patient indicates at the onset that puncture alone will not suffice, an arthrotomy followed by early mobilization in the strictly synovial forms yields the best results. To prevent the incision from closing, the synovial membrane should be sutured to the skin. Early mobilization can be made much less painful by the use of large injections of procaine hydrochloride into the lateral ligaments and into the insertions of the quadriceps. For the severe cases in adults, simple arthrotomy must yield to more radical methods. The authors warmly recommended the drainage operation employed in war injuries of the knee; i. e., removal of the patella, resection of the ends of the femur and tibia, and synovectomy. The same methods were recommended for children, with the exception that early mobilization could not be carried out so easily.

SURGERY OF THE SUPRARENALS

On the third subject the paper prepared by Leibovici (Paris) and Stricker (Mulhouse) constitutes a monograph, which will be a landmark in this rapidly developing field of surgery. The authors believe that one is justified in predicting some very gratifying results following operations for benign tumors of the medullary portion (hypertension syndrome) or of the cortical portion (genitosuprarenal syndrome).

Operative intervention for malignant tumors has not been successful. The technic is difficult, the immediate mortality high and recurrence frequent, taking place earlier in tumors of embryonal character. Malignant tumors are also commonly bilateral. Suprenalectomy is of no value in epilepsy. In certain cases of hypertension, especially those of paroxysmal type and those of the menopause, some brilliant results have been reported. But there have also been some failures in hypertension cases.

In thrombo-angiitis obliterans (Buerger's disease) of the extremities, suprenalectomy is indicated in cases in which the vessels are still permeable, capable of vasodilatation. Lumbar sympathectomy offers a better prognosis in these cases than suprenalectomy. Too few patients with Raynaud's disease have been operated on to enable one to draw any conclusions. Denervation of the suprarenals for hyperthyroidism

seems to have a favorable action in lowering the basal metabolism rate, especially for cases not benefited by repeated thyroidectomies.

OPERATIVE TREATMENT OF ACUTE PANCREATITIS

In their paper, Brocq and Varangot said that thus far surgery in acute pancreatitis has not been successful, because much remains obscure as to the initial causes. A rational treatment should be based on the prevention of the conditions that lead to activation of the pancreatic secretion, to check these causes when they have once begun and to combat the shock that results from them. Treatment varies according to whether one is dealing with the aseptic or the suppurative form. The former represents the real evolution of pancreatic autodigestion from the stage of activation of the trypsin within the gland itself. Death in aseptic pancreatitis seems to be due to toxemia similar to that observed in severely jaundiced patients. It would seem as though, as a result of hepatic insufficiency, certain incompletely metabolized proteins enter the circulation. The object of treatment should be to drain the pancreas, eliminate the cause of the pancreatitis, especially drainage of the biliary tract, combat the shock and intoxication and attempt to save as much as possible of the pancreas itself. The gallbladder should be drained and calculi removed, at the same time an examination of the stomach and duodenojejunal region being made if the patient's condition permits. If there is hypochloremia and hyperglycemia in addition to shock, the former should be treated by sodium chloride intravenously and the latter by insulin. In favorable cases one sees a decided improvement in from two to three weeks. Death often occurs two or three days after operation. The mortality of these aseptic cases remains between 30 and 50 per cent; perhaps with earlier operation and drainage of the biliary tract, it may be lowered.

As to the cases due to infection, a division into suppurative and gangrenous forms is very difficult. They develop rapidly in persons apparently in the best of health. One can observe the formation of a swelling in the epigastric region or palpate a deep-seated, diffuse, fixed, painful mass. At operation one finds an infected hematoma in which lie gangrenous shreds of pancreatic tissue. Unless operation is performed in these cases, death from sepsis or peritonitis occurs. In some cases the process may be walled off with recurrent febrile attacks. There is a type of suppurative pancreatitis in which the condition develops gradually, leading to the formation of an epigastric mass. The pus may burrow toward the diaphragm or appear in the lumbar region or evacuate into a hollow viscus. Early operation will avoid these complications. The prognosis is more favorable in suppurative than in acute or hemorrhagic pancreatitis.

If the gland has undergone complete destruction, the outlook is very serious. The more localized the process, the better the prognosis. The anterior mode of approach to the pancreas is the only one to be considered.

In the next paper on the surgical treatment of chronic pancreatitis, Berard and Mallet-Guy considered as amenable to operation only cases in which the inflammatory changes were primary in the pancreas. Their character, whether benign or malignant, is discernible only by the clinical behavior of the tumor; that is, if it diminishes in size, it is benign and vice versa. An eighteen months cure stamps the lesion as being of noncancerous nature. This is due to the fact, at least at the beginning of the disease, that the clinical picture of a cancer in a certain number of cases, and of a benign chronic pancreatitis, is identical. Even exploratory operation does not always enable one to make a differential diagnosis. The biliary origin of chronic pancreatitis is evident in more than half of the cases, but it is difficult to determine the route of infection. Icterus and pain are the most reliable symptoms. The jaundice is considered generally to be due to an obstruction of the

common duct; but there are cases in which one cannot find such an obstruction, and postoperative injection of iodized oil into the biliary tract also fails to reveal an obstruction. At present, the surgical treatment of chronic pancreatitis is empirical. The operation that yields the best results is drainage of the biliary tract, even when there is no demonstrable obstruction. Such a drainage can be external (cholecystostomy or choledochotomy) or internal (among the latter, anastomosis of the duodenum and common duct is not to be recommended, because of the danger of ascending infection of the bile ducts). The best results follow anastomosis of the gallbladder and stomach. External drainage operations are more likely to be successful if drainage of the gallbladder is combined with that of the hepatic duct. Chronic pancreatitis with icterus can be cured in 75 per cent of the cases, and in an even larger number if there have been no previous lesions of the gallbladder. Drainage of the common duct is even more efficacious than that of the gallbladder, but there is danger of a permanent fistula. In chronic pancreatitis without icterus, drainage of the biliary tract is of little benefit. Direct drainage of the pancreas is not to be recommended. Even if a biliary fistula develops in cases of chronic pancreatitis after drainage of the gallbladder, one can always resort to an anastomosis between the latter structure and the stomach. Even if there are evidences of duodenal compression, gastro-enterostomy is rarely indicated.

Abuse of War Pensions in France

That France also has its pension troubles is the subject of an article in a recent number of the *Siècle médical*. Jan. 1, 1933, there were about 1,181,000 persons drawing pensions. Of these, 60,143 receive an indemnity of 100 per cent and 278,000 one of 10 per cent. The total sum spent for pensions is about seven billion francs annually (nearly five hundred million dollars at the present rate of exchange). One billion francs (seventy million dollars) is spent for those having major war injuries and those who were gassed, and four billion francs (over 280 million dollars) for those who are ill or "feign illness." About one third of those who receive pensions were noncombatants, such as workers in munitions plants.

During the first years after the war, these "medical parasites," as the writer terms them, did not receive any pension at all. Following the passage of a law in 1919, pensions were allowed to every one, whether in active service or not, "on whom a disease was found, it being taken for granted that such condition had been contracted or had been made worse by the dangers, accidents or fatigues of service." Every one who had a certificate of some acute illness, no matter if only of short duration and mild in nature, issued during the war, now applies for a pension.

This situation has assumed such political importance that it will require a strong hand to control it.

MOSCOW

(From Our Regular Correspondent)

Oct. 6, 1934.

Reform of Medical Education in the Soviet Union

In May 1934 an all union conference on medical education was called at Moscow to discuss the project of reorganization of medical education. In the medical school a five year course will be organized. The first five semesters will follow a common program. In the fifth year the students are to study medicine in connection with their future specialty. In all medical schools there will be curative and prophylactic faculties, but the pediatric and hygienic courses will be given only in universities where there are enough qualified teachers. The obstetric faculty will be a part of the curative-prophylactic faculty. The faculty of physical culture will be closed, but the study of physical culture will be obligatory on every other

faculty. The preparation of physicians by means of correspondence courses is annulled. Many research institutes will be united with faculties of medicine in order to make the latter centers of scientific thought. The oldest medical institutes of Moscow, Leningrad, Tomsk, Kazan, Rostov on Don and Voronezh will be reorganized as medical schools. Government examinations will be established. Persons entering faculties of medicine will have to be much better prepared than previously. Many new textbooks will be written for students. In the autumn of 1934, 9,500 new students will be received in the faculties of medicine. The number of young men desiring to receive medical education is growing.

Academician I. P. Pavlov

September 27, the eighty-fifth birthday of the physiologist Ivan Petrovitch Pavlov was celebrated by the Soviet Union. Professor Pavlov was born in the family of a priest at Riazan and received his early education in a seminary. In 1870 he went to St. Petersburg, where he attended the faculty of natural sciences and began his study of physiology under the guidance of Professor Zion. His first work, on innervation of the pancreas, published in 1874, was awarded a gold medal. After graduating at the university, he entered the military medical academy, simultaneously working as assistant to Professor Zion. He went to Germany in 1877, where he studied physiology of the gastro-intestinal tract with Professor Heidenhain. Coming home he took up research on the physiology of the blood. In 1879 he graduated from the academy but remained there for further study. He directed for ten years the experimental laboratory of the clinic of the physician Prof. S. P. Botkin. In 1884-1886 Pavlov worked abroad with Ludwig and Heidenhain. He published several papers on the pancreatic juice after returning home. He received the degree of doctor of medicine in 1883, became a private dozent in 1884 and was professor of pharmacology at the military medical academy in 1890. He was appointed to the chair of physiology in 1896, which he occupied till 1924.

In 1897 Professor Pavlov summarized the results of his work in his classic monograph "Lectures on the Digestive Glands." He was awarded for these researches the Nobel prize in 1904. In 1906 he was elected a member of the Russian Academy of Science. Professor Pavlov is a member of numerous foreign academies and scientific institutions and he has received many international prizes for his scientific work.

In 1903 in the International Congress of Physiologists in Madrid he read his well known paper on the experimental psychology and psychopathology of animals, which became the basis of a new chapter in physiology. There are hundreds of scientific reports made under the guidance of Professor Pavlov on the question of conditional reflexes, which was first developed by him.

In his two books "Twenty Years' Experience in the Experimental Study of the Higher Nervous Reactions of Animals" and "Lectures on the Work of the Cerebral Hemispheres" he gave for the first time a complete systematic statement of the theory of conditioned reflexes.

The Soviet government has always been attentive to Pavlov. In the difficult year of 1920 there was published by Lenin a special decree about the edition of Pavlov's works, which provided good working conditions for the pursuit of his scientific studies. Five years ago the government published another decree about the organization of special laboratories in the village of Coltuschi (near Leningrad) with a special building for Pavlov's work. The Council of People's Commissars of the Soviet Union in recognition of his eighty-fifth anniversary established an annual prize of 20,000 rubles for the best work in physiology and five scholarships of 500 rubles monthly each for young scientists in the field of physiology. The govern-

ment will publish in 1935-1936 all of Pavlov's works and will assign for his biologic station in Coltuschi 1,000,000 roubles yearly. A street in Leningrad will bear Pavlov's name. Talking pictures devoted to Pavlov and his research are now being made under the guidance of the pupils of Pavlov—Professors Podcopajev, Féodorov and others. The first series of pictures will be ready for the opening of the fifteenth International Physiologic Congress in the Soviet Union in August 1935.

Besides his scientific study, Professor Pavlov works every day physically and enjoys sport. In the parks of Coltuschi he plays skittles and rides a bicycle. At present he directs three large laboratories. Nearly all chairs of physiology in the Soviet Union are occupied by his pupils, many of whom are known the world over—Professors Orbeli, Bicov, Féodorov, Speransky, Rozenkov, Savitch, Frolov, Zeleni and others.

The Fifth Congress of Physiologists

The fifth All-Union Congress of Physiologists, Biochemists and Pharmacologists was held at Moscow, June 25-30. Prof. I. P. Rosenkov was elected president of the congress. About 250 papers were read at the meetings. The sections of the congress were on (1) comparative physiology, (2) physiology of nourishment, (3) biochemistry, (4) physiology of work, (5) experimental physiology and (6) pharmacology and industrial toxicology. The meeting of June 26 was devoted to the question of neurohumoral regulation. Prof. Leo A. Orbeli of Leningrad and Prof. D. E. Alpern of Kharkov read papers. June 27, three papers were read. The first one was by Prof. A. N. Palladin, who spoke on the biochemistry of muscular activity. Investigations on the influence of athletic training on the content of lactic acid in muscles demonstrated that the training causes no accumulation of lactic acid. Professor Palladin spoke about the influence of fatigue on the oxidative processes that are not immediately connected with muscular work. Prof. I. S. Beritov of Tiflis spoke on the psychonervous elements of individual behavior of the higher vertebrates. He considers behavior the total reaction of the organism, a reaction formed of the adaptation of the animal to the external medium and adaptation of the medium to the requirements of the organism. Professor Beritov refers every act of behavior to the reflexes, though the laws of the science of behavior and the science of reflexes are different. He studied the behavior of dogs by the method of free movements. The behavior of the animals based on their individual experience he calls "individual behavior." Psychology and reflexology cannot completely explain the behavior of men and animals. Professor Beritov's paper called forth many objections, mostly from representatives of I. P. Pavlov's school.

June 29 the plenary meeting of the congress was devoted to the origin of excitation and fatigue. Prof. A. A. Uchomsky of Leningrad said that tissues and organs that do not get tired do not exist. The problem of fatigue is outgrowing physiology and is becoming a social problem of expedient organization of work. Prof. D. S. Vorontzov of Kazan spoke of the origin of excitement and demonstrated that it is closely connected with metabolism. The electrical reaction of nerve and muscle does not exceed five seconds. Prof. D. L. Rubinstein of Moscow said that the use of oscillations of low frequency currents of some hundred million oscillations in a second opens new ways of studying the activity of a living cell.

In the section of comparative physiology, Prof. S. M. Leites of Kharkov read a paper on the regulation of fat metabolism. Dr. N. F. Popov of Moscow spoke about the vegetative functions of dogs after exclusion of the central nervous system.

In the section of pharmacology, Prof. V. V. Savitch of Leningrad reported on the influence of soporifics on the intestinal secretions. Small doses of morphine depress the secretion, having no influence on the brain; barbital and paraldehyde stop

the secretion of the intestine. Those observations point out the rôle of the central nervous system on the secretion of the intestine.

Professors Honored

The All Russian Executive Committee has given the title "honorary workers of medicine" to the following well known Russian professors: Prof. Serge N. Davidenkov of Leningrad, who wrote about 140 papers in neuropathology, biology and genetics; Prof. Leo A. Orbeli, who occupies the chair of physiology in the Military Medical Academy and in the All-Union Institute of Experimental Medicine; the surgeon Professor Andreas; L. Polenov, who in 1926 established the first chair of neurologic surgery in the Soviet Union; Prof. Ludwig I. Svergeevsky, a specialist in ear and throat diseases and one of the best Soviet surgeons; Prof. Serge U. Spasocutczky and Prof. George N. Speransky, a pediatrician, one of the founders of the Institute for Studying Motherhood and Childhood.

RIO DE JANEIRO

(From Our Regular Correspondent)

Sept. 15, 1934.

Indications for Roentgen Therapy in Rhinolaryngology

In a communication to the Society of Medicine and Surgery of São Paulo, Dr. P. Mangabeira Albernaz states that the two most important indications of roentgen therapy in rhinolaryngology are the papillomas of the larynx and rebellious hemorrhages. The roentgen treatment of papillomas is relatively recent and the results are spectacular. The treatment is simple and without danger if the right technic is followed. The author reports the case of a child, aged 12, with aphonia due to a papilloma of the left vocal cord. A cure was obtained and has been maintained for more than two years with irradiations of the larynx. Roentgen therapy is the method of choice for the treatment of papillomas of the larynx. Not as well known as the former procedure is the effect of roentgen rays on hemorrhages resistant to all other therapeutic means. In these cases, in which even transfusion fails, irradiation (irradiation of the hypophysis, of the spleen, of the lumbar medulla, and of the region in which the hemorrhage takes place) stops the hemorrhage suddenly. The author states that the use of roentgen rays has not only been a therapeutic measure but also a prophylaxis, under which conditions the irradiation must be done fifteen hours before the intervention. He cites the case of a child, aged 6, having a hemorrhagic diathesis of nineteen days that was diagnosed as purpura haemorrhagica. Blood examination showed 1,900,000 red cells, 10,000 leukocytes, 35 per cent hemoglobin, absence of hematoblasts, increase in the bleeding time and normal coagulation time. The polymorphonuclears were 43.5 per cent and the lymphocytes 43.5 per cent. After various treatments, tamponing, emetine, transfusion and so on, the case was given up as lost. The author advised roentgen therapy. The child was cured and has remained so for three years.

Caseation of Nerves of Leprosy

Dr. Enrico Branco Ribeiro has recently presented a well documented work to the Society of Medicine and Surgery of São Paulo on the surgical aspects of caseation of nerves in leprosy. On the basis of ten cases the author points out that in leprosy neuritis the peripheral nerves increase in volume; generally this is due to a fibrosis, but rarely there is necrosis followed by caseous coagulation and later liquefaction, surrounded by granulomatous tissue with fibroblasts, collagenous fibrils, giantocytes, lymphocytes, plasmocytes, histiocytes and newly formed vessels, but as a rule, with absence of *Mycobacterium leprae*.

This focus of caseation, which is found preferably in the endoneurium, passes to the epineurium and from there pro-

gresses in the direction of the superficial tissues, reaching eventually the skin surface. The author says that this is a surgical condition. He divides the cases into three groups. The first group includes those in which the caseous tumor has already pierced the skin, leaving a retractile scar that adheres to the nerve trunk and to the skin. In these cases the author does a neurolysis and envelops the reconstructed nerve with a piece of peritoncum recently collected. The second group comprises cases in which the disorder has attacked a nerve trunk at one or various points with formation of tumors. In these cases he proceeds to the dissection and extirpation of the tumors, to the incision of the nerve and to extraction of the caseous matter found in the endoneurium. The third group is composed of cases in which the disorder has attacked secondary cutaneous nerves and in which surgery cannot be conservative, the tumors being excised through section of the nerve branch above and below the affected part.

Congress of Neurology, Psychiatry and Legal Medicine

At the fourth Brazilian Congress of Neurology, Psychiatry and Legal Medicine, July 18-24, not less than thirty-eight papers on neuropsychiatry and legal medicine were presented and discussed. These contributions put up in a volume will give proof of the activity of the disciples of Juliano Moreira, Franco da Rocha, A. Austregésilo and Henrique Róxo, who have done so much to exalt the level of national medical culture.

Personals

Drs. Antonio Fontes and Valois Souto have been named by the government as representatives of Brazil at the tuberculosis conference in Warsaw.

JAPAN

(From Our Regular Correspondent)

Sept. 29, 1934.

The Abolition of Titles and Degrees in Advertisements

The Medical Association of the Western Provinces recently passed a resolution in its annual meeting to propose to the government the abolition of medical titles and degrees in advertisements or signs of any kind, for the following reasons: First, the present medical law prohibits the use of any kind of doctors' degrees in their advertisements. Second, generally speaking, the titles and degrees are conferred for theses on fundamental research and not for clinical work. The bearers are apt to use them in advertising their clinical skill. Third, there are too many who abuse their degrees, such as lending them to others or in advertising "patent medicine" and quack treatments. The new minister of education, considering it to be his great mission to reform the whole educational system, has put his hand to this work of reformation. He has taken up the question of titles and degrees, together with the question of shortening the number of school years as a whole. It is expected that a bill embodying the proposed reforms will be presented during the coming winter session of the diet. The government, it is believed, will support the bill, as there are many communities that support it.

The Regulation of Quackery

The rapid increase of medical impostors using various kinds of instruments, which they call their own invention, has forced the home office to issue new general regulations. An official committee was organized for this purpose, and at its first meeting the metropolitan police board issued the following reports: There were in Tokyo in August 4,473 lay practitioners. Almost half of them engage in what they call "electrohealing." Official control over them has not been strict because the methods ten years ago were quite simple and not believed to be harmful.

It was not, therefore, regarded as a violation of the medical act. But in 1929 the government declared some of them to be a kind of medical practice and forbade charlatans to use ultra-violet rays, high frequency current and the roentgen rays. In proportion to the increase in quacks, the manufacture of lamps and electrotherapeutic instruments increased, and many invalids were taken advantage of. The national health has come to be threatened by these harmful devices. A surprising fact is that there came to be a school of what is called electrohealing. It is not a school in its true sense, yet dares to assume this title. A flourishing school of this kind is said to have sent out more than 2,000 persons, who finished their course all over the country within a few years. The intelligent unemployed, who are everywhere at present, are ready to enter such a school. The course is usually six months, or a year and a half at the longest. After the students have paid a large school fee and bought an instrument of the school's own design at a high price, the queer title of "master of electrohealing" is conferred and they start their practice. Healers who use various rays are next in number. Palm therapy flourished widely a few years ago, but at its zenith a famous peer fell a victim of it. This caused a great sensation and led to this therapy being prohibited on sick people, and now it is allowed only to promote health and not healing. The new regulations are expected to cut the number of lay practitioners to two thirds when it is enforced.

Microbiologic Research Institute

The official gazette of September 17 says that a new microbiologic research institute has been established in connection with the Osaka Imperial University. There has been only one institute in Japan of this kind, the Infectious Disease Research Institute in Tokyo, which is chiefly devoted to studies of microbiology and to the manufacturing of preventive vaccines. Osaka is often called the gateway of infectious diseases from abroad, and so it will be more convenient for this kind of work than Tokyo. The new institute will study chiefly leprosy, tuberculosis, bacteriology and the prevention of epidemics. It will deal with infectious diseases that are closely connected with the surgical, internal and dermatologic departments. The first chief is Prof. Dr. Yashiro Furutake of the medical department of the university. Drs. Taniguchi, Satani, Imamura, Hosokawa and Sakurai, who are professors and assistant professors of the university, are on the staff. It will be completed in 1939 and the annual expenditure is expected to amount to over 330,000 yen. A large building will have been built by that time.

Kitazato Memorial Library

It is three years since the late Baron Dr. Shibasaburo Kitazato passed away. In order to commemorate his achievements and services in the progress of medical science, a plan for establishing a medical library has been made public by his friends. This will be the first library of medicine in this country. The sum of 300,000 yen will be contributed for the expenses of construction by the people at large. The chief of the committee is Baron T. Yamamoto, ex-minister of home affairs.

A New Medical College

It has been officially announced that a new medical college will be attached to the Formosa Imperial University at Taiwan and will open in 1936. Construction will be begun next year. Prof. Dr. S. Mita of the Tokyo Imperial University, a member of the organizing committee, will be appointed director, and twenty-four professors will be selected from various places by 1940, when the work will be completed. The present medical school in Formosa will be raised to the status of a university college of medicine. This will be the second medical college in Japanese territory.

Marriages

NORMAN BERNARD MURPHY, Augusta, Maine, to Miss Harriet Madeline Colgan of Mattapan, Mass., in September.

THOMAS BLACKBURN PAYNE, Fredericksburg, Va., to Miss Virginia Garnett at Gwynedd, Pa., October 20.

HARCOURT ALEXANDER MORGAN JR., Knoxville, Tenn., to Miss Sara Stone of Union City, August 9.

PIERRE G. JENKINS to Miss Emily Sinkler Martin, both of Charleston, S. C., at Florence, October 15.

JEFFERSON ALBRIGHT JONES, Philadelphia, to Miss Mildred Wolfe at Valley Forge, Pa., September 29.

PHILLIP P. PEASE, Chardon, Ohio, to Miss Marion Johnson of Middlefield, at Erie, Pa., October 5.

EDMUND LUDLOW KEENEY to Miss Eleanor Seymour Zimmerman, both of Baltimore, October 27.

GEORGE KENDAL DAZLY, Santa Monica, Calif., to Miss Doris Schwuchow of Los Angeles, October 11.

JAMES MITCHELL PARKER, Boston, to Miss Elizabeth Harding of Chestnut Hill, Mass., September 21.

MAYNARD F. POLAND, Indianapolis, to Miss Elwanda Phillips of Dunkirk, Ind., October 7.

OLIVER JOSEPH MENARD, Springfield, Mass., to Miss Janet T. Moran of Boston, November 7.

LORAIN WILLIAM WARD, Fairbank, Iowa, to Miss Graec Edwards of Blairstown, recently.

FRANK S. PECKOSH, Oxford Junction, Iowa, to Miss Collette Hart of Lost Nation, recently.

DOMINIC ZITO, Flushing, N. Y., to Miss Margery Armitage of New York, September 22.

HOWARD C. SPARKS, Monroeville, Ohio, to Miss Mary Shondel of Ottawa, recently.

ARTHUR CUNO FRANK ZODEL to Miss Beatrice Wilson, both of Johnstown, Pa., June 7.

GEORGE E. STAFFORD, Salina, Kan., to Miss Mary Greenwald at Falls City, Neb., July 5.

FRANCIS I. TAYLOR, Altoona, Pa., to Miss Elizabeth Hepler of Meadville, May 22.

ARTHUR E. PERLEY, Quincy, Ill., to Miss Ruth Buss in September.

Deaths

Lewis Linn McArthur @ Chicago; Rush Medical College, Chicago, 1880; member of the Colorado State Medical Society and the Society of Clinical Surgery; member and past president of the American Surgical Association; member and formerly chairman of the American section, International Surgical Congress; past president of the Chicago Medical Society; fellow of the American College of Surgeons; since 1886 chief surgeon to St. Luke's Hospital and consulting surgeon to the Michael Reese Hospital; consulting surgeon to the Grant and Evanston (Ill.) hospitals; was commissioned a major in the Medical Reserve Corps in 1917 and director of Base Hospital, number 14; Chevalier of the Order of Leopold of Belgium; aged 76; died suddenly, November 5, of heart disease.

Eugene R. Carpenter, Dallas, Texas; Jefferson Medical College of Philadelphia, 1898; member of the State Medical Association of Texas; past president of the El Paso County Medical Society; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the visiting staffs of the Baylor, Methodist and Parkland hospitals; retired with the rank of captain in the U. S. Army; aged 61; died, October 9, in a local hospital.

Fulton Schuyler Vrooman, London, Ont., Canada; University of Toronto Faculty of Medicine, 1904; member of the American Psychiatric Association; associate professor of psychiatry, University of Western Ontario Medical School; served with the Canadian Army Medical Corps during the World War; superintendent of the Ontario Hospital; aged 52; died, July 10, in the Victoria Hospital, following an operation for appendicitis.

Howard Perry Bellows, Boston; Boston University School of Medicine, 1877; professor emeritus of otology, professor of physiology, 1877-1885, and professor of otology, 1886-1929, at

his alma mater; fellow of the American College of Surgeons; consulting aurist to the Massachusetts Memorial Hospitals and Westboro (Mass.) State Hospital; aged 82; died, October 16, at his home in Cambridge.

William H. Van Gieson, Bloomfield, N. J.; College of Physicians and Surgeons, Baltimore, 1886; vice president and for seventeen years member of the board of education; aged 69; for many years on the staff of the Mountinside Hospital, where he died, September 7, of injuries received when he fell over a rock, while at his summer home in Boothbay Harbor, Maine.

John Randolph Garrett @ Roanoke, Va.; University College of Medicine, Richmond, 1898; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the Roanoke Hospital; aged 65; died, August 28, in the Jefferson Hospital, of uremia and hypertrophy of the prostate.

Jacob Lincoln Schoch, New Ulm, Minn.; University of Michigan Medical School, Ann Arbor, 1885; an Affiliate Fellow of the American Medical Association; member of the state board of medical examiners, 1891-1896; aged 71; on the staff of the Loretto Hospital, where he died, September 22, of pulmonary thrombosis and pleurisy.

Thomas Kelly Van Zandt, Louisville, Ky.; Kentucky University Medical Department, Louisville, 1902; at one time adjunct professor of obstetrics, University of Louisville School of Medicine; on the staffs of the Norton Memorial Infirmary and St. Anthony's Hospital; aged 59; died, September 16, of cerebral hemorrhage.

Edward Andrew Tracy, Keene, N. H.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1902; member of the New Hampshire Medical Society; served during the World War; aged 57; on the staff of the Ellicott Community Hospital, where he died, September 2, of peritonitis, following an operation.

Alfred Forbes Blackhall, Schenectady, N. Y.; University of Vermont College of Medicine, Burlington, 1918; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; on the staff of the Ellis Hospital; aged 39; died, October 24, of embolus following multiple fractures.

Leonard Ernest Neale, Baltimore; University of Maryland School of Medicine, Baltimore, 1881; professor emeritus of obstetrics at his alma mater; member of the Medical and Chirurgical Faculty of Maryland; fellow of the American College of Surgeons; aged 75; died, October 19, of heart disease.

John Alexander MacArthur, Winnipeg, Manit., Canada; McGill University Faculty of Medicine, Montreal, Que., 1885; professor of diseases of children, University of Manitoba Faculty of Medicine; on the staffs of the Winnipeg General Hospital and St. Boniface Hospital; aged 86; died, August 26.

Charles Wardsworth Wright, Longmeadow, Mass.; University of the City of New York Medical Department, 1888; member of the Massachusetts Medical Society; served during the World War; on the staff of the North Adams (Mass.) Hospital; aged 70; died, September 25, of uremia.

Frank A. Metcalfe, Chicago; Hahnemann Medical College and Hospital, Chicago, 1897; formerly professor of materia medica and internal medicine at his alma mater; on the staff of the Jackson Park Hospital; aged 61; died, October 20, of essential hypertension and cerebral thrombosis.

Harry Parker Thompson, Brookville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1890; member of the Medical Society of the State of Pennsylvania; on the staff of the Brookville Hospital; aged 72; died, September 23, in the Cleveland (Ohio) Clinic Hospital, of hepatitis.

Samuel C. Broadstreet @ Mount Pleasant, Texas; University of Louisville (Ky.) School of Medicine, 1888; past president and secretary of the Titus County Medical Society; aged 70; died, October 12, in the Paris (Texas) Sanitarium, of disease of the prostate and pyelonephritis.

Frederick Augustine Rupp, Lewistown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1900; member of the Medical Society of the State of Pennsylvania; formerly member of the board of health of Lewistown; served during the World War; aged 58; died, July 23.

John Allen Thames, Jackson, La.; Tulane University of Louisiana Medical Department, New Orleans, 1908; member of the Louisiana State Medical Society; superintendent of the East Louisiana State Hospital; aged 52; died suddenly, September 30, at Harvey, of heart disease.

John Albert Boger @ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1889; fellow of the

American College of Surgeons; for many years police surgeon; on the staffs of the Episcopal, Stetson and St. Mary's hospitals; aged 65; died, October 20.

Christopher Hamilton Tebault Jr., New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1895; member of the Louisiana State Medical Society; veteran of the Spanish-American War; aged 66; died, September 4, of carcinoma of sigmoid and rectum.

David Thomas Tayloe Jr. • Washington, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1919; fellow of the American College of Surgeons; aged 40; connected with a hospital bearing his name, where he died, September 14, of edema of the brain.

Eugene L. Evins, Wilburton, Okla.; Tulane University of Louisiana Medical Department, New Orleans, 1892; member of the Oklahoma State Medical Association; aged 69; died, August 31, in St. Mary's Infirmary, McAlester, of acute emphysema of the gallbladder.

Charles M. Braidwood, Imlay City, Mich.; Detroit College of Medicine, 1900; member of the Michigan State Medical Society; past president and secretary of the Lapeer County Medical Society; aged 59; died in October at Port Huron, of valvular heart disease.

John Albert Williams • Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; aged 67; on the staff of the Ohio Valley General Hospital, McKees Rocks, where he died, September 20, of diabetes mellitus and tuberculosis of the lungs.

Harmon Silas Trueman, Medford, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1880; member of the Massachusetts Medical Society; aged 76; died, September 1, in the Trull Hospital, Biddeford, Maine, of coronary occlusion.

William Smith O'Brien, Chicopee, Mass.; Tufts College Medical School, Boston, 1905; formerly member of the board of health and school committee; on the staff of the Mercy Hospital, Springfield; aged 53; died, September 3, of heart disease.

William F. Farley • Holden, W. Va.; University of Louisville (Ky.) School of Medicine, 1893; past president of the Logan County Medical Society; medical superintendent of the Holden Hospital; aged 68; died, September 26, of myasthenia gravis.

Leander D. Keith, Anna, Ill.; Hospital College of Medicine, Louisville, Ky., 1896; member of the Illinois State Medical Society; aged 69; died in October as the result of a fall from a third story window of the Missouri Baptist Hospital, St. Louis.

William Minor Bryan • Senior Surgeon, U. S. Public Health Service, Charlottesville, Va.; University of Virginia Department of Medicine, Charlottesville, 1906; aged 52; died, October 5, of angina pectoris and coronary sclerosis.

Edward L. C. Richter, St. Louis; Beaumont Hospital Medical College, St. Louis, 1897; member of the Missouri State Medical Association; formerly coroner and alderman; aged 66; died, September 6, of cerebral hemorrhage.

Starr Clarence Hollis • Adams, N. Y.; Syracuse University College of Medicine, 1900; health officer for thirty-four years; served during the World War; aged 56; died suddenly, September 10, of coronary occlusion.

Willis Rollin Congdon, Santa Cruz, Calif.; Rush Medical College, Chicago, 1889; member of the California Medical Association; aged 66; died, August 18, of bronchopneumonia, chronic pyelitis and chronic myocarditis.

Edwin James Glass Valentine, Jersey City, N. J.; New York Homeopathic Medical College and Hospital, 1894; formerly member of the county board of health; aged 64; died, August 27, of aplastic anemia.

John Preston Ferguson, Louisville, Ky.; Jefferson Medical College of Philadelphia, 1892; member of the Kentucky State Medical Association; aged 68; died, October 8, of cerebral hemorrhage.

Frank C. Robinson, Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1896; member of the Arkansas Medical Society; aged 71; died, September 19.

John Angelo Lester, Nashville, Tenn.; Meharry Medical College, Nashville, 1895; emeritus professor of physiology at his alma mater; aged 69; died, September 27, of carcinoma of the prostate.

Lewis E. Robinson, Magee, Miss.; Memphis (Tenn.) Hospital Medical College, 1899; member of the Mississippi State

Medical Association; aged 64; died suddenly, October 2, of heart block.

Harry Willrich Oyer, Pittsburgh; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; died, August 2, in Toronto, Ont., Canada.

Silas Woodson Nossaman, Cunningham, Kan.; University Medical College of Kansas City, 1902; aged 60; died, September 15, in the Wesley Hospital, Wichita, of appendicitis.

Ralph L. Hoyt, Christiana, Pa.; Baltimore Medical College, 1898; member of the Medical and Chirurgical Faculty of Maryland; aged 58; died, October 2, of heart disease.

Samuel Yoffe, Chicago; Chicago College of Medicine and Surgery, 1916; aged 44; died, October 19, in the University of Pennsylvania Hospital, Philadelphia, of pneumonia.

Thomas Mason Staley • Bicknell, Ind.; Baltimore Medical College, 1903; served during the World War; aged 55; died, September 28, of chronic valvular heart disease.

Robert Alexander Twitchell, East St. Louis, Ill.; American Medical College, St. Louis, 1890; member of the Illinois State Medical Society; aged 77; died, September 21.

Jean Baptiste Delisle, Ottawa, Ont., Canada; Laval University Faculty of Medicine, Quebec, 1892; aged 72; died, August 11, in the Notre Dame Hospital, Montreal.

Warren Smith, Holland, Mo.; St. Louis College of Physicians and Surgeons, 1898; aged 62; was instantly killed, October 8, when he was struck by an automobile.

Robert McAdam, Hot Springs National Park, Ark.; Hahnemann Medical College and Hospital, Chicago, 1885; aged 85; died, July 24, of chronic nephritis.

Frank Thomas Roach, Newport, Mich.; University of Michigan Medical School, Ann Arbor, 1903; aged 56; died, October 17, of carcinoma of the stomach.

Charles Henry Gibbs, Ellsworth, Maine; Medical School of Maine, Portland, 1881; member of the Maine Medical Association; aged 83; died, August 27.

William Rockwell, River Hebert, N. S., Canada; Jefferson Medical College of Philadelphia, 1886; aged 75; died, September 28, of coronary thrombosis.

Uriah H. Farr, Paragon, Ind.; Indiana Medical College, Indianapolis, 1877; Civil War veteran; aged 87; died, October 2, of cardiorenal disease.

Jesse Mead Titterington, Marionville, Mo.; Nashville (Tenn.) Medical College, 1878; aged 79; died, September 15, of valvular insufficiency.

Zebulin Monroe Hampton, Centralia, Mo.; Marion-Sims College of Medicine, St. Louis, 1891; aged 77; died, October 3, of cerebral thrombosis.

Francis M. Siner, Terre Haute, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1884; aged 72; died, October 5, of uremia.

Aubrey Taylor Fuller, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1901; aged 59; died, July 15.

George B. Borgelt • St. Louis; Missouri Medical College, St. Louis, 1890; aged 70; died, October 21, of carcinoma of the liver.

John Thomas Vick, Wichita Falls, Texas; Gate City Medical College, Dallas, 1903; aged 72; died suddenly, September 17.

Preston Work Foote, Rosenberg, Texas; Hospital College of Medicine, Louisville, Ky., 1880; aged 75; died recently of uremia.

Homer John Tillotson, Los Angeles; College of Physicians and Surgeons, Baltimore, 1880; aged 77; died, September 3.

James Henry Anderson, Union City, Mich.; University of Michigan Medical School, Ann Arbor, 1888; died, September 1.

Frank G. Jackson • Muncie, Ind.; Louisville (Ky.) Medical College, 1894; aged 75; died, October 5, of heart disease.

Jerome Butz Weida, Philadelphia; University of Vermont College of Medicine, Burlington, 1883; died, August 29.

Alba Lee Smith, Detroit; Detroit College of Medicine, 1912; aged 44; died, September 30, of biliary cirrhosis.

Moses Hawkins Topping, Los Angeles; Louisville (Ky.) Medical College, 1896; aged 59; died, September 19.

Ernest C. Blanck, Park Ridge, Ill.; Jenner Medical College, Chicago, 1907; aged 72; died, October 10.

Correspondence

NEED OF DERMATOLOGISTS FOR DEEPER KNOWLEDGE OF ALLERGY

To the Editor:—In THE JOURNAL, October 27, page 1275, Dr. Coca begins his paper with the statement “If one should inquire which of the existing medical specialties would profit especially through a deeper knowledge of allergic disease, one would necessarily think first of dermatology.”

On page 1277 Dr. Coca says: “I have treated three patients according to Sulzberger’s plan, all of which were much more sensitive by skin test to oidiomycin than to trichophytin. One of the three, a traveling salesman with large lesions on both forearms and elsewhere on the body, was unable to take the injections regularly and during the few months of his treatment his skin sensitivity remained stationary and his local condition remained unchanged. This case was later seen to be one of psoriasis.”

The last sentence would seem to indicate that the need of the dermatologist for a deeper knowledge of allergy is equaled only by the need of the allergist for a deeper knowledge of dermatology.

JAMES H. MITCHELL, M.D., Chicago.

TANNIC ACID TREATMENT OF BURNS

To the Editor:—The other day, while leafing through the July issue of the *Country Gentleman*, I noted an article by Paul De Kruif expounding, in extravagant language, the discovery, by Davidson of the Henry Ford Hospital staff, of the efficacy of 5 per cent tannic acid lotions in cases of extensive burns. May I, apropos of this, quote the following paragraph from the *Pittsburgh Medical Review* of May 1890, page 170:

TANNIN IN THE TREATMENT OF BURNS

A correspondent of the *Pharmaceutische Zeitung*, speaking from his own experience, says that tannin cannot be too highly recommended as an application to burns, especially when very extensive, the skin being entirely removed. A 5 per cent solution is squeezed from a sponge over the denuded surface, which is then dressed with soft ointment, either with or without tannin. Pain immediately abates, and the healing process is wonderfully rapid. The tannin solution must, of course, be freshly applied as often as the dressing is renewed.—(Dixie Doctor.)

J. A. HAGEMANN, M.D., Pittsburgh.

THE PARENTERAL ADMINISTRATION OF CEVITAMIC ACID (ASCORBIC ACID) SOLUTIONS

To the Editor:—The ready availability of cevitic acid (ascorbic acid) in pure crystalline form has naturally suggested its parenteral administration in solution in acute scorbutic conditions (Schultzer, Paul: *Lancet* 2:589 [Sept. 9] 1933. Bauke, E. E.: *München. med. Wchschr.* 81:1240 [Aug. 10] 1934). In order to prevent untoward local reactions from such administration, which may be attributed to the drug, certain pertinent factors should be called to the attention of physicians.

Cevitic acid is a relatively strong acid and on dissolving in water yields a solution of low p_H value (about 3.4). Its acid solution injected intravenously would be partially neutralized by the buffer alkalis of the blood, but on subcutaneous, intramuscular or intradermal injection such neutralization might not be quick enough to prevent the sclerosing effect of a strong acid solution. We have observed skin sloughs in mice, rats, guinea-pigs and rabbits, within three hours after subcutaneous injection of 0.5 cc. of 5 per cent solution of cevitic acid, and after intradermal injection of 0.05 cc. of 2 per cent solution. No local reactions occur if the cevitic acid solution is neutralized with sodium bicarbonate just before such administration.

It is recommended that, if cevitic acid is to be administered parenterally, it be dissolved in sterile water and neutralized with one-half its quantity of sodium bicarbonate (yielding a solution about p_H 7.0) immediately before injection so that untoward local reactions may be avoided. The dissolving and neutralizing should be done just before administering, as otherwise there may be loss of effectiveness.

B. H. FISHER, B.S.,
CHAUNCEY D. LEAKE, Ph.D.,
San Francisco.

From the Pharmacological Laboratory,
University of California Medical School.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer’s name and address, but these will be omitted, on request.

OBSTETRICS IN RURAL PRACTICE

To the Editor:—In view of the considerable discussion concerning the care of obstetric patients I desire to present, for your criticism, the following case. In particular, I desire your opinion concerning the conservative attitude during the first and second stages, and the manner in which the third stage was handled. Obstetric textbooks are not clear on the matter of how long a retained placenta may be left alone, but I have heard an outstanding obstetrician say that forty-eight hours would be a safe limit. Of course, spending eighteen hours at the bedside of a woman in labor is most inconvenient—and economically a loss—to the physician, but, to my mind, it is about the only safe way, at least in country practice. All too frequently a mother “speeds up” if the physician leaves and delivers unexpectedly. The use of solution of pituitary is dangerous, and forceps should be used most rarely. I would appreciate your opinion on these points also.

Since the majority pay little or nothing (the patient cited has never paid me a cent), a physician cannot afford to handle many else he would go into bankruptcy from neglecting paying patients while absent on his maternity calls. Is there any method of “speeding up” a delivery that is perfectly safe to both mother and child? I would rather spend twenty-four hours at the bedside than run even a risk of killing either, or, for that matter, of even causing avoidable damage to the birth canal or infant. Perhaps the best solution would be to hospitalize all rural obstetric cases. In my own little practice I have, during the past year, refused all “last minute” maternity calls; I mean those who have neglected at least reasonable antepartum care. I have done this not only for my economic protection but also because I feel that such action in this state is necessary to train the public in the matter of antepartum care. Many of the counties provide visiting nurses, and the state pays a small fee to the physician who cares for the indigent mother. If the physicians continue to answer “last minute” calls the people will continue to neglect antepartum care and the efforts of the state and of medicine will be counteracted.

RURAL PRACTITIONER, New York.

AN OBSTETRIC CASE

A white woman, aged 38, a housewife and business woman, a primipara, had been given antepartum care by her own physician. Pregnancy was uneventful. Abdominal flatulence had recurred for years regardless of treatment. Labor began at the thirty-sixth week, according to the menstrual history. A physician who had never even heard of the patient was called in the absence of the engaged physician at 2:30 a. m.

First Stage (sixteen and one-half hours): According to the history at the bedside, the membranes had ruptured spontaneously, with frequent expulsion of small quantities of fluid, after the first half hour. The physician was called after four hours. At four and one-half hours, palpation was practically impossible because of abdominal distention. The cervix, by rectal examination, was one fourth dilated; the fetal heart rate was 160, in the left lower quadrant. Pains of from fifteen to forty-five seconds’ duration occurred at average intervals of from five to six minutes, moderately strong, from four and one-half to ten and one-half hours and from twelve and one-half to sixteen and one-half hours, a two hour relatively quiet interval between. At the ninth hour aseptic vaginal examination revealed the cervix two thirds dilated; the fetal head was in left occipito-anterior presentation and no disproportion was evident. At the twelfth hour sodium amylal, 1½ grains (0.2 Gm.), was administered. At the end of the first stage the patient was somewhat tired but the pulse was good.

Second Stage (three and one-quarter hours): The beginning was judged by increased strength and frequency and the bearing-down character of the pains. After one hour the head was on the perineum. Pains were fairly strong, with a duration of thirty seconds, at intervals of from one to one and one-half minutes. At the end of two and one-half hours (one and one-half on the perineum) there was progress, but little on vulval inspection. The use of low forceps was considered. At two and three-quarter hours there was progress. At three and one-quarter hours spontaneous delivery occurred of an 8 pound 4 ounce (3,741 Gm.) infant in left occipito-anterior presentation. There was practically no bleeding.

Third Stage (about twenty-eight hours): No bleeding occurred and there were no pains. The abdomen was greatly distended and tympanitic;

palpation was practically impossible. There were sounds suggestive of a fetal heart with a rate of 164 in the left upper quadrant and what might be a fetal head or partially contracted fundus was indefinitely palpable in the right upper quadrant just above the level of the umbilicus. The abdomen was massaged frequently for two and one-half hours; large quantities of gas were expelled by the mouth and rectum; no bleeding occurred and there were no pains. The patient was tired. The possibility of the presence of a twin was considered. The cord stump and the vulva were protected by sterile dressings. The physician left (after eighteen and a quarter hours with the mother, except for a two hour interval during the first stage) with directions for immediate call if developments occurred during the night.

The night was uneventful; the mother was comfortable. Distention continued. There were no fetal heart sounds. The abdomen was massaged, without results. At 11:45 a. m., fluidextract of ergot, U. S. P., 15 drops, was administered. At 3 p. m. there were a few vague uterine pains. At 4 o'clock the ergot, 15 drops, was repeated. At 7 o'clock there were still no pains; the patient had passed about 30 cc. of blood. A modified Credé expulsion was attempted without success; the abdomen was very tender. The physician requested consultation (for anesthesia and manual removal of the placenta). At 9:30 p. m. the distention was markedly reduced. A semisoft uterus was palpable one fingerbreadth below the umbilicus, with a hard ring transversely across the lower segment. Under ether anesthesia, with full aseptic preparations, an intact placenta was expressed. Solution of pituitary 0.5 cc. was administered. The posterior vaginal wall was sutured. The fundus was well contracted. The physicians left at 11:40 p. m.

Puerperium: On the second day the patient was comfortable. The temperature was 100.4 F. A cathartic was ordered.

On the third day the patient was feeling well. The temperature was 101, the pulse 84 and good. In the evening the temperature was 104.2. Orders were given for fluids, alkaline drinks, a cathartic, a light diet and no visitors.

On the morning of the fourth day the patient was feeling well. The temperature was 102, the pulse 84 and good. The breasts were normal. There was a thick yellow-brown vaginal discharge. Orders were given for a fluid diet, low vaginal irrigations with corrosive mercuric chloride 1:1,000, and removal of the infant from the breast. The afternoon temperature was 102.4. The patient complained of flatulence and discomfort. Orders were given for elevation of the head of the bed and insertion of a rectal tube.

On the fifth day the patient was feeling well. The temperature was 100.8, the pulse 90 and good.

On the sixth day the patient was feeling well. The temperature was 100, the pulse 81 and good.

On the seventh day the patient was feeling well. The temperature was 100, the pulse 81 and good. Orders were given for a soft diet.

On the eighth day the patient was feeling well. The temperature was 99, the pulse good.

On the ninth day the patient was feeling well. The afternoon temperature was 98, the pulse 81 and good. Lochia was moderate. Orders were given permitting a few visitors and a moderate diet.

On the tenth day the mother was not visited. No telephoned reports were received.

On the eleventh day the patient's condition was very good. The afternoon temperature was 98.4, the pulse 74 and good. Abdominal distention was only moderate. The fundus was not palpable. The breasts were normal. Orders were given for a regular diet and sitting up in bed.

On the twelfth day the patient's condition was very good.

On the thirteenth day the patient's condition was very good. Orders were given that the patient might be out of bed gradually and might be up and dressed on the fifteenth day. The mother was discharged, with orders to report at the office for postpartum examination after six weeks. She has never reported.

Note: The breasts were permitted to dry, supported, as repeated attempts to nurse the infant resulted in gastric upsets. On the twelfth day a diagnosis of pyloric stenosis was made. It responded to gruels (the father refused to administer atropine, and later gruels and preferred condensed milk). The patient was apparently normal after the fifteenth day. She was discharged conditionally, on the twentieth day.

ANSWER.—1. It is scientifically and ethically wrong and economically unfair for any one to speed up a labor to save his own time, for his own convenience or to increase his fee. Without doubt the continued high maternal mortality in the United States and other countries, where such a practice is growing, under various alibis, is in part due to such interference with the natural processes of labor. The use of pituitary and of quinine, the routine rupture of the membranes, and other procedures are responsible for a certain percentage of the mortality of the new-born and of puerperal infection in addition to the damages which the cervix, the pelvic floor and the baby's brain so often suffer.

2. It is probable that an imbalance between the sympathetic and the autonomic innervation caused the prolonged first and second stages, and this might also explain the uterine inertia of the third stage. In such cases atropine might have hastened the labor. A low forceps operation on this patient, after the head had been down on the pelvic floor for one or two hours, would have been justifiable.

3. Regarding the third stage, some difference of opinion exists as to whether a placenta should be left in the uterus, that is in the absence of hemorrhage of course, for any extended period of time. Ramsbotham relates a case in which the placenta never came away and was either absorbed or discharged piecemeal in the lochia.

Polak in 1922, in cases of retained placenta, advised tamponade with washed iodoform gauze, leaving it in place for from twenty-four to thirty-six hours, and others, usually older authors, have said that there is no hurry about removing the placenta, in the absence of hemorrhage; but this was in the days when manual removal of the placenta was attended with great danger from infection.

Nowadays it is considered better practice to empty the uterus, at least before three hours has passed. Aseptic and antiseptic preparation, rubber gloves and relaxing anesthetics render this operation safe.

Years ago there were many cases of incarcerated placenta following the administration of ergot. This practice therefore was discarded. The amount administered here probably would not have caused stricture of the uterus. Pituitary occasionally acts in the same way as ergot by incarcerating the placenta but not sufficiently often to contraindicate its administration.

4. As for the economic aspects of long obstetric cases, it is notorious that obstetrics is the hardest, most time consuming and least remunerative specialty in all medicine. Perhaps the doctors themselves are to blame for permitting this state of affairs. In the cities the question of caring for the indigent or middle class is easily settled by sending the patient to a hospital, although in many hospitals the service is no better and not as safe as the woman can obtain in her own home if her case is properly managed. Nowadays the automobile has annihilated distances and it would take a man less time to reach a patient 30 miles from his office than it used to require to go 8 miles in the days of the buggy.

Presupposing that a woman has been given proper antepartum care and goes into her labor in good health and that no indication of complications can be detected at the first thorough examination, medical and obstetric, a patient is probably safer in the hands of nature alone than in the hands of those who speed up cases with pituitary, quinine and rupture of membranes. But this is not an argument for reducing the amount and quality of medical care rendered a woman during labor. Civilization has increased the pain and perils of childbirth. We should always strive toward the ideal, and this means at least two physicians and one trained nurse and a perfect maternity hospital. Such attention is economically impossible for the majority of women and it is comforting to know that, with the aid of nature and employing all the knowledge that modern science has given the obstetrician, he can obtain thoroughly satisfactory results with the means at his disposal if he is willing to make the effort to use them.

5. Regarding the refusal to attend last minute maternity calls, it is always the best practice to answer every maternity call that comes in. Educating the public must be done by example, by word of mouth, by pamphlets and leaflets, and in similar ways, always remembering that one has to keep hammering all the time and that progress is slow.

ERYSIPELAS

To the Editor:—A man, aged 27, a butcher, at the age of 15 suffered an infection of the left hand, which required an incision and drainage and which left him with contraction of the tendons of the fourth and fifth fingers of the left hand. Since then every few years he gets attacks of lymphangitis associated with chills and fever. The area of redness starts from a slight abrasion of the finger and extends as a rule to the shoulder and is accompanied by axillary adenitis. Two years ago this eruption spread from the hand to the back of the thorax. At that time he was very ill, and at first a diagnosis of sepsis was made. He was given two blood transfusions, which did not stop his chills or high fever and spread of the eruption. The diagnosis was then changed to that of erysipelas migrans. He was given two injections of erysipelas serum, which immediately cleared up his condition. This year he again suffered an attack, which began on the same hand as a lymphangitic condition with tender palpable glands in the axilla, and severe chills with a temperature of 103, and which spread next day to the back of his thorax, the area of redness being located below the angle of the scapula to the costal margin and to the spine. He was again given an injection of erysipelas serum, which was repeated in twenty-four hours, and the condition immediately cleared up. But four days later he developed a severe urticarial rash, which cleared up in twenty-four hours after a few injections of epinephrine and local applications. Could you suggest anything to prevent these attacks, which, because of his trade, he is liable to suffer again, and which will be more difficult to control in view of the fact that he became sensitized to the serum? Please omit name.

M.D., Brooklyn.

ANSWER.—An attempt to desensitize the patient can be made as outlined in THE JOURNAL, June 9, by Leona M. Bayer, in the article on desensitization to insulin allergy. If erysipelas recurs before this can be done, it can in all probability be controlled by ultraviolet treatment or by treatment with roentgen rays. While a few authors complain of inability to control erysipelas with ultraviolet rays, the great majority seem to have been successful and are enthusiastic about the method. Czepa

(Zur Behandlung des Erysipels mit der Quartzlampe, *Wien. klin. Wchnschr.* 35:564 [June 22] 1922), reports 100 cases mostly on the face. In this location, a prompt cure was obtained in all cases. A few cases on the trunk were refractory. He gave a fairly strong erythema dose on three successive days, the second and third doses somewhat larger than the first, which he described as ten minutes at 80 cm. with a not too old burner. The eyes were protected only by the closure of the lids. The temperature dropped promptly and the disease stopped spreading. The only after-treatment was cool wet dressings of very dilute solution of aluminum acetate or 0.1 per cent resorcin water. The second and third treatments were given as a precaution against relapse.

Josef Becker (Die Wirksame Dosis bei der Quartzlampebehandlung des Erysipels, *München. med. Wchnschr.* 74:497 [March 25] 1927) found that one and a half times the erythema dose was efficient. He also repeated this dose as a precautionary measure on the second and third days. For those without a dosimeter, he recommends from nine to twelve minutes at a distance of 100 cm. (40 inches) with a good burner. He warns against too strong a treatment.

As proof that the prompt subsidence of the disease after this treatment is no mere coincidence, he cites a case of erysipelas of the face in which the temperature fell promptly, the general condition improved after the treatment, and the disease ceased to spread except in one spot behind the ear, which had escaped the first treatment. This continued to spread but yielded promptly to direct treatment.

Roentgen treatment of erysipelas is also highly successful. Most of the writers have used about one erythema dose, 300 roentgens, but von Battingen reports that one-fourth erythema dose, 75 roentgens, is successful, repeated on the following day if thought necessary.

G. C. Andrews (Diseases of the Skin, Philadelphia and London, W. B. Saunders Company, 1930, p. 537) reports that fractional doses of x-rays have in two long standing cases of recurrent erysipelas stopped the attacks completely for more than three years.

It would seem, then, that the case under discussion may be successfully treated even though attempts at desensitization fail.

POSSIBLE BENZENE POISONING IN PAINTER

To the Editor.—A painter who had been engaged in doing glazing for five days in confined quarters without ventilation was attacked with a severe dizziness so that he had to quit working. For the past four weeks he has been under my care. His chief complaint is dizziness, which is particularly pronounced on arising from his bed in the morning but occurs also at various periods. He may go around for two or three days without any pronounced dizziness and then have one day in which there is a severe recurrence. In addition to the main complaint of vertigo, which makes it absolutely impossible for him to do his work, he also complains of general weakness and particularly of muscular weakness of the lower limbs. He also complains of occasional spells of dyspepsia and lack of appetite. Physical examination reveals considerable pallor and at times a tendency to jaundice. Occasionally the sclera and the skin are entirely clear, but in most of the visits I find a light yellowish tinge throughout the skin, particularly visible in the sclera. Otherwise the examination is negative. A blood count reveals a secondary anemia with about 3,000,000 red cells, and a white count of about 4,000 cells. The differential revealed about 60 per cent of polymorphonuclears and 40 per cent monocytes. There is no evidence of any basophilia or stippling of red cells. The varnishes used in the glazing contain turpines and benzene. I am impressed that the condition is one of granulocytopenia due to poisoning with benzene. Do you believe that this conjecture is in agreement with the symptoms presented? What would you suggest for the treatment in this case? It is evidently not a case of plumbism. Please omit name.

M.D., Ohio.

ANSWER.—In view of the statement that the materials utilized by this worker contain benzene, it seems appropriate to believe that benzene poisoning exists. Especially is this suggested by the anemia and the leukopenia. By way of control and treatment of this condition the following suggestions are made:

1. The worker should be removed from any further exposure to benzene.
2. General measures should be instituted, directed to the prevention of infection and the elimination of the anemia.
3. Exposure to natural or artificial sunlight has proved of value in these milder cases of benzene poisoning.
4. Some good results possibly may arise from the administration of liver extracts. These should be used as in the case of any other form of anemia.
5. Lecithin emulsion (5 cc. of a 10 per cent strength) has been administered intravenously to advantage.
6. Great caution should be exercised in connection with such procedures as dental extraction and tonsillectomy.
7. A high calcium intake in food is commendable.

GLANDULAR DYSTROPHY

To the Editor.—A married woman, aged 27, complains of a menstrual and intermenstrual disorder. The patient is obese, weighing 160 pounds (72.6 Kg.). Her height is 5 feet 2 inches (157.5 cm.). She states that she began her menstrual periods about fifteen years ago. Then the periods were normal, occurring every twenty-seven to twenty-eight days, with a duration of four or five days. Two years later she had scarlet fever. Her periods stopped for four months. Following this amenorrhea she began to have irregular periods, which occurred every two to three months. Ten and one-half years ago she had nine months of amenorrhea, for which she saw a physician. She was given ovarian extract, which started an irregular flow. This type of menstrual flow differs from the previous ones in that it lasts between two weeks and two months, weakening the patient considerably and causing her much left lower quadrant pain. An endocrinologist has tried corpus luteum and anterior and posterior pituitary medication, with inconstant alleviation of symptoms. Theelin was tried, with no relief. One gynecologist told the patient that she had degeneration of both ovaries; another said that she had cysts of both ovaries. Associated with the menorrhagia, the patient has noticed a marked body and facial hirsuties. The latter feature has become so prominent that social contacts are embarrassing. Late, with oral administration of 5 grains (0.3 Gm.) of whole ovary daily, the patient has not menstruated for one month. Can you offer any suggestions as to further treatment and diagnosis? Do you think the patient will ever be able to conceive?

M. I. GOLDIN, M.D., Eloise, Mich.

ANSWER.—The story is that of a woman who is the victim of a pituitary deficiency. This evidently involved first the growth hormone of the anterior lobe and began during her growing years. This is indicated by her short stature. One would speak with more assurance along this line if more of the family history had been given, particularly the height and weight of the parents and siblings. It would also be helpful to know the age of onset of the obesity.

In spite of the absence of that information, the statement can be made with considerable assurance that following the original deficiency of the growth hormone there was later an involvement of the gonadotropic hormones and of some other factor in the pituitary. This further deficiency was probably brought about by the damage wrought by scarlet fever. This disease seems to exert a selective influence on the pituitary, and deficiencies of that organ frequently follow attacks of this disease. A further possibility is that the scarlet fever was accompanied by a temperature sufficient to damage the ovaries directly and that this also was a contributing factor in the amenorrhea that followed the scarlet fever.

The menorrhagia that now troubles the patient is probably due to a lack of the luteinizing factor or hormone of the anterior lobe and probably can be controlled by administering the anterior pituitary-like principle from the urine of pregnancy. This should be given in doses of 1 cc. (from 100 to 125 rat units) or more daily until the bleeding is controlled. Light, so-called stimulating doses of the x-rays applied to the pituitary and ovaries might possibly be helpful, but this treatment entails a certain hazard and should be used only as a last resort. It is unlikely that the oral administration of whole ovary will be of any benefit.

The facial hirsuties is probably due to a pituitary disturbance but raises the question also as to whether it may not be due to an involvement of the suprarenal cortex. It should be recalled that tumors of the cortex occurring in adult women are associated many times with amenorrhea, with hirsuties and with an elevated blood pressure. Other symptoms of this disorder are acne, loss of hair on the head, increased muscular development and a deepening of the voice—a decrease in the female and an increase in the male attributes of the individual. Prolonged treatment of such cases with preparations of the anterior lobe is frequently followed by pregnancy.

SCLERODERMA OR RAYNAUD'S DISEASE

To the Editor.—I am much interested in a high school boy living across the street from me, who is greatly handicapped with Raynaud's disease. His fingers are of stony hardness, flexion and extension are limited, pressure sores appear over the knuckles and on the finger tips, and throughout the winter the hands are blue or purple almost continuously. This summer the fingers are more inflexible than last, although he can drive a car. I would like particularly references to the literature concerning treatment, surgical or medical, possibly a critical review by some one or group of individuals, who have reported a number of their own cases. Also who are some of the neurosurgeons in the Midwest or East who have had a large experience with the disease? M.D., Ohio.

ANSWER.—Obviously the diagnosis in this case is scleroderma involving the extremities: acroscleroderma or sclerodactylia. The onset of this disease is frequently initiated with vasospastic disturbances reflected in color of the skin, such as is seen in Raynaud's disease. Frequently the face and upper part of the thorax are involved in this process. It seems that the primary disturbance involves the smaller arteries and arterioles, with quantitative diminution in the number of vessels and in the circulating blood in the affected parts. The ulcers on the ends of the fingers may contain particles of

calcium from terminal phalanges. This can be shown in the roentgenogram. Arteriography demonstrates an occlusive lesion of the digital arteries and evidence of spastic phenomena. Treatment in the later stages of the disease is not satisfactory. In the earlier types of the disease, in which marked involvement of the joints, deformities and excessive fibrosis of the skin are lacking, cervicothoracic sympathetic ganglionectomy affords the best opportunity for some improvement in the hands and face. If present in the feet, lumbar ganglionectomy is used. The amount of improvement is variable, but in all cases some improvement has been observed. By this procedure the vasomotor control of the vessels of the hands is eliminated, and the maximal flow of blood is permitted to reach these parts. Medical treatment consists of physical therapy and injections of foreign protein to produce systemic fever. This should be continued over a considerable period of time, if well tolerated. In a small percentage of cases, definite progression occurs in spite of all treatment. Death occurs from exhaustion; pathologic changes are found in the heart.

PROVOCATIVE WASSERMANN TEST

To the Editor—In a syphilitic suspect whose blood Wassermann reaction is negative, what is the value and the technique of a provocative Wassermann test? What interval of time should elapse between the drug given and the taking of the blood specimen? M.D., Tennessee

ANSWER—The provocative Wassermann test is of value in diagnosis in patients with a definite syphilitic infection in the past, whether treated or untreated, but with a negative blood Wassermann reaction, in about 10 per cent of the cases in which it is tried. When the blood Wassermann reaction is negative in the presence of a lesion thought to be syphilitic, or if there is persistent partial fixation even in the absence of suggestive lesions, a decision as to whether the patient has syphilis may sometimes be made by observing the effect on the blood Wassermann reaction of a single injection of arsphenamine 0.3 Gm or of neoarsphenamine 0.6 Gm. The blood Wassermann test should be quantitatively titered at the time of the injection and every other day thereafter for fourteen days. The test is positive if reagin appears in a previously Wassermann negative blood, or if it increases sharply in amount in a blood previously doubtful or positive. The increase of reagin, if it occurs at all, begins about the third day and reaches its maximum about the tenth day with subsequent subsidence to the original level.

Though the provocative Wassermann test is of value as a diagnostic procedure, it is of no value whatever as a criterion of cure. The test is significant only when positive, absence of provocative effect does not signify freedom from syphilis; and in late syphilis, even though previously untreated, the test is much more often negative than positive.

The provocative effect is observed much more frequently in patients with either early or late syphilis in whom the blood Wassermann reaction is already positive at the time of the first arsphenamine injection. It can be demonstrated in the majority of such individuals by means of quantitative titrations of blood serum in the test. The increase in Wassermann titer reaches its maximum between the fifth and tenth days, after which the titer usually subsides promptly to or below its original level.

LESION OF VULVA

To the Editor—I have a patient who reported to me for examination, May 8. She was three months pregnant and there was a lesion at the fourchette involving the left labium majus. The lesion was about a little more than five eighths inch vertically and went down into the fourchette, presenting the appearance of a tear. It bled much and is still very vascular. Various local applications were made. It was also cauterized or, rather, phenol (carbolic acid) full strength was applied and did stop bleeding for a while. The patient stated that she discovered the lesion two weeks before I saw it and tried to treat it herself but made it worse. Three Wassermann reactions have been negative and there are no constitutional symptoms that might suggest a syphilitic infection. I am unable to reconcile it with the various lesions usually encountered in that position or place. The part of the labium seems to be healing slowly from its outer border, but deep into the fourchette the condition still obtains and bleeds readily on handling or movement. No constitutional treatment has been given because of lack of indication. There is also a degree of leukorrhea that might contribute to the sluggishness to heal. The patient is sensitive to intercourse, and access to the deep parts is difficult. Kindly advise me in this case. The patient is a Negress, aged 28, a primipara. Please omit name.

M.D., South Carolina.

ANSWER—In the differential diagnosis of the lesion described, a number of causes must be considered. The lesion may be the result of trauma from coitus or other reason, but such injuries usually heal rapidly unless they become infected. In spite of the negative Wassermann tests and absence of consti-

tutional symptoms, a chancre must be considered. Such a lesion usually has an indurated edge with shallow sloping sides, and the tributary lymph nodes are shotlike. Chancroids are usually multiple, they have soft, undermined edges, they are tender, and they are generally accompanied by buboes in the groin. Diphtheria, while rare, must be considered, but the lesion in most cases is covered by a thick, gray, adherent membrane, and there is fever and usually a history of a similar infection in the throat. The diphtheria bacillus can be isolated readily from such ulcerative lesions. There is a possibility of local tuberculosis, but in most of these cases there is evidence of a similar infection in other organs, the ulcer is slow growing, and its base is shotlike. The lesion may be granuloma inguinale, which occurs almost exclusively in Negroes. In such cases Donovan's bacilli can be isolated and the lesions yield readily to antimony and potassium tartrate and to fuadin. In spite of the patient's age, an early carcinoma must be considered. In such ulcers the border is hard and elevated and the lesion is friable and bleeds easily. In the case cited an effort should be made to detect diphtheria bacilli, Ducrey's bacilli, tubercle bacilli, Donovan's bacilli and spirochetes. Furthermore, a small piece of tissue should be removed and studied microscopically. This will prove or disprove the presence of carcinoma and may reveal the cause of the lesion.

DIAGNOSIS OF FACIAL PARALYSIS

To the Editor—A man, aged 38, in rugged health, with a completely negative past history of illness or injury, suddenly became dizzy while walking along the street and within a few hours developed a left-sided blindness, a left facial paralysis and a complete left hemiplegia. This was accompanied by headache and a slight ringing sensation in the ears. My examination was made approximately one month after the onset. About five days previous to my examination he had had a partial recovery, but examination showed an involvement of the right optic tract. The reflexes were not disturbed. The blindness was to objects on the left, a homonymous hemianopia. The facial paralysis involved the lower peripheral fibers, but retention of the ability to wrinkle the forehead on both sides was maintained. There was a complete left hemiplegia, presumably an involvement of the right pyramidal tract about the decussation. The tendon reflexes of the arms and legs were both increased and the pathologic reflexes (Babinski, Chaddock) were present. I am presuming that the patient had a thrombus; his blood pressure has been normal throughout, repeated blood Wassermann reactions have been negative, though no spinal test has been made. The question arises as to where the thrombus was or where the lesion occurred, since the right optic tract must be involved back of the supercolliculus, back of the external geniculate body and back of the pulvinar. It is easy to associate this with a lesion of the right pyramidal tract, but it is not so easy for me to understand why the left facial would be involved, on the assumption that the patient has a single lesion. The textbooks are rather confusing as to the amount and degree of supranuclear decussating fibers of the facial. Would it be possible for this man to have sufficient right supranuclear fibers, decussating to the left, to produce such a paralysis? Please omit name.

M.D., Oklahoma.

ANSWER—The involvement of the face described is of the type that is common in central (pyramidal) lesions and is not due to involvement of the peripheral facial nerve. In a general way it may be said that movements that are essentially bilateral in character, such as those of the upper part of the face and of the large trunk muscles in breathing, are represented in the cortical centers of both sides of the brain, whereas movements that are essentially unilateral are represented mainly only in the motor center of the opposite hemisphere of the brain. This explanation is offered for the clinical observation that a lesion of one pyramidal path affects severely movements that are largely unilateral and affects only slightly those that are mainly bilateral. A lesion in the hinder part of the internal capsule may involve not only the pyramidal fibers for unilateral movements of the opposite side of the body but also the fibers of the optic tract. The sudden onset does suggest a vascular lesion, and the development within a few hours might point to a thrombus. In a man, aged 38, the most common cause for such a vascular insult is syphilitic arteritis. In the absence of evidence of this infection, care should be taken to exclude the presence of a neoplasm in which a vascular lesion has occurred.

PREVENTION OF DISEASE IN TROPICS

To the Editor—We are planning a cruise to South America, spending three days in British Guiana. My wife and two daughters have never left Wisconsin. Can you advise me the best drug method of malarial prophylaxis, and a simple method of purifying drinking water, other than boiling? Would carbonated beverages be reasonably safe? We are a bit afraid of malaria and typhoid.

M.D., Wisconsin

ANSWER—Drug prophylaxis is not satisfactory, as in most cases it serves to inhibit clinical manifestations without preventing infection. Although not as extensively tested as the older compounds, atabrine (in curative doses of 0.2 or 0.3 Gm.

daily) promises to be a valuable drug for prophylaxis and is comparatively nontoxic. However, atabrine even in small daily doses of 0.1 Gm. will produce a yellow coloration of the skin after a variable time. This disappears fairly promptly on withdrawal but this may be an objectionable feature to the use of the drug as a prophylactic. For such a short stay the best method of malaria prophylaxis is probably to sleep under a good mosquito net or in screened quarters. It is also advisable to be in screened quarters during the hours immediately preceding and succeeding sunset, as these are the most dangerous hours of anopheline flight. Boiling water is undoubtedly the best method of rendering it safe for drinking. Many of the portable methods of purifying water are too cumbersome for such a short trip and some of them are probably not effective for certain animal parasites. Next to boiling water it is safest to drink such liquids as weak tea. There are also generally available in these parts spring water bottled in the United States, which is safe if one always makes sure that the seal on the bottle is unbroken. In general, carbonated beverages are reasonably safe, but this is due largely to care in manufacturing and to the fairly rapid death of non-spore forming pathogens. Sometimes, however, local products are so unhygienically prepared and so quickly marketed that they are not safe. Beverages that are carbonated by fermentation, such as beer, are safe. For protection against typhoid, vaccination should be considered.

DIABETES, TUBERCULOSIS AND ARTERIOSCLEROSIS

To the Editor:—I have a patient with diabetes and tuberculosis. He was admitted to the hospital in December 1932 with a minimal amount of tuberculosis affecting the right lung, but his diabetic condition, previously undiagnosed, was very severe. Acidosis developed immediately after admission and he came uncomfortably close to death's door. Jan. 12, 1933, he weighed 101 pounds (46 Kg.). At the age of 32 his height is 6 feet 1 inch (185.4 cm.). His condition improved steadily, so that during the summer months he was transferred to the "shack." His weight increased to 152½ pounds (69 Kg.) but at present it averages 136 (62 Kg.), about 10 pounds (4.5 Kg.) more than his best weight previous to admission. The point now is that the condition of his feet is preventing his return to work. Especially during the evening he complains of his feet tiring easily and painings so severely at times that he cannot walk. Both feet show marked sclerosis of the blood vessels, the pulse not being obtained in the dorsalis pedis of the left foot and but poorly in the right. This complaint began soon after the patient began to walk after being confined to bed for some five months. A consultant from Hartford suggested a high carbohydrate diet. This was tried with no avail, and at the request of the patient the former diet was reinstituted, which with some changes is at present protein 95 Gm., fat 192 Gm., carbohydrate 166 Gm., the high calory diet being protein 105 Gm., fat 150 Gm., carbohydrate 220 Gm. Immersions in hot and cold water, and cod liver oil rubs have been tried without success. Have you any suggestions to offer? I realize that the foregoing is rather short in a desire to avoid too many details. I neglected to say that the insulin dosage is breakfast 13 units, dinner 5 units and supper 8 units.

VIRGIL F. NEUMANN, M.D., Norwich, Conn.

ANSWER:—Neuritis on an arteriosclerotic basis would appear to be the cause of the pains in the feet. The marked arteriosclerosis in a 32 year old patient with diabetes of not more than two years' duration is striking and perhaps might be related to the gain of 50 per cent of body weight in a short period. One would like to know the fasting cholesterol value.

Is the patient taking alcohol?

The prognosis of diabetic neuritis is almost invariably favorable, although usually requiring months rather than weeks and sometimes even a year for recovery.

The avoidance of extremes in diet, thus, carbohydrate not over 175 Gm., protein 100 Gm. and fat from 100 to 130 Gm. according to retention of body weight, would seem indicated along with insulin sufficient to control the diabetes. Green vegetables, tomato juice, a dessertspoonful of cod liver oil and avoidance of any extremes in local treatment are the indications together with the guaranty that eventually recovery will follow.

USE OF CALCIUM INTRAVENOUSLY—CALCIUM IN TUBERCULOSIS

To the Editor:—My local drug supply house informed me that various preparations of calcium intended for intravenous injections have recently been withdrawn from the market. They presume that this has been due to instability of precipitation. I will be much obliged to you for the latest information as to the status of intravenous calcium therapy, especially for tuberculosis. Would it be better for me to prepare fresh solutions of calcium in my own laboratory immediately before the injections, and if so, what preparation should I use and how should it be made up and given?

G. P. LAWRENCE, M.D., Westerville, Ohio.

ANSWER:—We are not aware of solutions containing calcium intended for intravenous injections having been recently withdrawn from the market. Some time ago it was found that calcium gluconate solutions would precipitate, particularly in the cold, but by warming would be redissolved. To overcome

this difficulty one firm is marketing its solution in admixture with calcium lactobionate. The Council has not reported on the use of calcium in the treatment of tuberculosis. In general, the evidence has not borne out the early enthusiasm for such therapy, although it may have a limited field of usefulness. Mayer and Wells concluded that there is no acceptable clinical evidence for the value of calcium therapy in tuberculosis. Their animal experiments failed to show that calcium therapy favorably affected the course of the disease. Calcium compounds have been used in tuberculosis to remedy calcium deficiency, to lessen inflammatory exudate, to favor calcification of lesions and to lessen sweating and diarrhea; but it is not considered an essential remedy by critical students of the subject.

PURPURA SIMPLEX

To the Editor:—A woman, aged 28, unmarried, complains of a reddened pin point to pin head sized lesion beneath the skin above her ankles, which appears every summer. Heat from a motor car will also produce these lesions. She is a blonde. The Wassermann reaction, urinalysis and blood counts are normal. The tourniquet test is positive, although the spleen is not palpable. Can you suggest any way of preventing these lesions? Kindly omit name and address.

M.D., California.

ANSWER:—There are a number of points concerning the description of these lesions that would be of interest. The question as to whether they are macular and fade on pressure or definitely purpuric cannot be settled from the description. In either case they fall into the erythema group. In this group one may have different clinical pictures, depending on the amount of vascular permeability. It is the latter factor that determines the morphology of the lesion. From the data submitted the patient appears to have a condition known as purpura simplex. Individuals with this condition are otherwise in good health, show no spontaneous mucous membrane bleeding and have purpuric lesions only on the most dependent portions of the body. The direct causative factor is an abnormal vascular permeability, which is brought to light spontaneously by such factors as are given in the history, or it may be induced by the tourniquet test. The coagulation, bleeding and cloth retraction times are normal in such cases. Given this constitutional background, a number of precipitating factors may produce this symptom, among which are endocrine disturbances, particularly during the menstrual cycle, infection and external irritants. In the absence of such factors the following regimen may be of benefit: The diet should contain adequate amounts of foods that contain vitamin C. Factors producing stasis in the dependent parts of the body should be removed and measures designed to improve circulation should be instituted. Contrast baths are often combined with the use of mild astringent lotions, and in some cases definite benefit may be observed. Calcium preparations are often prescribed, but the value of such therapy is questionable. Cases of this type have a favorable prognosis.

POSSIBLE BENZENE POISONING WITH GRANULOCYTOPENIA

To the Editor:—Can you tell me whether the solvents for Plastic Wood and Valspar contain benzene or any of the allied substances? A patient who had had several attacks of granulocytopenia, definitely known to be due to amidopyrine, had refrained from all such drugs with good results, i. e., had had a normal white cell count for some months. After he had been exposed to the fumes of these two substances in a closed room, the white cell count fell to 2,073, with 27 per cent neutrophils. No other cause could be found and there have been no further attacks for about a year. I thought that perhaps the bone marrow had become very sensitive to these agents. Please omit name.

M.D., Virginia.

ANSWER:—The present reply refers to no specific product but instead to the general classes of substances into which fall the two items mentioned in the query.

Varnishes prior to thinning consist of various gums cooked up with oils, such as China wood or linseed. Ordinarily varnishes are thinned with petroleum naphtha and turpentine. However, they may be thinned with solvent naphtha, which may contain approximately 50 per cent of benzene. Since spar varnishes represent a high type of varnishes and since solvent naphtha instead of petroleum naphtha is more likely to be used in high type varnishes, exposure to benzene probably takes place frequently. This is true for the manufacture of varnishes as well as for their application. Plastic fillers, of which plastic wood is one variety, may be made from a variety of substances, such as saw dust, cheese and synthetic resins. These solid materials are mixed with some quick drying substance, such as varnishes, naphthas and various alcohols, including methanol. Here again opportunity may arise for exposure to benzene or benzene-like substances. The assumption implied in the query that benzene poisoning exists or has existed is within reason.

IMPOTENCE AFTER INJECTION FOR INGUINAL
HERNIA

To the Editor:—I have a patient, aged 58, with impotence. The blood pressure is normal and the Kahn reaction negative. Two and a half years ago he had a fracture of the seventh cervical vertebra and also some injury to the base of the spine but no fracture. In April 1933 he had an operation for double hernia following some injection treatment, which produced a great deal of scar but no cure of the hernias. The surgeon said that the scar was very dense. The roentgenogram taken about one year after the accident shows some scar in the region of the coccyx. His wife died following this accident and he remarried last December. He was potent for about one month, when he noticed that his testicles were getting smaller. On examination I found the right testicle to be about the size of an ordinary peanut and the left about twice that size. He shows no other symptoms along the urinary tract or otherwise except that he tires more easily than ordinarily. I would be pleased if you could give me the cause of testicular atrophy in such a case. The man is very well preserved physically and is alert mentally. Please omit name.

M.D., Michigan.

ANSWER.—In the absence of any pressure symptoms on the cord, such as paralysis or bladder symptoms, the spinal injuries can be excluded as a cause of either the impotence or the atrophy of the testicles. It is likely, however, that the injections he received for his hernias cut off or greatly interfered with the blood supply of the testicles. This result is at times seen in poorly done varicocele operations as well as in other operations on the spermatic cord in which the arteries which supply the testicles and which accompany the cord are tied off. It may therefore be possible that the small testicles do not produce enough hormone and that impotence will result.

PARALYSIS AGITANS

To the Editor:—My wife fell about two years ago, injuring her spine in the lumbar region. This does not give her any pain or trouble, but she has developed paralysis agitans. I have consulted several colleagues. I am giving her a general tonic and scopalamine hydrobromide $\frac{1}{320}$ grain (0.4 mg.) once or twice a day, which seems to hold the condition in check. I have been thinking of light massage to the right arm and hand, which are affected; perhaps a light treatment of high frequency (violet ray) might be beneficial. Would you kindly let me know? If you have any other suggestions, I would appreciate them. She is 66 years of age. Is it beneficial to exercise the arm and hand or best to spare using them? Please omit name.

M.D., New York.

ANSWER.—Therapeutic measures in paralysis agitans that give the most relief are of a sedative nature, such, for example, as scopalamine and related drugs. In the general management in such cases stimulants and excitants, mental as well as physical, should be avoided, as they tend to aggravate the symptoms. The aim should be the provision of a quiet and monotonous routine, which is at the same time as satisfying and interesting to the individual patient as can be devised. Fatigue is harmful, and exercise and activity should be limited to avoid it. Stimulating massage of the muscles and undue exercise tend to aggravate the symptoms; light skin friction or vibratory massage will often give relief, though sometimes, owing to idiosyncrasies, they may distress the patient and should be avoided. Infra-red rays in doses that will not cause reactions in the skin and autocondensation may also be helpful. Such measures are of course palliative and not curative, but they may help to occupy the time of the patient and afford non-stimulating variety.

HERPES PROGENITALIS

To the Editor:—A man, aged about 50, had an attack of influenza several months ago from which he made a good recovery. But, accompanying the attack, a small group of vesicles formed under the glans penis near the frenum, typical of herpes progenitalis, which was rather severe and stubborn but finally responded to the usual treatment. Later a reddish macule about 2 by 3 cm. appeared on the upper surface of the glans, extending to the meatus and having some small, slightly elevated papules scattered throughout. It has disappeared once, or appeared to do so, to return again. There are practically no symptoms (itching or pain). I have advised alcohol locally—saturated solution of alum and Whitfield's ointment (mild), thinking it might be some form of tinea infection, which he has had ingrown at times. His health is good otherwise. What do you suggest as cause and treatment? Please omit name.

M.D., Arkansas.

ANSWER.—It is somewhat difficult to answer the query correctly from the description given. One would be inclined to think that the patient is having recurrent attacks of herpes progenitalis. Occasionally the lesions do not show themselves in a characteristic vesicle form; they may show up simply as a reddish macule or as a slightly elevated papule, such as the writer describes. The fact that they have disappeared and come back again would incline one more than ever to such a diagnosis. Why these began following the attack of influenza, it is impossible to state. It may have been simply coincidence. In some cases herpes progenitalis appears as the result of irri-

tation; for example, the use of rubber condoms. The use of hot potassium permanganate soaks might be tried for these attacks, and in case there is a long foreskin, it might be well to have a circumcision.

TREATMENT OF ANKYLOSED JOINTS

To the Editor:—What benefit can I expect a patient to derive from a course of diathermy treatments for ankylosed joints, resulting from acute multiple arthritis following an infected gunshot wound? A woman, aged 22, received the wound, May 12, 1933. She developed acute multiple arthritis, Oct. 9, 1933, and was in bed four and one-half months. She was in a plaster cast eighteen days, and the result was an ankylosed hip joint, ankle and elbow joint. The elbow was aspirated during the acute stage of inflammation and held firmly in splints for two months. Will diathermy applied to these stiffened joints now absorb the calcium deposits and give the patient normal motion in them? Roentgenograms show considerable calcium deposit but no destruction or erosion of the bony tissue. Please omit name and address.

M.D., Missouri.

ANSWER.—In the treatment of ankylosed joints, medical diathermy through the joints will not absorb the calcium deposits or increase the motion. There are two types of ankylosis, bony and fibrous, and it is not possible from the facts given to determine exactly the type of this case. The treatment of a bony or true ankylosis is surgical, and physical agents will not give results.

In fibrous ankylosis the principles of treatment are to increase the local circulation by luminous heat, hot whirlpool baths or medical diathermy. This is followed by stroking and kneading massage for the same purpose. When the process has quieted down and the pain has disappeared, stretching should be tried at intervals or with continuous traction. Great care should be taken to avoid reaction. If there is a reaction and continued pain, operation should be considered.

REMOVAL OF MOLE FROM CHEEK

To the Editor:—Please state the best way to remove a small flat mole from the cheek of a middle aged man. He wishes the procedure to cause as little scarring as possible. The mole is nonpigmented and there is no history of cancer in the family. There is only one mole in the middle of his left cheek and he thinks that it mars his good looks; besides, he sometimes cuts it in shaving. I have been asked to remove it for him. Kindly give me your answer. It extends slightly above the surrounding skin. He says it has recently grown larger. It is slightly redder than his reddish complexion. What does electricity offer? The mole is of about thirty years' duration. Kindly omit name.

M.D., West Virginia.

ANSWER.—There is no way in which the mole described can be removed without leaving some permanent defect. From a purely cosmetic standpoint the best results are obtained with skilfully applied electrolysis. Scalpel excision will eradicate the mole completely and there may be nothing but an inconspicuous linear scar. Electrodesiccation is likely to leave a disfiguring scar. Everything considered, probably the best method of procedure in this case is scalpel excision.

GONORRHEAL CERVICITIS

To the Editor:—A woman, aged 22, has had gonorrheal cervicitis for the past year and a half, starting with an acute gonorrheal vaginitis and cervicitis. The vaginitis responded nicely to local treatment. The cervix has been treated with frequent intracervical applications of silver nitrate in strengths up to 20 per cent and with intracervical application of the cautery. In addition, tampons and douches have been used. She has also had a course of gonococcus vaccine. In spite of all this, she still has a copious discharge from the cervix, which, however, has for a long time been negative for gonococci. Can you advise me as to the best methods for clearing up this discharge? The tubes and uterus are normal. Kindly omit name and address.

M.D., New York.

ANSWER.—Medical diathermy and the Elliott treatment are both entitled to consideration in the management of stubborn cases of this character. Their value is problematic.

A badly diseased endocervix should be given a long period of rest after each cautery treatment. Anxiety to obtain a favorable result has perhaps led to overtreatment. If two or three thorough endocervical cauterizations, at intervals of several months, do not yield the desired result, recourse to amputation of the cervix should be considered. A modified Schroeder operation is well adapted to these cases.

SOMNAMBULISM

To the Editor:—I should like to have some information on the treatment of somnambulism. W. W. BOLTON, M.D., Lansdowne, Pa.

ANSWER.—Somnambulism is usually not an actual walking in a state of sleep, because somnambulists commonly avoid obstacles, pick up objects and talk. The condition is allied to hysteria and a portion of the personality is split off or sub-

merged. A similar process may happen in normal persons in moments of intense concentration. As it is a disorder of the personality, treatment should begin with a thorough study of that personality with proper search for conflicts, fears, doubts, strains, false beliefs and the like. Satisfactory results may follow, depending on the data uncovered and the adjustment of the patient to new points of view and his cooperation in new habit formations. Each case is an individual life problem in itself and more specific directions cannot easily be given. Secondarily, of course, various mechanical means may be devised to confine the patient to bed or to produce some stimulus strong enough to "awaken" him if he gets out of bed. Avoidance of unusual fatigue or excitement is helpful and, in the case of a child, fairly constant guarding may be necessary.

INTERMITTENT NEGATIVE PRESSURE IN ENDARTERITIS

To the Editor:—Will you please send me information regarding a new treatment of which I have heard for obliterative endarteritis? The treatment requires an air tight chamber in which the foot and leg are placed. A motor driven pump is attached to the chamber and the pressure in the chamber is alternately diminished and increased to stimulate circulation. Where are the treatments given and who makes the apparatus?

H. ST. JOHN WILLIAMS, M.D., Poughkeepsie, N. Y.

ANSWER:—The intermittent negative pressure apparatus for increasing the circulation to the extremities in cases of occlusive arterial disease was developed independently by Louis G. Herrmann and E. M. Landis of the Colleges of Medicine of the Universities of Cincinnati and Pennsylvania, respectively. There are a number of articles in the medical literature by these investigators, representative of which are:

Herrmann, L. G., and Reid, M. R.: The Pavaex (Passive Vascular Exercise) Treatment of Obliterative Arterial Diseases of the Extremities, *J. Med.* 14: 524 (Dec.) 1933.

Landis, E. M., and Gibbon, J. H., Jr.: The Effects of Alternate Suction and Pressure on Blood Flow to the Lower Extremities, *J. Clin. Investigation* 12: 925 (Sept.) 1933.

Distribution of the apparatus is under the control of the investigators mentioned.

LUPUS ERYTHEMATOSUS

To the Editor:—In the treatment of lupus erythematosus what bismuth preparation, given intramuscularly, is used? Please give dosage and frequency. Kindly omit name.

M.D., New York.

ANSWER:—Lupus erythematosus can be treated in the same way, with the same dosage and the same preparation of bismuth that is used for the treatment of syphilis. As in the treatment of syphilis, care must be exercised to avoid over-treatment for, unless the human organism can respond to the stimulation of the drug, harm will be done instead of good.

A dosage of 1 or 2 cc. of a 10 per cent suspension of bismuth subsalicylate in a vegetable oil can be given in gluteal muscles once a week. Other bismuth preparations are valuable, differing in dosage and frequency of administration. The urine should be examined for albumin and casts before each treatment and the patient quizzed regarding any itchy eruption. A bismuth line at the margin of the gums is not a contraindication to further treatment pursued with proper caution.

The results from bismuth therapy of lupus erythematosus are less certain than those obtained by the use of gold compounds, but success is sometimes achieved with bismuth therapy after gold has failed.

HYPERKERATOSIS SUBUNGUALIS

To the Editor:—I have a case in which there is an overgrowth of the nail of the great toe. The overgrowth has been removed two different times and recurs after several months. This is probably a case of onychauxis or hyperkeratosis subungualis. Could you tell me how to cure this condition, or will it be necessary to remove the distal phalanx of this toe? Please omit name.

M.D., Illinois.

ANSWER:—The removal of the nail alone will not cure the condition, because the growing matrix or root will promptly form a new nail.

The proper surgical treatment is to remove the matrix as well as the nail. The matrix may be identified as the dense gray tissue lying beneath the proximal portion of the nail. It extends close to the bone and well back to the base of the distal phalanx. The entire matrix must be cut away or it will reform a deformed nail. The skin at the sides of the base of the nail may be incised and the skin flap turned back so as to expose the matrix. After removal of this tissue the flaps may be replaced and left without suture.

Healing will occur usually without complications.

QUINCKE'S DISEASE

To the Editor:—A man, aged 30, always well, was afflicted with Quincke's disease about two years ago. Since then he has had manifestations of this sickness in various parts of his body, almost continuously. He has received the usual medication but with little relief. Are there any new remedies for this disease? How about glandular therapy? Please omit name.

M.D., Massachusetts.

ANSWER:—The name Quincke's disease has been applied to two different conditions: angioneurotic edema and meningitis serosa. From the description given it is presumed that the former is meant. Angioneurotic edema is usually considered to be an expression of allergic reaction and for this reason atropine and epinephrine are often administered and may give relief. It is certainly advisable to have the patient tested for sensitivity to foreign proteins of various kinds and to search for foci of infection that might serve as a source of sensitivity to bacteria. It has also been thought that in some instances this skin disease is of psychogenic origin; if no sensitivity is discovered, it would be well to consult a psychiatrist.

VULVAR INFLAMMATION

To the Editor:—A young woman has a varying number of small lesions just outside the hymen, usually macular, sometimes papular, which are extremely tender to touch. These lesions come and go without treatment and apparently have no relation to menstruation. Can you suggest diagnosis and treatment? Please omit name.

M.D., Missouri.

ANSWER:—The most common vulvar eruption is an inflammation of the hair follicles. This may be produced by leukorrhea so slight in amount as scarcely to be noticed. The irritation of clothing, perspiration and chafing are other less common causes.

The hair may be clipped if unduly long, but it should not be shaved. Cleansing douches or nightly vaginal instillation of 2 or 3 cc. of 3 per cent tannic acid in glycerin suffice to control the lesions caused by leukorrhea.

PARANAVEL COLIC IN CHILDREN

To the Editor:—What is meant by paranael colic (pain about the navel region of colicky character, frequent in children)? I find nothing in the literature about it. Please omit name.

M.D., New York.

ANSWER:—Before a diagnosis of paranael colic is made, a number of conditions of more or less importance should be excluded. Appendicitis or its adhesions must be considered. Recurrent attacks of abdominal pain in the region of the navel are probably due to a downward pull on the ligamentum teres, which lies between the umbilicus and the liver. The condition is encountered most frequently in the active, overweight child with a pendulous abdomen.

Morse's article "Recurrent Abdominal Pain in Childhood" in the June issue of the *Journal of Pediatrics* mentions Pott's disease, pelvic disease, lead poisoning, epigastric hernia, intestinal worms, abdominal adenitis, tuberculous peritonitis, spasm of the intestine, redundant colon, constipation and indigestion.

EYE CONDITIONS OF WORKERS IN HAIR INDUSTRY

To the Editor:—I would greatly appreciate any information you can give me on eye conditions peculiar to workers in the hair industries, especially in regard to any type of keratitis. Is keratitis punctata superficialis ever due to or influenced by working in hair (animal)? Please omit name.

M.D., Chicago.

ANSWER:—The presence of loose hairs of almost any sort in the conjunctival sac can lead easily to a form of keratitis that may resemble a keratitis punctata superficialis. It is believed that the corneal trouble is of a traumatic nature, as the loose and somewhat stiffened ends of the hairs rub against the corneal epithelium, producing almost microscopic abrasions. These erosions become lightly infiltrated and the clinical picture of a superficial punctate keratitis results. This coincides with the condition that is known to be due to caterpillar hairs in the conjunctival sac. A true keratitis punctata superficialis is believed to be due to an infection (Wright) and not to trauma.

TOXICITY OF PANCREATIN

To the Editor:—The dose of pancreas desiccated or pancreatin as given in the textbooks is from 2 to 5 grains. I would like to know whether it is toxic when given in large quantities and if toxic how it is manifested clinically.

SAMUEL GORSKY, M.D., Philadelphia.

ANSWER:—Pancreatin administered by mouth is not toxic. It can be given in much larger than the official doses; e. g., in quantities of 4 Gm. or more.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

ARIZONA: *Basic Science.* Tucson, Dec. 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Jan. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 5. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 27-28. *Medical.* Washington, Jan. 14-15. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

KANSAS: Topeka, Dec. 11-12. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 4-6. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Regular.* Baltimore, Dec. 11-14. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 15-17. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 3. Sec., Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 1-4. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO: Columbus, Dec. 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Reciprocity.* Oklahoma City, Dec. 11. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

OREGON: Portland, Jan. 2-4. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

TEXAS: Galveston, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 12-14. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 15. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

National Board of Medical Examiners

The National Board of Medical Examiners reports that its certificate was awarded to 355 candidates who passed the final examination held during June and July, 1934. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....	(1932), (1933, 3), (1934, 35)		39
Stanford University School of Medicine.....	(1932), (1934, 2)		3
University of Southern California School of Medicine.....	(1934, 2)		2
University of Colorado School of Medicine.....	(1932, 4), (1933)		5
Yale Univ. School of Med.....	(1927), (1930), (1932, 8), (1933, 7)		17
George Washington Univ. School of Med.....	(1932, 2), (1933)		3
Georgetown University School of Medicine.....	(1933)		1
Howard University College of Medicine.....	(1930), (1933)		2
Emory University School of Medicine.....	(1933)		1
University of Georgia School of Medicine.....	(1928)		1
Loyola University School of Medicine.....	(1934, 2)		2
Northwestern Univ. Med. School.....	(1932), (1933, 3), (1934, 13)		17
Rush Medical College.....	(1928), (1933, 3), (1934, 10)		14
School of Medicine of the Division of the Biological Sciences.....	(1933)		1
State University of Iowa College of Medicine.....	(1931), (1933, 3)		4
University of Kansas School of Medicine.....	(1933)		1
University of Louisville School of Medicine.....	(1933)		1
Tulane University of Louisville School of Medicine.....	(1931, 3), (1932, 3), (1933, 4)		10
Johns Hopkins University School of Medicine.....	(1931, 3), (1932, 2), (1933, 4)		9
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1933, 3)		3
Boston Univ. School of Med.....	(1931, 2), (1932, 2), (1933, 8)		12
Harvard University Medical School.....	(1928), (1929), (1931, 10), (1932, 28), (1933, 6)		46
Tufts Col. Med. Sch.....	(1930), (1931, 2), (1932, 6), (1933, 6)		16
Univ. of Michigan Med. School.....	(1931), (1932, 5), (1933, 6)		12
University of Minnesota Medical School.....	(1933), (1934, 8)		9
St. Louis University School of Medicine.....	(1933, 3)		3
Washington University School of Medicine.....	(1929), (1933, 2)		3
Albany Medical College.....	(1933, 11)		11
Columbia University College of Physicians and Surgeons.....	(1931), (1932, 7), (1933, 4)		12
Cornell Univ. Med. Col.....	(1923), (1931), (1932, 2), (1933, 6)		10

New York Homeopathic Med. College and Flower Hosp.....	(1932)	1
New York University, University and Bellevue Hospital Medical College.....	(1933, 5)	5
Syracuse University College of Medicine.....	(1932, 2), (1933, 3)	5
University of Buffalo School of Medicine.....	(1933, 3)	3
Univ. of Rochester School of Med.....	(1931, 2), (1932), (1933, 3)	6
Duke University School of Medicine.....	(1932, 2), (1933, 2)	4
Ohio State University College of Medicine.....	(1933, 2)	2
University of Cincinnati College of Medicine.....	(1934)	1
University of Oklahoma School of Medicine.....	(1932)	1
University of Oregon Medical School.....	(1933, 4)	4
Jefferson Medical College of Philadelphia.....	(1932, 2), (1933)	3
Univ. of Pennsylvania School of Medicine.....	(1932, 8), (1933, 7)	15
University of Pittsburgh School of Medicine.....	(1932)	1
Woman's Med. College of Penna.....	(1931), (1932, 4), (1933, 4)	9
Vanderbilt University School of Medicine.....	(1932)	1
Univ. of Vermont College of Med.....	(1932, 3), (1933, 7)	11
Medical College of Virginia.....	(1933)	1
University of Virginia Department of Medicine.....	(1932)	1
Marquette University School of Medicine.....	(1934, 2)	2
University of Manitoba Faculty of Medicine.....	(1931)	1
McGill Univ. Faculty of Medicine.....	(1931), (1932), (1933, 2)	4
University of Edinburgh Faculty of Medicine.....	(1932), (1933)	2
Universitat Bern Medizinische Fakultät.....	(1930)	1
American University of Beirut School of Medicine.....	(1933, 2)*	2

* Verification of graduation in process.

Wisconsin June Examination

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports the written and practical examination held in Milwaukee, June 26-29, 1934. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and five candidates were examined, 101 of whom passed and 4 failed. Twelve applicants were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1934)		86
Loyola University School of Medicine.....	(1934)		81
Northwestern University Medical School.....	(1933)		85,
85, 85, 86, (1934) 80, 83, 85, 85, 85, 86			
Rush Medical College.....	(1928)		79,
(1934) 84, 85, 86, 90			
University of Illinois College of Medicine.....	(1933)		85
State University of Iowa College of Medicine.....	(1933)		83
Harvard University Medical School.....	(1932) 84, (1933)		86
Tufts College Medical School.....	(1933)		84
University of Michigan Medical School.....	(1930)		83
University of Minnesota Medical School.....	(1933)		82
Washington University School of Medicine.....	(1932)		89
Ohio State University College of Medicine.....	(1933)		77
University of Oregon Medical School.....	(1932)		84
University of Pennsylvania School of Medicine.....	(1933)		85
Woman's Medical College of Pennsylvania.....	(1929)		77
Marquette University School of Medicine.....	(1934)		77,
77, 78, 78, 79, 79, 80, 80, 80, 80, 81, 81, 81, 82,			
82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84,			
84, 84, 84, 84, 85, 85, 86, 86, 86, 87, 88			
University of Wisconsin Medical School.....	(1931)		83,
(1932) 78, 84, 86, 86, (1933) 79, 81, 82, 82, 82, 83,			
83, 84, 84, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86,			
87, 88, 89, 89			
Osteopaths †.....			80, 83

School	FAILED	Year Grad.	Per Cent
University of Minnesota Medical School.....	(1934)		71
University of Nebraska College of Medicine.....	(1933)		73
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1932) ‡		73
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg.....	(1925)		71

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1932), (1933)		Illinois
University of Illinois College of Medicine.....	(1932)		Illinois
State University of Iowa College of Medicine.....	(1928)		Iowa
University of Kansas School of Medicine.....	(1927)		Kansas
Western Reserve University School of Medicine.....	(1932)		Ohio
University of Wisconsin Medical School.....	(1930)		Oklahoma,
(1931) New Jersey, (1932) California			
Osteopaths †.....		Iowa, 2,	Missouri

* No average grade reported.

† Licensed to practice osteopathy and surgery.

‡ Verification of graduation in process.

Wisconsin September Reciprocity Report

Dr. Robert E. Flynn, secretary, Wisconsin State Board of Medical Examiners, reports 4 physicians licensed by reciprocity at the meeting held in Green Bay, Sept. 11, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine.....	(1932)		Illinois
Rush Medical College.....	(1899)		S. Dakota
John A. Creighton Medical College.....	(1908)		Nebraska
Vanderbilt University School of Medicine.....	(1929)		Tennessee

Book Notices

A Text-Book of Pathology: An Introduction to Medicine. By William Boyd, M.D., M.R.C.P., F.R.C.P., Professor of Pathology in the University of Manitoba. Second edition. Cloth. Price, \$10. Pp. 1047, with 424 illustrations. Philadelphia: Lea & Febiger, 1934.

The appearance of the second edition of a textbook of pathology two years after its first publication is good evidence that it has been received with favor. Much new material has been introduced, notably paragraphs about glycogen storage (von Gierke's disease), on rhinosporidiosis, on medionecrosis of the aorta, on renal architecture in chronic Bright's disease (Oliver's work), on arrhenoblastoma, and on recent observations on encephalitis. In the part on general pathology, certain changes have been made in the order of the chapters so as to secure a more logical sequence. The part on immunity and allergy "has been entirely rewritten" and perhaps this is the part of the book that is in the greatest need of still further revision in the interest of greater clarity, simplification and better emphasis on the essentials as well as avoidance of contradictions. The section on epidemics is superficial and fails to take into consideration that epidemic diseases differ fundamentally in their ways of spreading. To say that "in epidemiology as in metaphysics there is more guesswork than solid ground" is an unhappy and unwise "wise crack." On page 168 one reads of guinea-pigs being injected with horse serum "in an amount even as small as 1 to 1,000 cc.," but otherwise the proofreading seems to have been done with great care. But what can this statement on page 159 mean? "An injection of so minute a dose as 0.1 cc. of immune serum will protect a monkey against yellow fever, and the same is true of measles and dog distemper." The second part, on special pathology, seems to answer the purpose of introducing the student to the study of medicine exceptionally well. In future editions, the efforts to avoid unnecessary repetitions in the second part of statements in the first part and vice versa should be continued. A new chapter dealing with some of the principal diseases of the teeth has been added.

Die Haut- und Geschlechtskrankheiten: Eine zusammenfassende Darstellung für die Praxis. Herausgegeben von Prof. Dr. Leopold Arzt und Prof. Dr. Karl Zieler. Lieferung 15, Band V. Die Behandlung des Trippers beim Manne. Von Prof. Dr. Georg Birnbaum. Instrumentelle Behandlung des Trippers beim Manne. Von Dr. Alois Glingar. Die Heilung des Trippers und deren Feststellung beim Manne. Von Prof. Dr. Karl Zieler. Der Tripper des Weibes. Von Prof. Dr. Konstantin J. Bucura. Paper. Price, 8 marks. Pp. 177-346, with 51 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1934.

This number is divided into four parts, each contributed by an authority on his subject. Professor Birnbaum's article on the treatment of gonorrhea in the male is inclusive and expresses the most modern concept of conservative therapy. Dr. Glingar contributes a thoroughly complete exposition of the instrumental treatment of gonorrheal infection in the male. The article by Dr. Zieler on the cure and determination of cure in the male is excellent. He elaborates on the methods of determining whether a patient has been cured and states that results are from 98 to 99 per cent accurate by modern provocative tests and careful and repeated subsequent examinations. A masterly discussion of gonorrheal infection in the female is the contribution of Professor Bucura of Vienna. This article is brilliantly illustrated with excellent anatomic drawings and histologic preparations.

Your Meals and Your Money. By Gove Hambridge. Cloth. Price, \$1.50. Pp. 190, with illustrations. New York & London: Whittelsey House, McGraw-Hill Book Company, Inc., 1934.

Gove Hambridge turns from the stimulating philosophy of his previous book, *Time to Live*, to the hard facts in a way that demands attention. He warns scientific readers that his presentation will sometimes make the scientist's hair stand on end, but he makes no apology for so doing because he wants people to read the book—and it would seem that they certainly ought to. The book is an effort to translate adequate diet into dollars and cents. The author divides families into four groups: those who earn \$3,000 a year or more, those who earn from \$1,800 to \$3,000, those who earn from \$1,000 to \$1,800 and those who

earn less than \$1,000. For each income group he has a plan according to which the housewife may know exactly how much she should spend for food to make sure that the diet contains adequate amounts of essential food material and that money is not wasted on dietary nonessentials. The book is full of tables, graphs and charts. It would repay careful study on the part of every mother who is faced with the serious problem of feeding the family on a limited budget; for the woman who does not need to count her pennies, it would be just as beneficial in teaching her to get the most food for her food dollar. It should help many a physician to answer the questions of his patients who, when he has prescribed a diet, counter with the despairing query "But doctor how can I afford it?"

Clinical, Pathogenetic and Experimental Investigations of Endometriosis, Especially Regarding the Localisation in the Abdominal Wall (Laparotomy Scars) with a Contribution to the Study of Experimental Transplantation of Endometrium. By Hans Fredrick Harbitz. *Aeta chirurgica Scandinavica*, Vol. LXXIV. Supplementum XXX. Paper. Pp. 400, with 70 illustrations. Oslo: Kristes Boktrykkeri, 1934.

The author, who is the son of Prof. Francis Harbitz, director of the Institute of Pathology in Oslo, derived his incentive for the preparation of this monograph chiefly from his interest in the subject of extraperitoneal endometriosis in the abdominal wall, especially in laparotomy scars. The work consists of three sections. The first deals with endometriosis in general, including a review of all the theories of its pathogenesis, the author himself favoring the well known retrograde implantation theory of Sampson.

The second section is probably the most valuable of the three, comprising, as it does, a meticulous study of 193 cases of endometriosis in abdominal scars gathered from the literature, including the author's own fifteen cases. This portion is a storehouse of information for any one interested in this special subject. Here again the author believes that implantation or direct ingrowth is the responsible factor, although in some instances his efforts to apply this concept may seem quite labored. The third division of the work details the author's own experimental studies on the transplantation of endometrium in rabbits, including transplantation into the abdominal wall and in laparotomy wounds. A short summary of the monograph in English, German and French concludes the volume. An excellent bibliography is included, while the illustrations, chiefly reproductions of photomicrographs, are quite good. The translation of Harbitz's work was, according to the author's preface, done chiefly by H. Yourelle, director of the Berlitz School in Oslo, and this may explain an occasional quaintness of term or expression, e. g., "endometriotic," "Sampson complexes." The monograph should be of interest and value to every one interested in endometriosis, and particularly to those who might be seeking a collective review of the subject of endometriosis in laparotomy scars.

Practical Talks on Heart Disease. By George L. Carlisle, M.D., Associate Professor of Clinical Medicine, Baylor University, Dallas, Texas. Cloth. Price, \$2. Pp. 153. Springfield & Baltimore: Charles C. Thomas, 1934.

There can be no doubt that there is a real need for a book presenting in simple fashion the practical aspects of heart disease. Such simplicity is fraught with the risk of presenting the subject dogmatically and at times inaccurately. This is the most serious defect in the present volume. This book is not so well suited for the general practitioner getting his first knowledge of the modern aspects of heart disease as for the well versed general practitioner, the internist and even the "embryo" cardiologist. The book presupposes a working knowledge of heart disease. One cannot learn about heart disease solely from reading the book. Its chief asset is the attempt of the author to point out a few of the more important errors commonly made in considering diseases of the heart. This is done in vivid and homely language. The text would have been greatly improved had greater care been given to its style, and none of its forcefulness would have been lost if the language had been somewhat more polished. A style suitable for oral argument is not always appropriate for a manuscript. The vigorous advocacy by the author of the use of special antiserum and vaccine in handling rheumatic fever is unwarranted and unjustified at present in view of the experience of experts in this field. Its dogmatism will not bear critical examination.

Thérapeutique hydro-climatique des maladies non tuberculeuses de l'appareil respiratoire. Par M. Pléry, professeur d'hydrologie thérapeutique et de climatologie à la Faculté de médecine de Lyon. Paper. Price, 20 francs. Pp. 159, with 20 illustrations. Paris: Masson & Cie, 1934.

This is devoted to a discussion of nontuberculous diseases of the respiratory tract. A historical sketch of the treatment by hydrotherapy and climate begins with ancient times and carries through each period to the present. One chapter is devoted to the general action of mineral waters and various climates, which includes a map to show where in France various mineral waters are to be found. Another chapter is devoted to the indications of hydrotherapy and climatic conditions in nontuberculous diseases of the respiratory tract. In this chapter are discussed chronic bronchitis, pulmonary emphysema, asthma and chronic pulmonary suppurations. Roentgenograms of the chest and photographs of patients before and after treatment are reproduced. One chapter, which is profusely illustrated, is devoted to the technic and control of the treatment. The author is quite enthusiastic over the results of the treatment.

Sunshine Preferred: The Philosophy of an Ordinary Woman. By Anne Ellis. Cloth. Price, \$2. Pp. 249. Boston & New York: Houghton Mifflin Company, 1934.

This is a highly emotional introspection on the part of a woman evidently afflicted with asthma, who for some unexplainable reason seeks relief in a succession of tuberculosis sanatoriums. She seems to have a perverse urge to do the things that she ought not to do and constantly to court disaster by undertaking what she is physically unable to accomplish. She has a low opinion of doctors; but this is not surprising, since she would not take medical advice except so far as it seemed to please her. The doctor she seems to like best is one who prescribes for her when she is in the Southwest and he is on the Eastern seaboard. It does not appear that he ever examined her. The book would probably make valuable reading for doctors, who might find in it some explanation of why patients sometimes act the way they do. It certainly is not to be recommended for reading by patients, particularly the tuberculous. The book may be good literature but it is certainly not good hygiene.

Keeping Young in Business. By E. B. Weiss and Louis L. Snyder. Cloth. Price, \$1.75. Pp. 182. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1931.

Under this intriguing title the authors have set forth in an interesting manner well known principles of physical and mental hygiene. There is nothing particularly new in the book, but the material is fundamentally sound and is well presented. The twenty-five health commandments will warrant careful attention. The business man who has allowed his job to boss him instead of being the boss of his job would do well to read and to heed. An interesting chapter is the one on "Making a Job for Yourself" and pointing out how individuals who have been thrown out of work during the depression have in some instances been able to make new jobs for themselves and thus have rescued themselves not only from economic shipwreck but also from mental and physical deterioration.

Die klinische Röntgendiagnostik der inneren Erkrankungen. Von Dr. Herbert Assmann, o. Professor und Direktor der medizinischen Klinik an der Universität Königsberg i. Pr. Fifth edition. Teile I und 2. Paper. Price, 87 marks. Pp. 1248, with 1226 illustrations. Berlin: F. C. W. Vogel, 1934.

A scientific work that goes through five editions in thirteen years does not need any further praise of its merits. A majority of the roentgenologists in this country are familiar with this standard book, probably because the exhaustive presentation of the subject is supplemented by a profusion of excellent roentgenograms, photographs of anatomic specimens, charts and diagrams, thus offering a combination of a reference book and an atlas. The first volume is devoted to a roentgenographic diagnosis of the circulatory organs, mediastinum and respiratory system, including the mediastinum, while the second volume is dealing with the diagnosis of diseases of the gastro-intestinal tract, various abdominal organs such as the liver, spleen and pancreas, the urinary system, the nervous system, the bones, the muscles, the tendons and the subcutaneous tissue. Recent methods of angiography, pyclography, hepatolienography and

ventriculography have received due consideration. The author deserves credit for a judicious evaluation of these methods and lack of unwarranted, premature overenthusiasm. Unfortunately, the bibliography entirely disregards foreign literature. In the chapter on examination of the duodenum the author expresses a mythical belief that, contrary to the Viennese school, which advocates fluoroscopic examinations, the American method employs radiography exclusively. Every well trained American roentgenologist is well aware of the fact that fluoroscopy and radiography supplement each other and that, in order to arrive at a correct diagnosis, both methods must be employed. No further adverse criticism can be offered, as the presentation of the subject is complete and clear, the style fluent and the roentgenograms reproduced exceedingly well.

Green's Manual of Pathology. Revised by H. W. C. Vines, M.A., M.D., Pathologist to Charing Cross Hospital, London. American edition edited by Kenneth M. Lynch, M.D., LL.D., Professor of Pathology, Medical College of the State of South Carolina. Fifteenth edition. Cloth. Price, \$6.50. Pp. 928, with 425 illustrations. Baltimore: William Wood & Company, 1934.

The first edition of this book was published in 1876. It has been revised and enlarged many times by different editors. From the beginning, so-called American editions have been issued apparently without any other change than in the names of the publishers. Even in the present edition English spelling and nomenclature prevail, which may be of disadvantage to the American student especially in the case of nomenclature. Many of the illustrations do not illustrate and should have been omitted. The text is fairly good in many parts but decidedly poor in spots. There is no escape from the judgment that the many revisions and expansions have resulted in a patchwork and that the book cannot be recommended as desirable for the use of American medical students at this time.

Untersuchungsmethoden für Arzneispezialitäten. Zusammengestellt von der Spezialitäten-Kommission des Internationalen Apothekerbundes: Prof. Dr. H. Thoms, Berlin, Dr. A. Risling, Stockholm, Prof. Dr. H. Baggesgaard Rasmussen, Kopenhagen, Prof. Dr. H. Hérissé, Paris, Prof. Dr. L. Van Halbe, Leyde, und Hofrat Dr. E. Wels, Wien. Unter Mitarbeit von Dr. E. Høst Madsen, Kopenhagen, und Priv. Doz. Dr. E. Schulek, Budapest. Boards. Price, 5 marks; 3 florins. Pp. 87, with 7 illustrations. Leiden: Fédération Internationale Pharmaceutique; Amsterdam: D. B. Centen's Wetenschappelijke Boekhandel, 1932.

This book describes a series of chemical methods that the Specialty Commission of the International Apothecary Association has chosen as a guide for use in the examination of medicinal products in general, and especially specialty products. Most of the methods are standard and are to be found in pharmaceutical chemistry textbooks but not in as compact form as they are given here. The volume may be considered in two main divisions, the first containing general methods and the second a short outline on the examination of tablets. In addition, there are three short chapters on quantitative alkaloid determinations, one of which bears the name of E. Schulek of Budapest, who was a guest in the A. M. A. Chemical Laboratory several years ago. It must not be considered that such a book can be mastered and that with knowledge so gained one can successfully analyze medicinal products. This type of chemical investigation is possible only if the investigator has the ability to develop new methods and devise applications of older methods to his problems. Ability of this type is the result of experience and cannot come from an outline guide or a book of methods.

The Radiology of Bones and Joints. By James F. Brallsford, M.D., M.R.C.S., Radiological Demonstrator in Living Anatomy, the University of Birmingham. Cloth. Price, \$9. Pp. 500, with 310 illustrations. Baltimore: William Wood & Company, 1934.

The author is well known for his many excellent articles, especially on roentgenology of the spine. He credits Mr. Naughton Dunn, one of England's leading orthopedic surgeons, with considerable help in supplying the material for his book. Almost all bone lesions are described and well illustrated by roentgenograms and line drawings. Unusual bone lesions are briefly described and illustrated. The author stresses periodic examination of lesions that cannot be diagnosed on the first roentgen examination. The book is up to date, easily read, and should be of value to all radiologists and bone and joint surgeons.

Medicolegal

Evidence: Qualifications of Expert Witnesses.—The plaintiff was the beneficiary of an accident insurance policy issued to her husband by the defendant company. The insured was found dead in his garage. In an action to recover on the policy, the trial court permitted the coroner, who was not a physician but an undertaker, to testify that the insured died from carbon monoxide poisoning, a cause of death not covered by the policy. From a judgment for the defendant company, the plaintiff appealed to the Supreme Court of Minnesota, after having been denied a new trial.

On appeal, the plaintiff contended, among other things, that the trial court erred in permitting the coroner to testify as to the cause of death. What caused the death of the insured, said the Supreme Court, was for the jury to determine. If the jury could be aided in determining that issue by the testimony and opinion of experts, such testimony was admissible. A physician is generally conceded to be a qualified expert witness as to the cause of death, even though without experience. The criteria of competence of expert witnesses is stated in Jones on Evidence, section 1314, as follows:

The test to determine whether a witness is qualified as an expert is to inquire whether his knowledge of the matter in relation to which his opinion is asked is such that it will probably aid the trier of the question to determine the truth.

With respect to the competence of the coroner to testify as an expert witness, the Supreme Court called attention to the fact that he had taken a regular three months undertakers course at the University of Minnesota. Sixty hours of that course was devoted to the study of death causes. His instructor had been a physician of the regular staff of the university, from whom he had received instruction relative to symptoms of carbon monoxide deaths. The witness had pursued the business of undertaker since 1922 and during that time had taken care of and prepared for burial some 600 bodies. As coroner, he examined minutely the bodies of those who had died a sudden or violent death. The witness testified as to the observation he had made of the body and surrounding conditions. He carried the body to his place of business, undressed it, examined it closely, and embalmed it within two hours. In so doing, he paid particular attention to the color of the surface tissue, to the color of the blood, and noticed that it did not coagulate. The witness, concluded the Supreme Court, was qualified to aid the jury as to the cause of death, and the trial court committed no error in permitting him to testify. No other error having been found in the case, the Supreme Court affirmed the judgment of the trial court for the defendant company.—*Palmer v. Order of United Commercial Travelers of America (Minn.)*, 253 N. W. 543.

Malpractice: Joint Liability of Physicians; Hypothetical Question Based on Hospital Record.—The appellee, Viola Petry, sued the appellants, physicians and surgeons, alleging that the death of her husband was attributable to their joint negligence. The trial court gave judgment against the physicians and they appealed to the court of appeals of Ohio, Stark County.

On January 18, the husband of the appellee became ill, suffering from a duodenal ulcer. Dr. K. E. Reighard, who was called to take care of him, had the patient removed to a hospital, where Dr. L. F. Mutschman was called in consultation. Thereafter the two physicians concluded that a bridge, anchored on a single tooth, should be removed and a dentist was called to do the extraction. The socket bled profusely, and the dentist packed it with gauze. Twenty-four hours thereafter the packing was removed and the socket repacked. The gauze removed was foul smelling. At midnight, January 22, the nurse in charge of the patient made notation on the hospital record that the patient manifested occasional jerking or muscular twitching and hypersensitiveness to noises. On the following morning, January 23, a gastro-enterostomy was performed by Dr. Mutschman, assisted by Dr. Reighard. No immediate change was noted in the patient's condition. In the evening of January 25, however, the patient died of a tetanus infection, the source of which was located in the tooth's socket.

The appellee, the patient's wife, contended that the physicians were jointly negligent in not discovering the presence of tetanus, in their failure to use ordinary care in its treatment, and in performing the operation when the patient's condition was so precarious and chances of recovery so remote. It was not contended that the operation was unskillfully done, but that it destroyed the patient's resistance, hastened and directly contributed to his death, and was therefore the proximate cause. The physicians, on the other hand, argued that they were not joint tortfeasors or partners. They denied that either was an employee of the other and contended that they must be considered as independent agents, without concert of action, collusion or common design, and that each was responsible only for his own negligence, and nothing more.

In *Village of Mineral City v. Gilbow*, 81 Ohio St. 263, 90 N. E. 800, 25 L. R. A. (N. S.) 627, it was stated:

If there is no concert of action—no common intent—there is no joint liability. . . . But a different principle applies where the injury is the result of a neglect to perform a common duty resting on two or more persons, although there may be no concert of action between them.

In the present case, said the court of appeals, Dr. Reighard recommended and procured Dr. Mutschman. Each had an equal opportunity to diagnose the patient's ailment and to prescribe a remedy. Each consulted with the other, and each advised the operation. Each was present at the time of the operation, one operating, the other assisting. Each participated in and approved of all that was done. There was, therefore, a concert of action and a common purpose and design. A joint action, concluded the court, was therefore maintainable against the physicians.

Hospital records, properly identified, are admissible in evidence. The opinions of expert witnesses in response to hypothetical questions based solely on the facts disclosed by such records are also admissible, even though the facts are not repeated in the questions. The trial court correctly refused to instruct the jury that the skill and care of the appellant physicians were to be judged by that possessed and exercised by "physicians and surgeons practicing medicine and surgery in the city of Alliance or vicinity." The words "in the city of Alliance or vicinity," said the court, improperly limit and confine the degree of care resting on the appellants. The correct rule was laid down in *Whitesell v. Hill*, 101 Iowa, 629, 70 N. W. 750, 37 L. R. A. 830, as follows:

The degree of knowledge, care, and skill required of a physician or surgeon is that which is ordinarily possessed by those practicing in similar localities, and is not necessarily limited to that which is in fact exercised in his particular locality.

And in *Gramm v. Boener*, 56 Ind. 497, as follows:

It will not do, as we think, to say, that if a surgeon or physician has exercised such a degree of skill as is ordinarily exercised in the particular locality in which he practises, it will be sufficient. There might be but few practising in the given locality, all of whom might be quacks, ignorant pretenders to knowledge not possessed by them, and it would not do to say, that, because one possessed and exercised as much skill as the others, he would not be chargeable with the want of reasonable skill.

After considering all the assignments, the court of appeals could find no prejudicial error and consequently affirmed the judgment of the trial court.—*Mutschman et al. v. Petry (Ohio)*, 189 N. E. 658.

Society Proceedings

COMING MEETINGS

- Medical and Surgical Association of the Southwest, El Paso, Texas, Nov. 22-24. Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz., Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.
- Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
- Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
- Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

55: 167-342 (Sept. 15) 1934

- Gonad-Stimulating Hormone of Pregnant Mares. H. R. Catchpole, Davis, Calif., and W. R. Lyons, Berkeley, Calif.—p. 167.
Studies on Creeper Fowl: VII. Expression of Vitamin D Deficiency (Rickets) in Creeper Chicks as Compared with Normal Chicks. W. Landauer, Storrs, Conn.—p. 229.
Weight of Principal Components of Normal Hypophysis Cerebri of Adult Human Female. A. T. Rasmussen, Minneapolis.—p. 253.
Dermatoglyphics and Problem of Handedness. H. H. Newman, Chicago.—p. 277.
Development of the Human Pharyngeal Tonsil. T. Snook, Ithaca, N. Y.—p. 323.

American Journal of Cancer, New York

22: 1-248 (Sept.) 1934

- *Metastasis in Squamous Carcinoma. L. W. Price, Glasgow, Scotland.—p. 1.
Melanotic Neoplasms of Skin. S. W. Becker, Chicago.—p. 17.
Further Consideration of Ewing's Sarcoma. C. L. Connor, San Francisco.—p. 41.
*Incidence of Vaginal Fistulas in Patients with Carcinoma of Cervix. F. R. Smith.—p. 52.
Pseudomyxoma Peritonici of Appendiceal Origin: Survey of Literature and Report of Case. R. D'Aunoy and A. Fine, New Orleans.—p. 59.
Some Remarks on Growth of Human Fibroblasts in Mediums Containing Copper. J. P. M. Vogelaar and Eleanor Erlichman, New York.—p. 66.
Utilization of Simple Derivatives of Glucose by Mouse Sarcoma. O. O. Meyer, Claire McTiernan and W. T. Salter, Boston.—p. 76.
Ammonia Production by Sarcoma: Sparing Effect of Carbohydrate. W. T. Salter and Phoebe D. Robb, Boston.—p. 87.
Tumors of Tendon Sheaths, Joints and Bursae. C. F. Geschickter and D. Lewis, Baltimore.—p. 96.

Metastasis in Squamous Carcinoma.—Price correlates the results of pathologic investigations with the available clinical data to determine why secondary deposits develop in one case of squamous carcinoma and are absent in another clinically similar case. The evidence indicates that there is no correlation between the clinical condition of the patient and the development of distant metastases. There is no constant relationship between the site of the primary tumor and the site of the distant metastases. The commonest sites for metastases in the series were thirteen cases in the lungs, seven in the liver and five in the kidneys. Less frequently metastases were formed in other sites. From a wider consideration of the development of metastases from numerous primary tumors of various types, the only consistent feature that emerges is that tumors arising in certain primary sites have a tendency to form metastases in certain tissues of predilection. There is a peculiar relationship between the site of the primary tumor and the site of the secondary deposits.

Vaginal Fistulas in Carcinoma of Cervix.—Smith studied the records of 2,852 patients, proved by biopsy to have carcinoma of the cervix and who had received radiation treatment, to determine the incidence of vaginal fistula following this form of therapy. The changes of the technic of radiation therapy are significant in view of the parallel yearly incidence of fistula. From 1922 to 1925 the limitation of unfiltered glass radon seeds to selected cases and the substitution of low voltage roentgen therapy for the external application of radium was accompanied by a decrease in the incidence of fistula as compared to preceding years. With the substitution of gold radon seeds, and with high voltage roentgen therapy replacing the low voltage type, the incidence of fistula was again at a comparatively high level in 1926 to 1928. In 1929 to 1932, with gold seeds omitted from all primary treatments and with

roentgen therapy preceding the radium therapy, the incidence of fistula remained consistently low. In 1921, the peak of the era of unfiltered radon seed therapy, the incidence of fistula and the percentage of patients treated with seeds reached the highest levels. Of those patients treated in the years preceding 1926 and who developed fistula there was only one alive in 1933, although several had lived two, three and four years. It seems fair to assume that the advancement of the disease before treatment plays a large part in the incidence of fistula. The yearly incidence in patients now dead parallels closely the yearly incidence in all irradiated patients. A high incidence of fistula is shown in primary carcinoma of the cervical stump. Each patient in this group had a supracervical hysterectomy, for some cause other than carcinoma of the cervix, at least four years before the onset of the symptoms of carcinoma. In the group of primary carcinoma of the cervical stump the incidence approximates that of the recurrent group, suggesting that hysterectomy increases the incidence of fistula, whether performed years before for other reasons or as the initial therapy for cervical carcinoma. The high percentage of fistula patients receiving retreatment in contrast to the relatively small percentage of total patients receiving retreatment indicates the increase in the incidence of the fistula in retreated patients. A comparison of the incidence of fistula in structural types with the type distribution of all cases shows the incidence in the adult type of growth to be only half as high as in the plexiform or in the anaplastic type. This may be due to the relative radioresistance of the adult type. A comparison of the incidence between irradiated and untreated patients shows that fistulas occur at least twice as frequently in untreated as in irradiated patients.

American Journal of Hygiene, Baltimore

20: 259-512 (Sept.) 1934. Partial Index

- Nature and Cause of Hookworm Anemia. A. O. Foster and J. W. Landsberg, Baltimore.—p. 259.
*Hookworm Anemia: Etiology and Treatment, with Especial Reference to Iron. C. P. Rhoads, New York; W. B. Castle, Boston; G. C. Payne, San Juan, Puerto Rico, and H. A. Lawson, Providence, R. I.—p. 291.
Comparison of Efficiency of Stoll Egg-Counting Technic with Simple Smear Method in Diagnosis of Hookworm. A. E. Keller, Nashville, Tenn.—p. 307.
Development of Human Hookworm, *Necator americanus*, in Guinea-Pigs. B. Schwartz and J. E. Alicata, New York.—p. 317.
Studies of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee: VIII. Observations on Intestinal Protozoa of Young Pigs and Attempts to Produce Infection with Human Strain of Endamoeba Histolytica. W. W. Frye and H. E. Meleney, Nashville, Tenn.—p. 404.
Anomalous and Nonspecific Reactions with Trichinella Spiralis Antigen in Relation to Other Disease Conditions. G. W. Bachman, R. Rodriguez Molina and J. O. Gonzalez, San Juan, Puerto Rico.—p. 415.
Further Studies on Passive Immunity to Metazoan Parasite, *Cysticercus fasciolaris*. H. M. Miller Jr. and Margaret L. Gardiner, St. Louis.—p. 424.
Effect on Vaccine Virus of Certain Lipoid Solvents. W. P. Dearing, Boston.—p. 432.
Precipitation Reactions of Meningococcus Strains with Immune Serum in Agar Plates in Relation to Antigenic Activity. Mary B. Kirkbride and Sophia M. Coheu, Albany, N. Y.—p. 444.
Concerning Presence of Heterophile Antigen in Certain Vegetable Materials. R. R. Hyde, Jeannette Chapman and Charlotte Kiesling, Baltimore.—p. 465.
Study of Production of Somatic and Flagellar Agglutinins in Response to Antityphoid-Paratyphoid Inoculation. E. W. Dennis and D. A. Berberian, Beirut, Syria.—p. 469.
Studies on Benign Tertian Malaria: VI. Heterologous Tolerance. M. F. Boyd, W. K. Stratman-Thomas, Tallahassee, Fla., and H. Muench, New York.—p. 482.
Id.: VII. Some Observations on Inoculation and Onset. M. F. Boyd and W. K. Stratman-Thomas, Tallahassee, Fla.—p. 488.
Comparison of Solar Ultraviolet Radiation in Baltimore and Bogota. A. Peña Chavarria and Paulina Gomez-Vega.—p. 508.

Treatment of Hookworm Anemia.—Rhoads and his associates made studies on eighty-three patients, including children and adults, having anemia and hookworm infection. The patients were selected primarily because they had less than 50 per cent of the normal hemoglobin, had no complicating conditions and had hookworm ova in the stools. Field observations were carried out on thirty-two patients. Hospital patients were maintained on a basal diet resembling closely the usual food of the Puerto Rican peasants. Particular attention was given to the nature of the relationship of the hookworm to the anemia. The relative effectiveness of treatment

of the anemia by removal of the parasites, by improvement of the diet and by the administration of iron or liver extracts was determined. Hematopoietic effects were judged by daily observations of the course taken by the reticulocytes and by determinations of the red blood cell and hemoglobin values of the venous blood on alternate days or at appropriately longer intervals. In the field observations the red blood cell and hemoglobin values were determined from capillary blood at approximately weekly intervals. The study revealed that: 1. The hypochromic anemia of hookworm disease in Puerto Rico is apparently caused by a combination of blood loss, dietary deficiency and gastro-intestinal changes probably resulting from defective nutrition. 2. The removal of the hookworms without other therapy had little effect on anemia or clinical condition. 3. The administration of large doses of iron, with or without the removal of the hookworms, produced rapid improvement of blood values and clinical conditions. 4. The advantages of direct treatment of the anemia with iron are indicated.

Canadian Medical Association Journal, Montreal

31: 347-464 (Oct.) 1934

- Second Blackader Lecture on Some Aspects of Virus Infection, with Especial Reference to Virus Diseases of Childhood. J. Craigie, Toronto.—p. 347.
- Fractures of Talus. A. Gibson and R. G. Inkster, Winnipeg, Manit.—p. 357.
- Rapid Cardiac Failure as Symptom of Acute Leukemia. C. A. Markson, Toronto.—p. 363.
- *Blood Iodine Content of Normal and Thyrotoxic Individuals: Iodine Tolerance Test. H. J. Perkin, B. R. Brown and J. Lang, Toronto.—p. 365.
- Study of Relative Antirachitic Value of Cod Liver Oil, Viosterol and Irradiated Milk. T. G. H. Drake, F. F. Tisdall and A. Brown, Toronto.—p. 368.
- *Convenient Method for Determining Serum and Bile Phosphatase Activity. E. J. King and A. R. Armstrong, Toronto.—p. 376.
- Differential Diagnosis of Coma. G. S. Young, Toronto.—p. 381.
- Common Duct Stone. R. V. B. Shier, Toronto.—p. 385.
- Progressive Exophthalmos Following Thyroidectomy. H. A. Des Brisay, Vancouver, B. C.—p. 389.
- Bronchoscopy in Diagnosis of Pulmonary Disease. L. H. Clerf, Philadelphia.—p. 393.
- Carcinoma of Jejunum. E. W. Mitchell, Toronto.—p. 395.
- Reliable Spinal Block Analgesia. B. C. Leech, Regina, Sask.—p. 397.
- Potency and Standardization of Digitalis in Canada. C. W. Chapman and C. A. Morrell, Ottawa, Ont.—p. 400.
- Use of Magnesium Sulphate in Cancer. R. P. Wright, Montreal.—p. 404.
- Why Late Diagnoses in Malignancy? Analysis of Two Hundred Late Diagnoses. E. E. Shepley, Saskatoon, Sask.—p. 406.
- Asthma Due to May Flies (Ephemerida): Case. H. E. MacDermot, Montreal.—p. 408.

Iodine Tolerance Test for Iodine Content of Blood.—

For the quantitative estimation of iodine in the blood, Perkin and his collaborators collected 10 cc. of whole blood in a nickel crucible and combusted it with potassium carbonate at 500 F. in a muffle furnace for five hours. The ash was extracted with alcohol and filtered, and the filtrate was evaporated to dryness. The residue from the filtrate was taken up with water and made slightly acid, and the iodide was oxidized to iodate. In forty normal subjects the iodine content was found to vary between 0.00024 and 0.00185 mg. to each 10 Gm. of whole blood. In thirty-nine patients with suspected hyperthyroidism the range for the group was between 0.00072 and 0.0141 mg. of iodine to each 10 Gm. of whole blood. The authors observed that following the oral administration of compound solution of iodine the blood iodine level was increased considerably, varying with the time the blood was taken. This led them to investigate in normal persons the relation of the iodine concentration of the blood with respect to time, following the ingestion of a known amount of iodine. A test was outlined as follows: After a 10 cc. sample of blood had been obtained, 10 minims (0.6 cc.) of compound solution of iodine in milk was given by mouth in the morning, breakfast being limited to one cup of coffee and a piece of toast. Five blood samples were withdrawn at one-half, one, one and one-half, two and one-half and seven hour periods and the total iodine was estimated. The amount of blood taken was reduced to 3 cc., since the iodine concentration was increased from five to fifteen times the normal. During the day normal meals were taken, with the exception that no foods high in iodine content were allowed. Total iodine estimations were made on the urine collected during the twenty-four hour

period. Since an abnormal iodine metabolism is considered to exist in persons with hyperthyroidism, the same procedure was used in patients with suspected hyperthyroidism. Analysis shows that the blood iodine concentration did not increase to as high a level in patients with a clinical and histologic picture of hyperthyroidism as in normal subjects. The hyperthyroid curves fall below, while the normal curves rise above the hypothetical line of 10 micrograms. Such a finding might be accounted for on the grounds that a hyperplastic thyroid may have a greater affinity for iodine than a resting gland and thus leave less iodine in the blood stream. However, it may be that there is an increased metabolism of iodine in the hyperthyroid patient, although the amount of iodine excreted in the urine in these cases, in comparison with the normal, would not confirm such a hypothesis. The results indicate that estimating the blood iodine concentration at definite intervals, following the ingestion of a single dose of compound solution of iodine, may be a valuable guide in the diagnosis of hyperthyroidism.

Method for Determining Serum Phosphatase.—King and Armstrong describe a method for estimating serum phosphatase activity in which the enzyme is allowed to act on phenyl phosphate and the liberated phenol is determined. The method is adaptable for use with bile. The time required for duplicate analysis of a serum is about one hour. The accuracy of the method is considered to be as great as or greater than that of previously described methods. The authors believe that the incubation period of thirty minutes as used in their method is of advantage in that it gives results which more truly represent the actual enzyme content of the blood than is the case with methods requiring a longer period of incubation. Theoretically, a proper measurement of the amount of the enzyme should be based on the initial velocity of hydrolysis. While the attainment of this condition is not practicable in a clinical method, the shortening of the period of hydrolysis, without any sacrifice in the accuracy of the analytic procedures, should make for the attainment of more exact and hence more significant values. When large numbers of serums are being examined as a routine, the authors have found duplicate analyses to agree on the average to within 5 per cent for those values lying within the normal range. For the higher values the percentage of error is correspondingly less. A number of serums that they examined simultaneously by their own method and by that of Jenner and Kay agreed closely. Most of the differences are scarcely beyond the combined experimental error of both methods.

Endocrinology, Los Angeles

18: 555-666 (Sept.-Oct.) 1934

- Effect of Castration on Anterior Hypophysis of Female Rat. E. T. Ellison and J. M. Wolfe, Nashville, Tenn.—p. 555.
- *Comparative Sensitiveness of Schizophrenic and Normal Subjects to Glycerin Extract of Adrenal Cortex. H. Freeman and R. G. Hoskins, Worcester, Mass.—p. 576.
- Psychologic Picture of Case of Laurence-Moon-Biedl Syndrome. W. C. Menninger, Topeka, Kan.—p. 583.
- Roentgen Therapy of Exophthalmic Goiter. A. M. Smith, Minneapolis.—p. 591.
- *Pituitary Headache. W. M. Skipp, Youngstown, Ohio.—p. 596.
- Repair of Reproductive System of Hypophysectomized Female Rats by Combinations of Hypophyseal Extract (Synergist) with Pregnancy-Prolan. H. M. Evans, R. I. Pencharz and Miriam E. Simpson, Berkeley, Calif.—p. 601.
- Maintenance and Repair of Reproductive System of Hypophysectomized Male Rats by Hypophyseal Synergist, Pregnancy-Prolan and Combinations Thereof. H. M. Evans, R. I. Pencharz and Miriam E. Simpson, Berkeley, Calif.—p. 607.
- Hormones of Hypophysis of Infantile Rat. Olive Swezy, Berkeley, Calif.—p. 619.
- Concerning Function of Pineal Body. W. Saphir, Chicago.—p. 625.
- Nature of Gonadotropic Hormone Found in Urine of Case of Teratoma Testicle. R. J. Main, Richmond, Va., and S. L. Leonard, Schenectady, N. Y.—p. 629.

Sensitivity to Glycerin Extract of Suprarenal Cortex in Schizophrenia.—Freeman and Hoskins administered a glycerin extract of suprarenal cortex to healthy male schizophrenic patients and to normal subjects in a daily dosage representing approximately 450 grains (30 Gm.) of cortical substance. In a first series of subjects in which the medication was administered for two weeks, two of eight normal controls and eight of nine patients showed a pressor reaction. In a second series in which the medication was administered

for four weeks, one of nine normal controls and seven of ten patients showed a pressor response. Combining the two series, 18 per cent of the normal subjects as compared with 79 per cent of the schizophrenic patients showed a pressor reaction. In the first series of patients the mean rise in systolic pressure for the group was 17 mm. In the first series of normal subjects the mean rise in the systolic pressure for the group was 2.6 mm. In the second series of patients the mean rise in systolic pressure for the group was 13.6 mm. and for the diastolic pressure 12.02 mm. In the second series of normal subjects there was no change in the systolic blood pressure of the group. The mean diastolic blood pressure rose 3.73 mm.

Pituitary Headache.—Skipp treated eleven patients suffering from pituitary headache (ten women and one man) with posterior pituitary extract by mouth and subcutaneously, with a disappearance of the headaches. The oral treatment consisted of the posterior lobe extract in tablet form and the injections consisted of a solution of the posterior lobe extract. Extracts of the anterior lobe apparently were without benefit. The author explains the headache by an interglandular syndrome that forces the hypophysis to hyperactivity, thus causing it to hypertrophy. As it is contained in the "small skull within the large skull" there is an increase of intracapsular pressure, which produces pressure on the blood vessels and their nerves and the pituitary capsule and thus causes pain. The sudden and lasting relief received by these patients is remarkable. It is evidently due to shrinking of the oversized gland and relieving the hypophysis of hypofunction. There is indication that there is a pronounced hypofunction in many cases in which characteristic pain in the head called headache would indicate hypofunction.

Journal of Bacteriology, Baltimore

28: 221-322 (Sept.) 1934

- Studies on Bacteriophage: I. Relation of Bacteriophage and Other Lytic Agents to Negative Stool Cultures: Study of Two Cases. Genia Rabinowitz, Brooklyn.—p. 221.
Id.: II. Comparison of Action of Lytic Agents and Bacteriophages on *Pyocyanus* Cultures. Genia Rabinowitz, Brooklyn.—p. 237.
Spoilage of Olives by *Colon Bacilli*. R. L. Tracy, Los Angeles.—p. 249.
Studies on Anaerobic Bacteria: I. Corn-Liver Medium for Detection and Dilution Counts of Various Anaerobes. L. S. McClung and Elizabeth McCoy, Madison, Wis.—p. 267.
Mechanical Device Which Prepares and Inoculates Rolled Tubes. R. Thompson, Montreal.—p. 279.
Effect of Deuterium on Growth of Yeast. O. W. Richards, New Haven, Conn.—p. 289.
Investigation of *Bacillus Pasteuri* Group: I. Description of Strains Isolated from Soils and Manures. T. Gibson, Edinburgh, Scotland.—p. 295.
Id.: II. Special Physiology of Organisms. T. Gibson, Edinburgh, Scotland.—p. 313.

Journal of Experimental Medicine, New York

60: 403-540 (Oct. 1) 1934

- Studies on Whooping Cough: I. Type-Specific (S) and Dissociation (R) Forms of *Hemophilus Pertussis*. G. S. Shibley and Helena Hoelscher, Cleveland.—p. 403.
Comparison of Ocular Micrometric and Projectoscopic Methods of Estimating Growths in Tissue Cultures. H. F. Swift, J. K. Moen and E. Vaubel, New York.—p. 419.
Rabbit Pox: I. Clinical Manifestations and Course of Disease. H. S. N. Greene, New York.—p. 427.
Id.: II. Pathology of Epidemic Disease. II. S. N. Greene, New York.—p. 441.
Existence of Factor Increasing Tissue Permeability in Organs Other Than Testicle. A. Claude and F. Duran-Reynals, New York.—p. 457.
Accumulation of Iron in Tuberculous Areas: IV. Effect of Ferric Chloride on Course of Tuberculosis in Reinfected Rabbits. V. Menkin, Boston.—p. 463.
*Participation of Skin Lymphatics in Repair of Lesions Due to Incisions and Burns. P. D. McMaster and S. S. Hudack, New York.—p. 479.
Irreversible Character of Late Changes After Hepatectomy. P. D. McMaster, New York, and D. R. Drury, Los Angeles.—p. 503.
Biologic Studies of *Tubercle Bacillus*: III. Dissociation and Pathogenicity of R and S Variants of Human *Tubercle Bacillus* (H²⁷). W. Steenken Jr., W. H. Oatway Jr. and S. A. Petroff, Trudeau, N. Y.—p. 515.

Lymph Canals in Repair of Lesions Due to Incisions and Burns.—With the aid of solutions of vital dyes, McMaster and Hudack studied the lymphatic capillaries in the ear of the mouse during the period of immediate reaction to injuries of various sorts and during the period of repair. The behavior

of lymph canals severed by incision differs greatly from that of the small blood vessels. Instead of closing, they sometimes remain open for as long as forty-eight hours. Materials introduced into the wound pass directly into the lymph canals through their gaping ends, a fact that will explain why infection from incisions is predominant along them. All round an injury the lymph canals are rendered abnormally permeable. So too are the blood vessels, a fact well recognized in the past. From twenty-four to forty-eight hours later, at a time when the blood vessels in the edematous tissue surrounding the injured area are still much more permeable than normal, the draining lymph canals allow far less to escape than usual. The possible reasons for this have been discussed. They participate in the removal of fluid from the edematous tissue. As repair after injury takes place, severed lymphatics may reunite when as yet there are no functioning blood vessels. Later an active hyperplasia of the lymphatic channels occurs, an extraordinarily abundant plexus of minute lymph capillaries budding into the area under repair.

Journal of General Physiology, New York

18: 1-142 (Sept. 20) 1934. Partial Index

- Crystalline Acetyl Derivatives of Pepsin. R. M. Herriott and J. H. Northrop, Princeton, N. J.—p. 35.
Convenient Ketene Generator. R. M. Herriott, Princeton, N. J.—p. 69.
Results of Irradiating *Saccharomyces* with Monochromatic Ultraviolet Light: I. Morphologic and Respiratory Changes. R. H. Oster, Cambridge, Mass.—p. 71.
Theoretical Significance of Talbot's Law. W. Arnold and C. P. Winsor, Cambridge, Mass.—p. 97.
Rate of Escape of Hemoglobin from Hemolyzed Red Corpuscle. H. Fricke, Cold Spring Harbor, Long Island, N. Y.—p. 103.
Conduction in Nerve Fibers. H. A. Blair, Rochester, N. Y.—p. 125.

Journal of Nervous and Mental Disease, New York

80: 377-500 (Oct.) 1934

- The Training of the Neurologist. P. Bailey, Chicago.—p. 377.
Dupuytren's Contracture One Hundred Years After Dupuytren: Its Interpretation. H. Powers, Wellesley, Mass.—p. 386.
The Unhappiness of Genius. H. H. Hart, New York.—p. 410.
Pupillotonia or Tonic Pupils: Report of Three Cases. G. B. Hassin, Chicago, and J. J. Thompson, North Chicago, Ill.—p. 430.

Kansas Medical Society Journal, Topeka

35: 369-408 (Oct.) 1934

- Functions of Anterior Hypophysis. C. M. MacBryde, St. Louis.—p. 369.
Surgical Treatment of Pulmonary Tuberculosis. L. W. Angle, Kansas City.—p. 373.
Rectocolonic Disease. J. L. Jelks, Memphis, Tenn.—p. 375.

Michigan State M. Society Journal, Grand Rapids

32: 533-580 (Oct.) 1934

- The Year's Achievement. G. L. Le Fevre, Muskegon.—p. 533.
Medical Education in Michigan. R. R. Smith, Grand Rapids.—p. 537.
Primary Carcinoma of Bronchi. W. D. Mayer, Detroit.—p. 539.
Petrositis. W. S. Gonne, Detroit.—p. 547.
Diphtheria: Some of Today's Problems. D. W. Gudakunst, Detroit.—p. 551.
Relation of Roentgenology to Obstetrics and Gynecology. A. R. Bloom, Detroit.—p. 555.
Adult Health Education Program in Washtenaw County. Gladys J. Kleinschmidt, Ann Arbor.—p. 561.
*Treatment of Impetigo Contagiosa Neonatorum: "Dry Method." S. J. Levin, Detroit.—p. 563.
Papillomas of Larynx: Case Reports. B. F. Glowacki, Detroit.—p. 564.

Treatment of Impetigo Contagiosa Neonatorum.—Levin used the following routine treatment for impetigo of the new-born in forty-four consecutive cases. It has been successful in clearing up these cases in seventy-two hours or less, the average duration being forty-eight hours after the institution of therapy. All mature lesions were opened once or twice a day and the infant was immersed immediately for from ten to fifteen minutes in a bath of 1:15,000 corrosive mercuric chloride and a thorough soap bath was given with a mild castile soap. A dusting powder composed of equal parts of bismuth subnitrate, light zinc oxide and mild mercurous chloride was applied freely following the bath. New lesions were opened twice a day and the bath was repeated. After the first day only an occasional lesion appeared and only one bath was usually necessary. The bath should be continued for a few days after the last lesion appears. The dusting

powder is applied freely during this period to the affected parts. Elsewhere, talcum powder is applied freely two or three times a day, special attention being paid to all folds and creases of the skin. When external heat is indicated, this is obtained best by a light tent rather than excessive clothing.

Nebraska State Medical Journal, Lincoln

19: 361-400 (Oct.) 1934

- Carcinoma of Colon. W. A. Fansler and J. K. Anderson, Minneapolis.—p. 361.
 *Management of Hemorrhage in Duodenal Ulcer. M. C. Howard and M. W. Barry, Omaha.—p. 367.
 Fractures of Forearm. B. R. McGrath, Grand Island.—p. 372.
 Diseased Uterine Cervix: Preliminary Report on Schiller's Lugol Test. R. J. Stearns, Omaha.—p. 375.
 Trichiniasis: Forty-Six Cases. A. W. Anderson, West Point.—p. 379.
 Electrocoagulation on Tonsils. L. C. Knight, Lincoln.—p. 382.
 Value of Sequestration Anemia in Surgery. C. H. Newell, Omaha.—p. 384.
 Choice of Operation in Biliary Tract Disease. H. H. Everett and R. H. Whitham, Lincoln.—p. 387.
 Clinical Pathologic Case Reports: IV. F. L. Rogers and J. M. Neely, Lincoln.—p. 389.

Hemorrhage in Duodenal Ulcer.—The plan of treatment that Howard and Barry have used in hemorrhage in duodenal ulcer, with occasional alterations, is as follows: The patient must remain at absolute rest not only during the time of the active hemorrhage but for a period of from two to three weeks after the stool has become negative. Morphine sulphate is administered for the first few days at frequent intervals to produce this rest. Milder sedatives may be used later. In the more recent cases, especially in patients who are nauseated, vomit or show signs of an excessive tympanites, gastric lavage has been used. This should be done morning and evening, preferably with warm tap water. The regurgitated blood in the stomach is removed and the usual beneficial effects of a gastric lavage are obtained. Since the hemorrhage in these patients depends on the activity of the ulcer, a diet is prescribed immediately, which consists of 3 ounces of milk and cream. This mixture is given at intervals of two hours from 8 a. m. to 8 p. m. These feedings are alternated with sodium bicarbonate, from 20 to 60 grains (1.3 to 4 Gm.) from 9 a. m. to 9 p. m. Tap water is given between the feedings in sufficient quantities to relieve the patient's thirst. On the third to the sixth day, gruels may be substituted for the milk feedings, and, as the hemorrhage is brought under control, the diet is increased. Elimination is regulated by prescribing 1 or 2 ounces (30 or 60 cc.) of liquid petrolatum each day. If needed, enemas should be given every other day and a glycerin suppository may be used occasionally.

New England Journal of Medicine, Boston

211: 563-606 (Sept. 27) 1934

- Traumatic Rupture of Kidney with Symptomatology of Acute Abdomen: Case Reports. H. S. Backus, Hartford, Conn.—p. 563.
 Ureterorectal Anastomosis in a Woman with Single Kidney Because of Tuberculosis of Bladder. T. N. Hepburn, Hartford, Conn.—p. 564.
 Observations on Experimental Transplantation of Ureter. C. H. Newswanger, Waterbury, Conn.—p. 565.
 Urinary Symptoms in Relation to Trichomonas Vaginalis Infestation. E. J. Maxwell, New Haven, Conn.—p. 567.
 Comparative Histology of Prostate and Prostatic Urethra in Man, Monkey and Rat from Point of View of Anatomic Origin of Prostatic Hypertrophy. R. H. Jenkins, C. L. Deming and Gertrude Van Wagenen, New Haven, Conn.—p. 569.
 Application of Bacteriologic, Physiologic and Histologic Principles to Prostatic Surgery. C. L. Deming, New Haven, Conn.—p. 572.
 Future of Psychiatry in Medical Schools. A. W. Stearns, Boston.—p. 574.
 Tuberculosis of Spine in Children: Based on Study of Eighty-Nine Cases from 1920 to 1930 Inclusive. E. F. Cave, Boston.—p. 578.
 Chemical and Electrogalvanic Burns of Tongue. W. J. Macdonald, Boston.—p. 585.
 Comparison of Skiodan and Diodrast as Vasographic Mediums, with Especial Reference to Their Effect on Blood Pressure. E. A. Edwards and F. Biguria, Boston.—p. 589.
 Bone Plate Screw Holder. A. W. Reggio, Boston.—p. 593.

211: 607-652 (Oct. 4) 1934

- *Method of Reduction and Fixation of Intracapsular Fractures of Femoral Neck. J. H. Fay, Melrose, Mass.—p. 607.
 Conduct of Convalescent Stage of Anterior Poliomyelitis. H. D. Corbusier, Plainfield, N. J.—p. 611.
 Diverticulosis, Diverticulitis and Carcinoma of Colon: Roentgenologic Discussion. R. Golden, New York.—p. 614.
 Auricular Fibrillation and Flutter Without Evidence of Organic Heart Disease. R. D. Friedlander and S. A. Levine, Boston.—p. 624.

Apparent Relationship Between Wound Healing and Ovarian Function: Case Report. B. C. Wheeler and D. S. Adams, Worcester, Mass.—p. 630.

Dermatitis of Breasts Caused by Compound Tincture of Benzoin; Report of Three Cases. M. F. Eades, Boston.—p. 632.

Reduction and Fixation of Intracapsular Fractures of Femoral Neck.—Fay outlines a method for the reduction and fixation of intracapsular fractures of the neck of the femur in which the knee of the affected side is flexed to a right angle, the thigh to an angle of 60 degrees and then, with the flexed leg used as a lever, internal rotation of the whole limb is carried out with the thigh adducted. This procedure disengages the fragments. It effectively releases the impinged posterior edge of the distal fragment, which is lying against the proximal fragment. Then, while forced internal rotation is maintained, extension and abduction of the limb follows. This sequence of movements places the fractured surfaces in exact apposition. For maintaining this apposition a sufficient length of time to favor bony union, well padded plaster boots are applied on both legs from the toes to the tibial tubercles. Both legs are held apart in forced internal rotation and abduction by a splint, which is incorporated in the plaster and which serves also to extend moderately the fractured limb by using the sound limb for counterpressure. The fractures are reduced as soon as they are roentgenographed. Reductions are done under gas anesthesia. The patient can receive adequate nursing care without discomfort and may sit up in bed at an angle of 60 degrees as soon as the plaster casts are firm. The fractured limb must be held in abduction at all times. The casts are left in place for ten weeks following reduction. Measurement of the distance between the trochanter and the iliac crest is possible in not too fat patients and is taken frequently. Since the two limbs are abducted equally, this is done by comparative palpation. When the casts are removed, the patient is kept in bed for about two weeks. When the heel of the fractured limb can be raised from the bed without aid, union is sufficiently firm to allow sitting up. Massage is given regularly to the knees and ankles after the removal of the casts and, in another two weeks, walking with crutches or assistance is begun. After this, the patient is allowed to go home and dispense with crutches as soon as walking without them is possible. The author obtained demonstrable bony union in nineteen of twenty-two cases.

Public Health Reports, Washington, D. C.

49: 1101-1128 (Sept. 21) 1934

- Mortality Rates by Occupational Class in the United States. R. H. Britten.—p. 1101.
 The Woodworth Personal Data Sheet as Applied to Delinquents. M. J. Pescor.—p. 1111.

Radiology, Syracuse, N. Y.

23: 261-390 (Sept.) 1934

- Acne Vulgaris and Roentgen Rays: Statistical Report. G. M. MacKee and F. I. Ball, New York.—p. 261.
 Differential Diagnosis of Injuries of Spine. H. P. Doub, Detroit.—p. 267.
 *Treatment of Chest-Wall Secondaries in Breast Carcinoma: Preliminary Report of New Radium Technic. G. E. Richards, Toronto.—p. 280.
 Cumulative Dose with Multiple Fields. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 285.
 Clinical Significance of Pneumoperitoneum. L. J. Friedman, New York.—p. 290.
 Micronephelometry and Its Application to Certain Radiated Living Tissues. W. M. Millar, Cincinnati.—p. 294.
 Pyeloperistalsis Characteristically Altered by Infection, with Notes on Functional Behavior of Other Hollow Viscera. H. A. Jarre and R. E. Cumming, Detroit.—p. 299.
 Correlation of Histologic Changes and Clinical Symptoms in Irradiated Hodgkin's Disease and Lymphoblastoma Lymph Nodes. A. Brunschwig and Ernestine Kandel, Chicago.—p. 315.
 Roentgen-Ray Visualization of Part of Lymphatic System. L. J. Menville and J. N. Ané, New Orleans.—p. 327.
 Stimulating Action of Radioactive Deposits in Body. F. B. Flinn, New York.—p. 331.
 Protracted External Irradiation in Treatment of Carcinoma of Mouth and Throat: Comparison Between X-Rays, Five-Grain Pack and Small Radium Pack. I. I. Kaplan, M. Friedman, Rivka Rosh and C. B. Braestrup, New York.—p. 339.

Treatment of Recurrent Skin Lesions in Breast Carcinoma.—In treating recurrent lesions in the skin and subcutaneous tissues of the wall of the chest following the surgical treatment of primary carcinoma of the breast, Richards uses a method that consists in fitting to the patient's body a radium

applicator, which he calls "the radium jacket." The foundation of this jacket consists of a layer of felt 0.5 cm. thick, which is fitted to the patient's body. To this, rows of radium needles are stitched on and spaced accurately from one another, so arranged as to provide even irradiation of the entire wall of the chest, from the midline in front round posteriorly as far as it is thought desirable to extend the jacket. When sufficient needles have been attached to the felt to cover the desired area, the whole package is enclosed in pure gum rubber and sealed, and in this form the jacket is applied to the patient's chest and the patient wears it for a period of time which is determined by the radium content of the needles and the filtration of their wall. The needles, 60 mm. in length, which have been used for this purpose, contain 3 mg. of radium element and have a wall thickness of 0.8 mm. of platinum of the standard platinum iridium type. Approximately 100 of these needles are used in the full radium jacket and, with the high filtration resulting in a hard gamma ray radiation and the distance from the skin, it is necessary to leave them in position from ninety to 100 hours in order to secure the desired effect. The reaction that follows is a fairly severe first to second degree erythema with vesication and requires care in its treatment. The application of a cream consisting of equal parts by weight of zinc oxide and castor oil is applied immediately following the removal of the jacket and until the reaction has healed entirely. The cream is applied thickly on gauze and the bandage is changed morning and night. The author states that up to the present time there has not been a case in which local secondaries developed following the foregoing procedure. The disadvantages of the method are that in several cases there has been a rather severe constitutional reaction, accompanied by rise of temperature and a moderate degree of shock, which has required the hospitalization of the patient for several weeks and that, if the treatment fails to control the disease, it results in a fairly marked degree of devitalization of tissue and subsequent treatments by any method are rendered difficult or impossible.

Review of Gastroenterology, New York

1: 183-260 (Sept.) 1934

- Mimicry of Acute Appendicitis by Malaria. S. M. Copland and C. J. Miangolarra, New Orleans.—p. 183.
*Donor's Diet as Possible Cause of Blood Transfusion Reactions. A. S. Price, New York.—p. 192.
Use of Fats in Gastric and Hepatic Diseases. P. Fructier, Vichy, France.—p. 202.
Cardiospasm: Report of Case of Twenty-Eight Years' Duration Terminating in Complete Obstruction. R. Finkelstein, Brooklyn.—p. 207.
The Hepato-Endocrine Syndrome. M. E. Binet, Vichy, France.—p. 213.
Relationship of Pulmonary Tuberculosis to Gastro-Intestinal Tract. E. Granet and G. G. Ornstein, New York.—p. 217.

Diet of Donor as Possible Cause of Blood Transfusion Reactions.—To determine the cause of reactions following blood transfusion, Price observed the diet of the donor preceding the transfusion. During the last ninety of 300 transfusions he made a decided effort to eliminate food as a possible cause for reaction by asking the donor to omit his last meal prior to the transfusion. For purposes of comparison, in the first 210 cases the attempt to curb the diet of the donor was not pushed and fifty-eight reactions occurred, or 27.5 per cent. In the last ninety cases in which an effort was made to curb the diet, ten reactions occurred, or 11 per cent. In six cases of the latter group, the donor had had something to eat within the five-hour period. Thus, if one is willing to accept the diet of the donor as a factor in producing reactions, the unexplained reactions in the last ninety cases might be reduced to three, or 3.3 per cent. One reaction was believed to be due to repeated collapse of the donor's vein. Of 125 cases in which the donor had had no food within the five-hour period, ten had a reaction. Four of the reactions were attributed to faulty technic, leaving six that occurred in the entire group in which no food was taken within the five-hour period. Of 125 cases in which the donor is known to have taken food within the five hours prior to the transfusion, 35 per cent had a reaction. The only desirable deduction is that the majority of unexplained reactions in blood transfusions may be avoided by controlling the donor's pretransfusion diet. At present, if any foods are to be classed as "vicious," among them would be milk, meat, eggs and gruels. The exact causative reaction factor is not known, but it is believed to be protein in nature. Observation has led to the belief that it is advisable to ask

the donor to omit coffee because of the cream used. At present, only orange juice is the recommendation given the donor for his pretransfusion diet. Such a recommendation is applicable only to the elective transfusion.

Rhode Island Medical Journal, Providence

17: 143-162 (Sept.) 1934

- Importance of Early Diagnosis in Urology. M. A. Chapian, Providence.—p. 143.
Some Medical Aspects in Treatment of Pulmonary Tuberculosis. U. E. Zambarano, Providence.—p. 148.

17: 163-178 (Oct.) 1934

- *Pneumonectomy: Successful Result in Case of Bronchiectasis. E. Widsberg, Providence.—p. 163.
Physical Symptoms from Psychologic Sources. W. C. Weigner, Providence.—p. 167.
Salyrgan: Its Use Over Extended Period of Time to Relieve Cardiac Insufficiency. L. I. Kramer, Providence.—p. 175.
Physiotherapy and Infections of Hand. E. A. Bowen, Cranston.—p. 176.

Pneumonectomy and Bronchiectasis.—Of the six cases of successful pneumonectomy, the one that Widsberg reports, a case of bronchiectasis of a duration of five and a half years in a girl of 12 years, involved the right lung, whereas the other five involved the left lung. When bronchiectasis, not amenable to postural drainage and bronchoscopic therapy, is confined to one lobe of a lung, lobectomy offers a reasonably good prospect for a complete cure. The method of Graham not only establishes drainage but also destroys diseased lung tissue in multiple stages. In the author's case the method of Graham was employed to begin with because of the multiple cavities and the extensive involvement. Amputation at the hilus was effected at the fourth sitting when it appeared relatively safe. On the other hand, pneumonectomy as a primary procedure would have been hazardous in this case. The wound in the wall of the chest has healed completely except for the opening of a small bronchial fistula high up in the axilla, the size of a pinhead. The fistula has closed, only to open again, on several occasions. Injection of iodized oil shows it to be about 1½ inches in length and to lead directly to the stump of the main bronchus. It is felt that a partial thoracoplasty may be required to effect permanent closure of the fistula as well as to overcome the extreme deviation of the trachea to the right. During the past year the patient has gained in weight and in height. She has carried on well under unfavorable home conditions. Moderate dyspnea develops only following considerable exertion. Cough and expectoration are insignificant and are due entirely to the presence of the bronchial fistula. Since September 1933 she has been attending school for the first time in her life.

South Carolina Medical Assn. Journal, Greenville

30: 177-192 (Sept.) 1934

- Intracranial Hemorrhage Without Paralysis. W. R. Mead, Florence.—p. 179.
Trends in Medical Economics. R. G. Leland, Chicago.—p. 183.

Texas State Journal of Medicine, Fort Worth

30: 303-364 (Sept.) 1934

- Foundation of Art and Science of Medicine. J. H. J. Upham, Columbus, Ohio.—p. 307.
Consideration of Carcinoma Problem as Especially Applied to Carcinoma of Uterus. J. C. Masson, Rochester, Minn.—p. 312.
Surgical Procedures for Relief of Intractable Pain. A. O. Singleton, Galveston.—p. 318.
Development of Peroral Endoscopy. J. H. Foster, Houston.—p. 322.
Use of Mucin in Treatment of Intractable Peptic Ulcer. G. M. Underwood, Dallas.—p. 328.
Mottled Enamel of Teeth in Children: Résumé with Consideration of Clinical and Etiologic Factors. J. R. Lemmon, Amarillo.—p. 332.
Accidental Transmission of Quartan Malaria in Opium Addicts. P. A. Woodard, Galveston.—p. 336.
*Molds in the Etiology of Asthma and Hay Fever: Preliminary Report. H. E. Prince, W. A. Selle, Galveston, and Marie Betzner Morrow, Austin.—p. 340.
Pathologic Basis of Renal Insufficiency. J. P. Simonds, Chicago.—p. 344.
*Trichomonas Vaginalis Vaginitis: Preliminary Report. K. J. Karnaky, Houston.—p. 348.
Blood Transfusion in Infancy and Childhood. W. H. Bradford, Dallas.—p. 352.

Molds as Etiology of Asthma and Hay Fever.—Prince and his associates have encountered cases of severe asthma, both with and without hay fever, that have defied all attempts

at etiologic diagnosis and consequently have received little benefit from therapy. These cases for the most part appear in the fall, about October, and persist with remissions until March or April. The remissions are experienced generally during warm clear weather when the wind is from the Gulf. They began a series of air-borne mold cultures in June 1933. From the roof of a building, sterile plates of Sabouraud's agar were exposed to the air for intervals of two minutes each. These plates were allowed to incubate at room temperature until colonies appeared, which usually required from five to seven days. It was somewhat surprising to find that these short exposures usually resulted in one colony, sometimes more, on each plate. When the time of exposure was increased to five minutes, the colonies were so numerous that mutual contamination could not be avoided. Several cultures of molds were obtained also from the air within doors. In three instances the cultures were obtained from known sources: mold 10, cultured from corn smut, mold 27 from a trichophyton and mold 28, which was an alternaria. Thus, the authors obtained twenty-nine different cultures during the months of June and July. The colonies generally assumed enough gross characteristics within a week to be roughly differentiated, after which they were fished off and inoculated into liquid Sabouraud's mediums in 1,000 cc flasks for quantity yields. After all growth had ceased in the flasks, which required usually from fifteen to twenty days, the pellicles with all spores and mycelia were carefully removed, washed to remove the culture mediums and dried in individual desiccators over calcium chloride. Weighed amounts of the dried material were ground in a mortar and extracted for forty-eight hours in a medium containing one third Coca's fluid and two thirds glycerin, all extractions being carried out in the ratio of 1 Gm of mold to 40 cc of extracting fluid (25 per cent). The extracts were then subjected to Berkefeld filtration and the sterile extracts stored in rubber-stoppered bottles and numbered. A double check for sterility was performed, one plating being made on Sabouraud's agar to determine whether any spores had escaped filtration and a second on ordinary nutrient agar to check for bacteria. Testing sets were prepared from these stock solutions by simple dilution. Coca's solution alone being used as the diluent, so as to avoid a high concentration of glycerin. Two sets of dilutions were prepared, 1:2,000 and 1:500. All the subsequent testing was performed by the intracutaneous method, 0.02 cc being introduced into the superficial layer of the skin in the usual manner. In no case was the 1:2,000 dilution found to be too strong, the less sensitive cases were tried on the 1:500 extract. It was not found necessary to run control tests on the patients, because in each instance several extracts failed to react and these were considered negative. Altogether the authors have tested eighteen patients with their mold extracts. Four normal medical students gave negative reactions. In two asthmatic and one hay fever patient, results were likewise negative, eventually other causative factors were found. Three other asthmatic patients, in whom the cause is known to be a bronchial infection, have reacted strongly to certain of the molds, in two the injections of mold extracts were without benefit, while the third was not treated. Another asthmatic patient sensitive to house dust gave positive reaction to three molds but was treated with dust extract because his symptoms occur chiefly in Austin, Texas, where molds are much less abundant. A difficult hay fever patient is making good progress with mold therapy. The author discusses the six remaining cases that gave positive reactions to molds in which mold therapy has been distinctly encouraging.

Trichomonas Vaginalis Vaginitis—Karnaky presents a method for the diagnosis of *Trichomonas vaginalis* that may be useful to those who have not examined many smears or who are not familiar with this organism. With this method, a few drops of dilute gentian violet stain is mixed well with the smear on the slide. The epithelial cells, pus cells and debris are stained purple, the parasites are not stained at first but may be seen swimming around in a purple surrounding. Later they will take in some of the purple granules and will have a purplish tint. The warm dilute gentian violet preparation is made by adding 6 or 8 drops of gentian violet to 5 cc of warm tap water.

United States Naval Med. Bulletin, Washington, D. C.

32: 381-576 (Oct.) 1934

- Syphilis in the Navy R P Parsons—p 381
- Incidence of Yaws and Syphilis in Five Rural Villages, Republic of Panama P W Wilson—p 391
- Christopher Columbus and the American Origin of Syphilis R C Holcomb—p 401
- Should We Standardize Treatment of Early Syphilis? H L Jensen and J M Wheeler Jr—p 430
- Hemolytic Jaundice Report of Two Unusual Cases with Results Following Splenectomy C W Brunson—p 441
- Surgery of Spleen Report of Two Cases of Hemolytic Jaundice Treated by Splenectomy J A Biello—p 449
- Medical Observations in Tropics E U Reed—p 463
- Vincent's Disease W H Short—p 467
- Local Anesthetic Solutions E H Tennent—p 487
- Alcoholism and Pellagra S R Mills—p 493
- Systematic Study of Three Hundred and Three Cases of Syphilis with Use of a "Graph" for Aid in Comprehension L E McDonald—p 497
- Plea for Adequate Antisyphilitic Treatment G H Ekblad—p 506

Virginia Medical Monthly, Richmond

61: 377-438 (Oct.) 1934

- Tumors of Sympathetic Nervous System D Lewis, Baltimore—p 377
- Metastatic Septic Endophthalmitis H S Hedges, Charlottesville—p 383
- *Simplified Treatment of Eclampsia M P Rucker, Richmond—p 384
- Narcolepsy Case Report R Brittain and L F Hobbs, Jewel Ridge—p 387
- Diathermy for the Physician in General Practice J O Fitzgerald Jr., Richmond—p 388
- Problem of Hair Growth T W Murrell, Richmond—p 391
- Diabetic Coma Without Ketonuria Case Report C H Beach, Richmond—p 395
- Autobiography of a Doctor's Saddlebag R H Garthright, Vinton—p 401
- Cerebrospinal Fever L Farley, Courtland—p 402

Simplified Treatment of Eclampsia.—To stop convulsions, Rucker's main reliance has been the intravenous administration of magnesium sulphate. He gives 20 cc of a 10 per cent solution. If the convulsions recur, he repeats it once or twice. When the magnesium sulphate failed, he has used sodium amytal intravenously. External stimuli, such as noise, bright lights and jarring the bed, should be avoided. Rest cannot be emphasized too strongly. For this reason the author has abandoned colonic irrigation and gastric lavage. If the patient is in labor he gives morphine and scopolamine or sodium amytal and scopolamine so as to keep her as comfortable as possible in the first stage. For second stage anesthesia he prefers local infiltration of the perineum with 0.5 per cent procaine hydrochloride. To avoid the suppression of urine, he gives plenty of water. If the patient is conscious, she is encouraged to drink water and weak lemonade. Otherwise, a pint of water is poured into the stomach through a nasal tube every eight hours. If more is necessary, hypertonic solution of dextrose may be given intravenously. Edema of the lungs is combated with digitalis. He gives half a cat unit dose of digitalis as early in the treatment as possible. When this is done, edema of the lungs does not develop. When the patient is brought in after a number of convulsions and she has already begun to froth at the mouth, he believes that it is wise to take from 500 to 600 cc of blood from a vein. After the convulsions are controlled, the treatment is tapered off with small doses of sodium amytal, 3 grains (0.2 Gm) two or three times a day, or with sodium bromide and chloral hydrate. For several days the diet should consist of fruit juices. On the whole, the author thinks that it is unwise to allow the patient to leave the hospital undelivered. However, there are exceptional cases that can be carried closer to term under careful supervision. He has treated 123 consecutive cases of eclampsia, with a gross mortality of less than 5 per cent.

Wisconsin Medical Journal, Madison

33: 721-796 (Oct.) 1934

- Clinical Signs Considerations and Therapy of Brain Tumors H H Reese, Madison—p 734
- Limitations of Intravenous Urography H W Hefke, Milwaukee—p 742
- Bromism Review of More Recent Literature and Analysis of Sixteen New Cases Annette C Washburne, Madison—p 746
- Thrombophlebitis of Lateral Sinus F S Cook, Eau Claire—p 751
- Malignant Intraspinal Meningioma Case Report D J Twog H A Devine and M O Boudry, Fond du Lac—p 759
- Traumatic Rupture of Sigmoid with Intra Abdominal Hemorrhage G M La Croix, Shotton, and C E Ryan, Appleton—p 760

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

28: 105-152 (July) 1934

- Tuberculosis in Wales. H. D. Chalke.—p. 109.
*Influences Adverse to Tuberculous Patients. J. A. G. Keddie.—p. 117.
Alpine Climate in Connection with Laryngeal Tuberculosis: Notes. T. Rüedi and B. Hudson.—p. 126.
Gold Treatment of Pulmonary Tuberculosis. C. Mayer.—p. 131.

Influences Adverse to Tuberculous Patients.—Keddie, in a survey of 262 cases, observed that a large proportion of the cases of pulmonary tuberculosis are reported to the public health authority when the disease is far advanced and that, therefore, in comparatively few instances can one expect ultimate permanent arrest of the lesion. The majority of cases, whether early or advanced in type, fail to secure adequate initial residential treatment. While the medical practitioner is partly responsible for so many patients presenting themselves for public medical treatment at a late stage, the patient is more at fault. Though lack of education in regard to the need for early and adequate treatment is commonly the factor at work, domestic difficulties are not infrequently the important causal influences. On return from residential treatment the patient has in many cases to face housing conditions that are almost certain to be deleterious to his health, and in many instances inadequate food is an adverse influence, being usually present as a result of the inability to secure suitable work for which there is physical capacity. The author is of the opinion that, in order to secure the amelioration of the conditions under which tuberculous patients and their families so commonly live, conditions which undoubtedly cause the patients to relapse or hasten their deaths, and which are practically certain to lower markedly the resistance to infection of the house contacts, there is urgent need for the rehousing of many cases and for the establishment of a care and after care organization.

British Medical Journal, London

2: 499-538 (Sept. 15) 1934

- Differential Diagnosis of Functional and Organic Nervous Disorders. G. Riddoch.—p. 499.
Id. A. A. W. Petrie.—p. 503.
*Mechanical Transmission of Trypanosomiasis, Leishmaniasis, and Yaws Through Agency of Nonbiting Hematophagous Flies: Preliminary Note on Experiments. J. G. Thomson and W. A. Lamborn.—p. 506.
Postoperative Complications and Results of Tonsil and Adenoid Operations in Children. B. Elizabeth Nesbitt.—p. 509.
*Pulmonary Tuberculosis in Asthma Cases. E. M. Fraenkel.—p. 513.

Transmission of Trypanosomiasis, Leishmaniasis and Yaws.—Thomson and Lamborn point out that nonbiting hematophagous muscids feed readily to repletion on blood, serum, serous exudate, ulcers, sores and also secretions from the nose, eyes and mouth. After a meal a certain proportion of these flies pass blood or serum in their numerous dejecta, which may contain large numbers of living trypanosomes, leishmania or the *Treponema pertenue* of yaws. These hematophagous flies have their preferred hosts: *Musca spectanda* Wied favors man. It lays its eggs exclusively in human feces, breeding freely. It derives moisture from human feces and could thus take up *Leishmania donovani* from this source, since the organism is known to occur sometimes in this medium. Large numbers attack persistently and with determination scratches, cuts and sores of the skin of man in search of food and also haunt the eyes, nose and mouth in search of fluid. *Trypanosoma brucei* in the blood of rats and dogs are readily ingested by *Musca spectanda* and during a period varying between five minutes and six hours these flagellates can be passed alive in the numerous droplets of dejecta passed through the intestine of the fly. Rats were experimentally infected by the intraperitoneal injection of these dejecta by a drop placed on a fresh cut on the ear and by the dejecta placed on a drop of blood exuding from the bite of a tabanid. *Trypanosoma brucei* in the dejecta introduced into the eye, nose and mouth did not produce infection. Certain flies after a feed extrude a drop of the ingested blood containing living trypanosomes from the proboscis from five to ten minutes after a full meal. Living leptomonads in cultures of *Leishmania donovani*, infantum (dog strain) and tropica are

freely ingested by *Musca spectanda* and are passed viable in the droplets of excreta for several hours after a feed. There can be no doubt that these flies could ingest the round tissue forms of all the human forms of leishmaniasis and pass them in a viable state either through the intestine or by regurgitation from the proboscis to sores or mucous membranes. It would seem certain that both kala-azar and oriental sore might be actively transmitted through the agency of these flies. The *Treponema pertenue* of yaws passes rapidly in a viable form through the intestine of *Musca spectanda* and so might be deposited easily on cuts and abrasions.

Pulmonary Tuberculosis in Asthma Cases.—Of 369 cases, sent to Fraenkel, diagnosed as bronchial asthma, investigation showed that active tuberculosis was present in sixteen. In two instances a suggestive history was obtained. In one the undiagnosed patient's wife developed tuberculosis of the eyes and in another two children had tuberculous meningitis and pulmonary tuberculosis. It would appear that tuberculosis may become established after asthma alone has been recognized. The asthma may, as a result of an allergic predisposition, be at first monovalent, later becoming polyvalent. The possibility of a secondary hypersensitiveness to tuberculous allergens now arises. Thus, a chemist's assistant who possessed a sensitization to sodium salicylate with typical asthma later developed a rapidly progressive exudative tuberculosis with persistence of the asthmatic picture. There could be no doubt that this patient had previously been completely free from tuberculosis. Another case was that of a medical man who had had asthma practically all his life and became infected with tuberculosis while working in the tuberculosis department of a hospital. This infection led to cavity formation and after treatment was followed by healing. The history of the patient frequently shows an "influenza" infection or a catarrh of the apex. In some of such cases there is found an inactive tuberculosis, which can be demonstrated only by roentgenograms. The most important aspect of these observations is the fact that an active and open tuberculosis can be concealed for a lengthy period under the guise of a bronchial asthma with both eosinophilia and skin reactions against specific proteins.

Glasgow Medical Journal

4: 89-160 (Sept.) 1934

- William Mackenzie, M.D., Founder of Glasgow Eye Infirmary and First Lecturer on Diseases of Eye in University of Glasgow. A. M. Ramsay.—p. 89.
*Aneurysm of Popliteal Artery. J. Dunbar.—p. 102.

Aneurysm of Popliteal Artery.—Dunbar reports a case that presented an expansile swelling in the middle of the lower half of the left popliteal space. Pressure over the superficial femoral artery caused the pulsation to disappear. There was slight delay of the pulse in the left posterior tibial artery. Slight venous congestion of the leg was present with enlargement of the superficial veins, especially one from the upper end of the short saphenous running upward and inward to the long saphenous. There was no difficulty about the diagnosis. Roentgen examination failed to show any definite shadow corresponding to the aneurysm. To investigate the shape of the aneurysm, neo-*iopax* was injected into it through a fine needle. Roentgenograms showed the aneurysm to be of the fusiform variety, with a marked constriction of the artery about 1 inch below the aneurysm. The artery was slightly dilated between the aneurysm and the constriction. To open up an efficient collateral circulation, pressure by means of a tourniquet (Skey's) was applied to the superficial femoral in Hunter's canal. The patient was able to carry out the treatment unaided. At first he could keep the tourniquet in position for only five minutes at a time. This was repeated three times a day and the length of time was gradually increased until in three weeks he could stand it for thirty minutes without discomfort. A posterior median vertical incision was made over the swelling, the large vein noticed on examination being avoided. The sac was easily found and the vein and nerve, lying on its outer posterior aspect, were carefully dissected from the sac. After the sac had been completely exposed it was found impossible to expose the constriction of the artery without causing considerable damage to the nerves. Therefore the aneurysm was removed between ligatures. The patient was discharged from the hospital fourteen days later, having made an uneventful recovery.

Journal of Tropical Medicine and Hygiene, London

37: 257-272 (Sept. 1) 1934

- Elephantiasis Nostras (Nonfilarial Elephantiasis). A. Castellani.—p. 257.
Pellagra in Sudan. N. L. Corkill.—p. 265.

Lancet, London

2: 523-578 (Sept. 8) 1934

- Concomitant Squint and Its Treatment. L. H. Savin.—p. 523.
Disturbances of Body Temperature. C. E. Lakin.—p. 526.
Further Observations on Filariar Periodicity. G. C. Low and P. H. Manson-Bahr, laboratory report by A. H. Walters.—p. 531.
Treatment of Exophthalmic Goiter with Deep X-Ray Therapy. E. P. Poulton and W. L. Watt.—p. 535.
Vaporized Iodine with Bier's Modified Hyperemia in Treatment of Pyogenic Cutaneous Affections. A. Strickler.—p. 537.
"Curious Bodies" Found in Lungs of Coal Workers. Enid Williams.—p. 541.

2: 579-632 (Sept. 15) 1934

- Arterial Hypertension. O. L. V. de Wesselow.—p. 579.
*Disturbances of Body Temperature. C. E. Lakin.—p. 586.
Injection of Gasserian Ganglion. H. S. Souttar.—p. 592.
Iron in Treatment of Splenic Anemia. L. S. P. Davidson.—p. 593.
Delayed Chloroform Poisoning. T. F. Todd.—p. 597.
Colles's Fracture. S. Holzman.—p. 598.

Disturbances of Body Temperature.—Lakin observed that metabolism is responsible for heat production, that a center in the hypothalamus is concerned with the regulation of body temperature and that the center is so constituted as to be sensitive to the temperature of the blood passing through it. If this temperature is raised, the various means for increasing the loss of heat and decreasing its production are brought into play. If the temperature is lowered, those for decreasing the loss of heat and for increasing the production of heat become operative. The thyroid and suprarenal acting through the sympathetic nervous system influence metabolism and together form a "humoral apparatus" (Cramer) concerned in the regulation of the heat of the body. The heat center may be regarded as a group of nerve cells representing the central connections of the sympathetic. When it is considered that during muscular exercise the production of heat may be increased from 200 to 300 per cent without the temperature rising, whereas in fevers production of the heat may be increased only from 20 to 30 per cent and yet pyrexia results, it is obvious that in cases of fever some lack of adjustment must occur. In infective conditions pyrexia must be regarded as the resultant of two forces: the toxic action of the invading organism on the one hand and the resistance of the infected person on the other. Such a conception is borne out when the temperature chart is studied in conjunction with the curve of the opsonic index. The elevations on the temperature chart correspond to depressions of the opsonic curve and vice versa; that is, the temperature chart bears an inverse relationship to the opsonic activity. Since aseptic suppuration is accompanied by fever, some investigators ascribe the fever and chills that occur in cases of suppuration to the absorption of autolytic products rather than to the direct action of poisons produced by the invading organisms. The rise of temperature that occurs when a patient gets up too soon after a pyrexial illness is to be ascribed to the increased cardiac action (consequent on the increased exertion) washing out inflammatory products from the affected area into the general circulation. The occurrence of pulmonary infections after anesthesia is perhaps favored by the thyroid and suprarenal exhaustion that follows the exhibition of general anesthetics.

Medical Journal of Australia, Sydney

2: 273-304 (Sept. 1) 1934

- The Rheumatic Child. E. B. Jones.—p. 273.
Adenohypophyseal Dystrophies of Infancy and Childhood. L. Dods.—p. 277.
Epilepsy from Pediatric Point of View. W. S. Laurie.—p. 286.

South African Medical Journal, Cape Town

S: 589-628 (Aug. 25) 1934

- What Do We Think With? E. G. D. Drury.—p. 591.
Indications for Cesarean Section. E. C. Crichton.—p. 595.
Behavior Disorders in Infancy and Childhood. G. K. Cross.—p. 597.
Some Musings of a General Practitioner. H. J. Levisseur.—p. 601.
Health Importance of Preschool Life. A. J. Milne.—p. 604.

Presse Médicale, Paris

42: 1401-1416 (Sept. 8) 1934

- Hyperthyroid Heart and Cardiothyroses. L. Bérard and P. Colson.—p. 1401.
*Possibility of Local Vitamin Insufficiency: Theoretical Considerations and Therapeutic Application. S. Balachowski.—p. 1404.

Local Vitamin Insufficiency.—Balachowski believes that the only proof of a local vitamin insufficiency lies in the therapeutic results of supplying the vitamin locally. In attempting to answer this question he used a colloidal preparation of carotene for local application. The direct application of this preparation at the site of different local conditions resulted in numerous successful therapeutic effects and often in a remarkable analgesia. Without desiring to formulate the indications for local carotene therapy, he believes that its study is interesting in superficial ocular lesions (conjunctivitis, keratitis, ultraviolet lesions, certain forms of trachoma, and so on), gingivitis, cracks of the breasts, anal fissures, burns and a few other similar local abnormalities.

42: 1417-1440 (Sept. 12) 1934

- Variations in Relationship of Cholesterol Esters to Total Cholesterol in Pathology. G. Laroche, A. Grigaut and Costes.—p. 1417.
Hepatic Cirrhosis and Gynecomastia. L. Capriglione, W. Berardinelli and F. da Costa Cruz.—p. 1419.
*Early Diagnosis and Treatment of Intestinal Invagination of Nursling. E. Pouliquen.—p. 1421.

Intestinal Invagination of Nursling.—Pouliquen discusses the diagnosis and treatment of intussusception in infants. When the classic signs of occlusion, restlessness and bloody stools exist, the diagnosis offers no difficulties. When, however, the bloody stools are delayed or absent, this diagnosis is much more difficult to make at the first visit. Vomiting, colic and palpation of a filled intestinal loop are also frequently helpful. Rectal examination often clarifies the diagnosis because of the palpable mass or because blood tinged stool or mucus is often obtained. Roentgenologic examination is of great importance. In fact, the author feels that when invagination is suspected the physician should think immediately of the x-rays and the possibility of obtaining consultation by telephone. Two types of treatment come under consideration. These are enemas and operation. The author feels that one or two barium enemas suffice and, if the massive passage of barium into the small intestine occurs accompanied by disappearance of the palpable filled intestinal loop, proof of its effectiveness exists. Operation when used should be performed immediately and rapidly and should involve the tactile reduction of the invagination. Resection is rarely successful.

Policlinico, Rome

41: 573-632 (Oct. 1) 1934. Medical Section

- *Action of Hormones and Mercurial Diuretics on Evolution of Histamine Blister. P. Steffanutti and E. Jantria.—p. 573.
*Clinical and Roentgenologic Contribution to Treatment of Gastroduodenal Ulcer with Injections of Sodium Benzoate. R. Liberti.—p. 581.
Pulmonary Metastatic Echinococcosis: Case. V. Maccone.—p. 600.
Amino Acids in Typhoid. A. Valentini.—p. 617.

Action of Hormones and Mercurial Diuretics on Evolution of Histamine Blister.—Steffanutti and Jantria state that the histamine blister is made up of two fundamental factors, the first of which is exclusively vascular by nature and is due to capillary dilatation and transudation of plasma fluid from the capillary walls. The second phase is a condition of local edema produced by stagnation of the transudate in the meshwork of the cutaneous tissues. The authors studied the influence of such important hormones as epinephrine, solution of pituitary, thyroxine, insulin and extract of the anterior hypophysis and of mercurial diuretics on the second stage of the blister. They observed a diminution of the blister when extracts of the hypophysis and insulin were administered and a continuous evolution when a thyroid hormone substance was given simultaneously with mercurial diuretics. They give the following explanation: The first two substances increase the power of absorption of the cutaneous tissues in the presence of transudates, while the latter diminish this absorptive power. This explanation is in accord with the current ideas concerning tissue action of the hormones and with the effect of mercurial diuretics on water metabolism. They believe that the histamine blister is particularly adapted to the study of the inhibitory power of such substances on the tissues.

Treatment of Gastroduodenal Ulcer with Injections of Sodium Benzoate.—Liberti treated fourteen patients who had gastric and duodenal ulcers with daily intravenous injections of 2 cc. of a 25 per cent solution of sodium benzoate. The patients were not placed on a strict diet but were advised against drinking alcoholic beverages, smoking and eating acid foods and condiments. The injections were given for from twenty to forty consecutive days, depending on the resistance of the disease to treatment. Two patients showed complete cure after thirty injections, while eleven had a temporary clinical and roentgenologic improvement with eventual recurrences of the disease symptoms within from two to six months. One patient evinced no improvement after the maximum number of injections. The author does not attribute any specific curative power to the sodium benzoate but considers it an effective and useful adjuvant to the medical treatment of gastric and duodenal ulcer.

Archivos de Cardiología y Hematología, Madrid

15: 291-338 (Aug.) 1934

Biologic Standardization of Digitalis Preparations. T. Alday Redonnet.—p. 291.

*Variations of Arterial Blood Pressure in Relation to Changes of Intrapulmonary Atmospheric Pressure. J. A. Adrio Mateo.—p. 316.

Blood Pressure and the Intrapulmonary Atmospheric Pressure.—Adrio Mateo concludes that the arterial blood pressure in normal persons diminishes when the ambient barometric pressure increases and rises when the ambient barometric pressure diminishes. Persons suffering from vasomotor disturbances of nervous instability and those with vasomotor neurosis react to the barometric changes by showing variations of the arterial blood pressure similar to those shown by patients suffering from arteriosclerosis or circulatory diseases. The reaction in these patients, however, is not of a clear type. The arterial pressure in patients with arteriosclerosis, either of the decompensated or of the slightly compensated type, as well as that of those suffering from a circulatory miopragia, descends to normal figures when the ambient barometric pressure increases, just as in normal persons and in those having compensated arteriosclerosis, but descends abnormally when the barometric pressure diminishes. The lowering of the arterial blood pressure in the last mentioned case may be considered a cardiac failure rather than a reaction. It is, in fact, a cardiac claudication. The results of the author's observations explain the frequent appearance of decompensatory and vasomotor disturbances and the general feeling of illness in arteriosclerotic patients under sudden changes of atmospheric pressure. They also show the importance of meteorological pathology as a science in which the clinician and the meteorologist, working together, will enlighten the mechanism of action of the atmospheric pressure on the arterial blood pressure as well as many other facts not as yet clearly understood.

Archiv für klinische Chirurgie, Berlin

179: 615-772 (Aug. 20) 1934. Partial Index

*Evaluation of Power of Resistance of Organism in Surgery. F. Schürer-Waldheim.—p. 615.

Clinical Observations on Healing of Subcartilaginous Bony Tears. M. Ernst.—p. 637.

Treatment of Fractures of Thigh in Childhood. H. Widenhorn and A. Faller.—p. 648.

*Anastomosis of Intrahepatic Bile Duct with Stomach or Intestine by Means of Rubber Tube Prosthesis. E. Gohrbandt.—p. 665.

*Diagnosis and Prognosis of Bone Tumors. R. Glauner.—p. 672.

Tumors of Small Bones of Hands and Feet. T. von Matolesy.—p. 708.

Absorption of Cerebrospinal Fluid and Osmotherapy. G. Jorns.—p. 717.

Evaluation of Power of Resistance of Organism in Surgical Practice.—According to Schürer-Waldheim, the power of resistance is dependent to a great extent on the functioning of the reticulo-endothelial system, particularly in combating infectious processes. Numerous errors have crept into the methods of estimation of the functional capacity of the reticulo-endothelial system. Erroneous conclusions were frequently arrived at from the so-called functional storage tests. The author has investigated with the aid of an exact photometric method the applicability in surgical diseases of the test of functional storage capacity of the reticulo-endothelium, in particular the colorimetric method of determining the amounts of congo red in the blood serum, according to the method of Adler and Reimann. His experiments demonstrated that the

amount of congo red in the serum does not constitute an index of the functional capacity of the reticulo-endothelial system. He leans to the views of Letterer and of Bennhold that the excretion of the injected congo red takes place with the aid of serum albumins and that little of it is taken up by the reticulo-endothelial cells. A fairly valuable partial functional test is offered by the method of a cytologic study of the contents of a cantharides blister as proposed by Kaufmann. Determination of the natural immune bodies in the blood according to the method of Wright (opsonic index) is another valuable method of estimating the power of resistance. The author describes several minor modifications of the Wright method, which are time saving, and cites clinical examples of the great practical value of determining the bactericidal power of an organism in combating septic processes.

Anastomosis of Intrahepatic Bile Duct with Stomach or Intestine.—Gohrbandt describes two surgical methods for the relief of icterus due to complete occlusion of the entire hepatic duct up to the point of exit from the liver. One method consists of puncturing the liver with a trocar 24 cm. long and 1 cm. wide and introducing a rubber tube. The second method consists of a direct anastomosis of an intrahepatic bile duct with the stomach or duodenum, a rubber tube being utilized as a prosthesis. The finding of a distended bile duct on the surface of the liver is not difficult. The duct is cut across and a rubber tube or an artery forceps is introduced while the bile is still flowing. The lumen of the duct may be stretched, if necessary, with the aid of an artery forceps to twice its size. The rubber tube is secured to the wall of the duct by a fine stitch to prevent slipping out. It is then anastomosed to the stomach or duodenum by the method of an oblique fistula formation. The stomach is preferable because of its motility, but the author warns that it is only the acid-containing stomach that will tolerate bile well. The serosa of the stomach or the intestine is sutured to the serosa of the liver about the point of exit of the rubber tube and its entry into the stomach or duodenum. The author reports one case in which trocar puncture and drainage was practiced and three cases in which he performed a direct anastomosis of an intrahepatic duct with the stomach. In all three cases obstruction was due to a malignant growth. This method makes it possible at least to relieve the patient from the effects of the obstructive icterus.

Diagnosis and Prognosis of Bone Tumors.—Glauner presents a study of seventy-seven cases of bone tumor selected from the material of biopsies and operatively resected specimens received at the pathologic institute of the München-Schwabing Hospital. While this is principally a histologic study, the author utilizes the histories, the roentgenologic studies and a follow up to complete the picture of each case. The study is concerned with the following questions: 1. Is histologic examination a competent criterion of benignity of a bone tumor that clinically and roentgenologically suggests a sarcoma? 2. Can the recently differentiated forms of sarcoma be recognized as definite entities with regard to their diagnosis, prognosis and treatment? The study is concerned also with methods of treatment and results as well as with the influence of trauma and of internal secretions. The material consists of four groups. In the first group there were ten cases of benign bone tumors; the second group had twenty-seven cases of undifferentiated sarcomas—spindle cell, round cell and Ewing sarcomas; in the third group there were twenty-two cases of differentiated chondro-osteomyxosarcomas and their combinations, and in the fourth group eighteen cases of benign processes resembling sarcoma, such as osteitis fibrosa localisata and Paget's osteitis deformans. The author concludes that a histologic study is capable of establishing the benign nature of a tumor. The clinical and roentgenologic information is of secondary importance in arriving at this diagnosis; therefore the importance of a biopsy. The roentgenologic appearance of fibrous osteitis, even if supported by a characteristic clinical history, is not a reliable criterion. The same can be simulated by a breaking down chondroma, osteoma and, even more frequently, by a chondrosarcoma and its metastases. The cavity should be curetted and the obtained material studied histologically. The excochleation suffices as treatment for osteitis fibrosa, as proved by the results in their cases. If the process becomes more extensive or displays a tendency to metastasize, a resection

becomes the method of choice. The true sarcomas yield a high mortality regardless of the method of treatment. The greater number of the few who survived a number of years were intensively irradiated with roentgen rays both before and after the operation. Irradiation was found to produce a fibrotic change in the histologic picture. The diagnosis of Ewing sarcoma can be made with assurance only on histologic examination. The prevailing notion that it grows along the shaft of a long bone is not correct. It is located close to a joint, as are the other sarcomas. Because of the difference in the treatment, an accurate diagnosis is particularly important in this group of tumors. Trauma seldom plays a part in the origin of sarcoma. In localized fibrous osteitis, on the other hand, a corresponding local trauma was shown to have existed in every case. The histologic picture of localized fibrous osteitis in the author's experience coincided with that generally described. Differentiation before puberty from a sarcoma was at times impossible. Typical giant cells, when present, simplify the differentiation. The author did not find a single instance of transformation of a localized fibrous osteitis into a general one, nor were disturbances of internal secretions observed in the localized form. Localized fibrous osteitis is a distinct disease of the young resulting from a trauma. The histologic differentiation of Paget's osteitis from fibrous osteitis of older patients may present considerable difficulties. The macroscopic appearance of the bone is of the greatest importance. The conditions are separate entities, Paget's disease occurring in old persons, mostly in women.

Deutsche medizinische Wochenschrift, Leipzig

60: 1371-1414 (Sept. 14) 1934. Partial Index

Connection of Medicine with National and International Research in Natural Sciences. L. Aschoff.—p. 1371.

Importance of Theoretical Medicine for Public Health and for Medical Practice. E. Abderhalden.—p. 1374.

*Oxygen Insufficiency in Cardiac Muscle as Cause of Angina Pectoris. G. von Bergmann.—p. 1378.

*Syndrome of Narcolepsy. H. Reinwein.—p. 1382.

Does Modern Biologic Knowledge About Eczema Have Practical Significance? G. Stümpke.—p. 1384.

Erroroneous Diagnoses in Pains of Bones: Hemophilia, Tuberculosis, Osteitis Fibrosa Localisata Recklinghausen. B. Valentin.—p. 1386.

Treatment of Pernicious Anemia in General Practice. H. Decher.—p. 1390.

Oxygen Insufficiency as Cause of Angina Pectoris.—

Von Bergmann says that the pathogenesis of angina pectoris has been explained on the basis of two theories, the coronary and the aortic. He rejects the aortic theory. In discussing the coronary theory he mentions experiments proving that, while the constriction of other vessels is controlled by the sympathetic, the coronary vessels are controlled by the vagus and that the blood supply of the cardiac muscle is adapted to the functional requirements of the heart. If the heart has to meet greater functional requirements, the coronary vessels become wider and the blood perfusion and oxygen supply increase. The author cites experiments (pressure on the vagus and clinical manifestations (the gastroduodenal syndrome) proving that a disturbance in the blood and thus in the oxygen supply of the heart muscle can be produced by neurogenic action. Still more important is the fact that an increase in the blood pressure in the carotid sinus produces by action an increase in the tonus of the cardiac vagus. This increase becomes severe, as for instance in Pal's vascular contraction of the coronary vessels occurs, the oxygen supply of the heart becomes deficient and angina pectoris may result. The author points out that he definitely accepted severe coronary ischemia in the cardiac muscle as the cause of angina pectoris. In recent years, as he cites electrocardiographic studies and in total constriction of the coronary vessels is the main factor in the development of oxygen deficiency in the heart muscle.

Syndrome of

histories of two patients with narcolepsy coexisted with development make it apparent that patient sustained while

ment of the narcolepsy as well as of the acromegaly. Observations on the cerebrospinal fluid and on the sella seem to indicate a hypophyseal tumor. Indications of the existence of a cerebral tumor existed also in the second patient. This one had sustained a concussion of the brain thirty years before the attacks of narcolepsy became manifest, but several years previous to that accident he had lost the formerly normally developed hair of the head and of the pubic region. Both patients had the typical symptoms of narcolepsy: attacks of sleep, attacks of loss of tonus and a disturbance of the nocturnal sleep. As the main reason why these cases were reported, the author mentions disturbances in the heat regulation. There existed considerable discrepancies between the axillary and the rectal temperatures. At times the axillary temperature was much higher than the rectal and at other times the rectal was higher than the axillary. The author points out that, considering the close proximity of the center of sleep and of the center of heat regulation, disturbances in the temperature of patients with narcolepsy are not surprising. The literature reports a case of narcolepsy with hypothermia and also calls attention to the fact that the impairment of the sympathetic functions have not been given sufficient attention in patients with narcolepsy. The author is unable to decide whether the disturbance in the heat regulation of his patients is due to morphologic changes in the brain itself or whether hormone actions of the impaired hypophysis are responsible.

Deutsches Archiv für klinische Medizin, Berlin

176: 567-714 (Aug. 22) 1934. Partial Index

*Symptomatology and Heredity of Hemolytic Jaundice. K. Hansen and E. Klein.—p. 567.

*Mechanism of Development of Prolonged Subfebrile Temperatures. I. Gelman.—p. 581.

Influence of Nutrition on Metabolism: Influence of Potassium on Metabolism in Rest and Work. F. Bruman.—p. 589.

Pathologic-Histologic Changes in Therapeutic and Experimental Intoxication with Sodium Salicylate and Its Favorable Modification by Dextrose. H. Madisson.—p. 612.

*Predisposition to Thrombosis in Polycythemia Vera. R. Jürgens and K. Bach.—p. 626.

*Testing of Pulmonary Function by Means of Histamine. A. Heymer and F. Grosse-Brockhoff.—p. 651.

*Dangers of Therapeutic Application of Alpha-Dinitrophenol. A. de Châtel and J. Motka.—p. 700.

Symptomatology and Heredity of Hemolytic Jaundice.

H. Klein show a general inheritance. Hemolytic jaundice runs through four cases of hemolytic jaundice of the classic type is important but also for observations, the course of development is yet unable to be determined to hemodynamically wide striding eyes, thus, progression, misplacement, Dupuytren's contracture, accessory nipples, skin atrophy.

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regional. He assumes that the disturbance in the thermoregulation of persons with protracted hyperthermias is connected with nervous-vascular disturbances. These disorders develop readily in patients with sympathetic instability. In the disturbances of the thermoregulation that exist in exophthalmic goiter and after acute diseases the same mechanism seems to obtain. Krehl spoke of an atactic condition of the involved organs. It is probable that this ataxia, which involves primarily the nervous-vascular mechanism, is sufficient to disturb the normal blood-heat distribution of the organisms. This development of disturbances of the temperature makes it understandable why there is no increase in the metabolic rate, in the oxidation processes and in the heat production. The disturbance in the temperature is rather the result of abnormal regional distribution and of heat elimination. It is not known how this comes about, but it is probable that insufficiencies of the natural barriers of the organism, such as the blood-cerebrospinal fluid barrier, the vascular endothelial barrier and the intestinal barrier, permit toxic substances to enter the regulatory apparatus of the central nervous system, which ordinarily do not enter it. It is possible also that the nervous regulatory ataxia is due to fatigue of the central apparatus. The part played by the endocrine system in the pathogenesis of protracted hyperthermias becomes easy to understand on consideration of the close connections between the endocrine glands and the sympathetic nervous system. Thus it is not the infectious, inflammatory processes or other localized anatomic changes that cause the protracted hyperthermia but rather a change in the reaction of the patient's organism, particularly in his sympathetic nervous system. In treating protracted subfebrile temperatures, the suggestion of different diagnoses and of numerous treatments should be avoided. A change in the mode of life and methods of physical therapy, such as water cures and galvanization of the cervical portion of the spinal column, may be tried. A sojourn in a sanatorium or in a rural district may be helpful.

Predisposition to Thrombosis in Polycythemia Vera.—Jürgens and Bach observed seven cases of polycythemia vera, of which three presented thrombosis. All the patients with thrombosis showed increase in thrombocytes, shortening of the time of thrombosis (capillar-thrombometer) and of the agglutination of the platelets and also increase in fibrinogen and globulin. In the four patients with polycythemia vera who were free from thrombosis, these changes were absent. This indicates that not all patients with polycythemia have a predisposition to thrombosis, but only those whose blood shows certain changes. The authors think that in addition to the increased fibrinogen and globulin content the thrombocytosis plays an important part in the formation of thrombi. They emphasize that the measurement of the thrombosis time, the counting of the thrombocytes and the examination of the plasma proteins are methods that will reveal a predisposition for thrombosis without having to take into account the vascular factor, the detection of which is difficult. This is important for the treatment. Roentgenotherapy of the bones of patients with polycythemia reduces the number of thrombocytes and normalizes the thrombosis time and the plasma protein.

Testing Pulmonary Function by Means of Histamine.—To determine the functional capacity of the lung, Heymer and Grosse-Brockhoff employed a test that was introduced by Klein and Nonnenbruch, who had found that the subcutaneous injection of from 1 to 2 mg. of histamine inhibits the oxygenation of the lung. The authors report their observations on 100 persons. In patients with disturbances of the pulmonary circulation, the subcutaneous injection of 1 mg. of histamine is followed by increase in the oxygen saturation of the arterial blood, reduction of the vital capacity and of the respiratory pause. The degree of all these changes is clearly a dependence on the severity of the clinical picture of the disorder. Persons with pneumothorax show a similar behavior. The method is especially suitable for the diagnosis of latent disturbances of the lungs and of the pulmonary circulation and is of great value in determining the effect of collapse therapy.

Application of Alpha-Dinitrophenol.—The authors are convinced de Châtel and Motika that alpha-dinitrophenol is not a harmless drug, for even if given in small doses it produced symptoms that indicate an

impairment of the kidneys and of the myocardium. The cardiac disturbances were demonstrated in electrocardiographic tests on the patients and they were corroborated in experiments on cats. Moreover, dinitrophenol does not always accomplish its aim, for in one of the patients the highest therapeutic doses changed neither the metabolism nor the body weight, and in the other one the weight did not decrease much until the sense of taste had become impaired and the patient had lost her appetite.

Klinische Wochenschrift, Berlin

13:1265-1296 (Sept. 8) 1934. Partial Index

- Animal Experiment as Differential Diagnostic Method in Dermatoses Suspected of Being Pemphigus. E. Urbach and S. Wolfram.—p. 1265.
Remarks on Research on Hormones of Hypophysis. A. Jores.—p. 1269.
Studies on Excretory Action of Saliva. J. K. Mayr.—p. 1270.
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*Clinical Experiences with Modified Takata Reaction. A. Jezler.—p. 1276.
*Virilism, Functional Disturbances of Ovaries and Hormone Elimination of Anterior Lobe of Hypophysis. H. O. Neumann.—p. 1278.
*Serodiagnosis of Syphilis by Means of Hemagglutination Reaction of Bachmann. G. Petzelt.—p. 1282.

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becomes the method of choice. The true sarcomas yield a high mortality regardless of the method of treatment. The greater number of the few who survived a number of years were intensively irradiated with roentgen rays both before and after the operation. Irradiation was found to produce a fibrotic change in the histologic picture. The diagnosis of Ewing sarcoma can be made with assurance only on histologic examination. The prevailing notion that it grows along the shaft of a long bone is not correct. It is located close to a joint, as are the other sarcomas. Because of the difference in the treatment, an accurate diagnosis is particularly important in this group of tumors. Trauma seldom plays a part in the origin of sarcoma. In localized fibrous osteitis, on the other hand, a corresponding local trauma was shown to have existed in every case. The histologic picture of localized fibrous osteitis in the author's experience coincided with that generally described. Differentiation before puberty from a sarcoma was at times impossible. Typical giant cells, when present, simplify the differentiation. The author did not find a single instance of transformation of a localized fibrous osteitis into a general one, nor were disturbances of internal secretions observed in the localized form. Localized fibrous osteitis is a distinct disease of the young resulting from a trauma. The histologic differentiation of Paget's osteitis from fibrous osteitis of older patients may present considerable difficulties. The macroscopic appearance of the bone is of the greatest importance. The conditions are separate entities, Paget's disease occurring in old persons, mostly in women.

Deutsche medizinische Wochenschrift, Leipzig

60: 1371-1414 (Sept. 14) 1934. Partial Index

Connection of Medicine with National and International Research in Natural Sciences. L. Aschoff.—p. 1371.

Importance of Theoretical Medicine for Public Health and for Medical Practice. E. Abderhalden.—p. 1374.

*Oxygen Insufficiency in Cardiac Muscle as Cause of Angina Pectoris. G. von Bergmann.—p. 1378.

*Syndrome of Narcolepsy. H. Reinwein.—p. 1382.

Does Modern Biologic Knowledge About Eczema Have Practical Significance? G. Stümpe.—p. 1384.

Erroneous Diagnoses in Pains of Bones: Hemophilia, Tuberculosis, Osteitis Fibrosa Localisata Recklinghausen. B. Valentin.—p. 1386.

Treatment of Pernicious Anemia in General Practice. H. Deicher.—p. 1390.

Oxygen Insufficiency as Cause of Angina Pectoris.—

Von Bergmann says that the pathogenesis of angina pectoris has been explained on the basis of two theories, the coronary and the aortic. He rejects the aortic theory. In discussing the coronary theory he mentions experiments proving that, while the constriction of other vessels is controlled by the sympathetic, the coronary vessels are controlled by the vagus and that the blood supply of the cardiac muscle is adapted to the functional requirements of the heart. If the heart has to meet greater functional requirements, the coronary vessels become wider and the blood perfusion and oxygen supply increase. The author cites experiments (pressure on the vagus) and clinical manifestations (the gastroduodenal syndrome) proving that a disturbance in the blood and thus in the oxygen supply of the heart muscle can be produced by neuroreflex action. Still more important is the fact that an increase of the blood pressure in the carotid sinus produces by reflex action an increase in the tonus of the cardiac vagus. If this increase becomes severe, as for instance in Pal's vascular crises, a contraction of the coronary vessels occurs, the oxygen supply of the heart becomes deficient and angina pectoris may result. The author points out that he definitely accepted several years ago the theory that ischemia in the cardiac muscle, that is, oxygen deficiency in parts of the heart, is the cause of angina pectoris, and he shows that studies in recent years have furnished the proof of this theory. He cites electrocardiographic studies and he emphasizes that not the coronary spasm with total constriction of a coronary branch is the most important factor in the development of angina pectoris but rather the oxygen deficiency in parts of the cardiac muscle.

Syndrome of Narcolepsy.—Reinwein relates the clinical histories of two patients. In the first patient a symptomatic narcolepsy coexisted with acromegaly. The anamnesis and the development make it appear probable that a trauma, which the patient sustained while boxing, was the cause for the develop-

ment of the narcolepsy as well as of the acromegaly. Observations on the cerebrospinal fluid and on the sella seem to indicate a hypophyseal tumor. Indications of the existence of a cerebral tumor existed also in the second patient. This one had sustained a concussion of the brain thirty years before the attacks of narcolepsy became manifest, but several years previous to that accident he had lost the formerly normally developed hair of the head and of the pubic region. Both patients had the typical symptoms of narcolepsy: attacks of sleep, attacks of loss of tonus and a disturbance of the nocturnal sleep. As the main reason why these cases were reported, the author mentions disturbances in the heat regulation. There existed considerable discrepancies between the axillary and the rectal temperatures. At times the axillary temperature was much higher than the rectal and at other times the rectal was higher than the axillary. The author points out that, considering the close proximity of the center of sleep and of the center of heat regulation, disturbances in the temperature of patients with narcolepsy are not surprising. The literature reports a case of narcolepsy with hypothermia and also calls attention to the fact that the impairment of the sympathetic functions have not been given sufficient attention in patients with narcolepsy. The author is unable to decide whether the disturbance in the heat regulation of his patients is due to morphologic changes in the brain itself or whether hormone actions of the impaired hypophysis are responsible.

Deutsches Archiv für klinische Medizin, Berlin

176: 567-714 (Aug. 22) 1934. Partial Index

*Symptomatology and Heredity of Hemolytic Jaundice. K. Hansen and E. Klein.—p. 567.

*Mechanism of Development of Protracted Subfebrile Temperatures. I. Gelman.—p. 581.

Influence of Nutrition on Metabolism: Influence of Potassium on Metabolism in Rest and Work. F. Bruman.—p. 589.

Pathologic-Histologic Changes in Therapeutic and Experimental Intoxication with Sodium Salicylate and Its Favorable Modification by Dextrose. H. Madisson.—p. 612.

*Predisposition to Thrombosis in Polycythemia Vera. R. Jürgens and K. Bach.—p. 626.

*Testing of Pulmonary Function by Means of Histamine. A. Heymer and F. Grosse-Brockhoff.—p. 651.

*Dangers of Therapeutic Application of Alpha-Dinitrophenol. A. de Châtel and J. Motika.—p. 700.

Symptomatology and Heredity of Hemolytic Jaundice.

—Hansen and Klein show a genealogical table of a family with fifty-four members. Hemolytic jaundice runs through four generations. In addition to twenty-one typical cases of hemolytic jaundice there are seven that show only parts of the classic syndrome. The detection of these atypical forms is important not only for the diagnosis of hemolytic jaundice but also for the heredity. In corroboration of Gänsslen's observations, the authors noted in this family also a great number of developmental disturbances and anomalies, but they are as yet unable to state whether the anomalies are in any way related to hemolytic jaundice. They observed tower-head, abnormally wide root of the nose, deformities of the palate, protruding eyes, divergent position of the eyes, mongolic fold, epicanthus, prognathism, persistence of deciduous teeth in adults, misplacement of permanent teeth and other tooth deformities, Dupuytren's contracture of the fifth finger, ongrown ears, accessory nipples, extensive crural ulcers, hemangiomatosis of the skin and acne vulgaris. The abnormalities of the eyes were persistent pupillary membrane, ectropion of the pigmented layer on the sphincter of the iris, cloudiness of the lens, bilateral cataracts of the anterior pole, tortuous retinal vessels, myopia, astigmatism and red-green color blindness. The persistent pupillary membrane is surprisingly frequent. It is present in nearly all the patients with hemolytic jaundice. The authors are unable to state whether it is a true syntropy of hemolytic jaundice or a peculiarity of this family. The heredity of hemolytic jaundice is dominant.

Protracted Subfebrile Temperatures.—Gelman tries to answer the question whether protracted subfebrile temperatures can be considered as a true fever process. Tests on patients revealed that in protracted subfebrile temperatures the main characteristic of a fever process is lacking; namely, increased heat production. Moreover, the author gained the impression that in some of the patients the increase in temperature is only

regional. He assumes that the disturbance in the thermoregulation of persons with protracted hyperthermias is connected with nervous-vascular disturbances. These disorders develop readily in patients with sympathetic instability. In the disturbances of the thermoregulation that exist in exophthalmic goiter and after acute diseases the same mechanism seems to obtain. Krehl spoke of an atactic condition of the involved organs. It is probable that this ataxia, which involves primarily the nervous-vascular mechanism, is sufficient to disturb the normal blood-heat distribution of the organisms. This development of disturbances of the temperature makes it understandable why there is no increase in the metabolic rate, in the oxidation processes and in the heat production. The disturbance in the temperature is rather the result of abnormal regional distribution and of heat elimination. It is not known how this comes about, but it is probable that insufficiencies of the natural barriers of the organism, such as the blood-cerebrospinal fluid barrier, the vascular endothelial barrier and the intestinal barrier, permit toxic substances to enter the regulatory apparatus of the central nervous system, which ordinarily do not enter it. It is possible also that the nervous regulatory ataxia is due to fatigue of the central apparatus. The part played by the endocrine system in the pathogenesis of protracted hyperthermias becomes easy to understand on consideration of the close connections between the endocrine glands and the sympathetic nervous system. Thus it is not the infectious, inflammatory processes or other localized anatomic changes that cause the protracted hyperthermia but rather a change in the reaction of the patient's organism, particularly in his sympathetic nervous system. In treating protracted subfebrile temperatures, the suggestion of different diagnoses and of numerous treatments should be avoided. A change in the mode of life and methods of physical therapy, such as water cures and galvanization of the cervical portion of the spinal column, may be tried. A sojourn in a sanatorium or in a rural district may be helpful.

Predisposition to Thrombosis in Polycythemia Vera.

—Jürgens and Bach observed seven cases of polycythemia vera, of which three presented thrombosis. All the patients with thrombosis showed increase in thrombocytes, shortening of the time of thrombosis (capillarythrombometer) and of the agglutination of the platelets and also increase in fibrinogen and globulin. In the four patients with polycythemia vera who were free from thrombosis, these changes were absent. This indicates that not all patients with polycythemia have a predisposition to thrombosis, but only those whose blood shows certain changes. The authors think that in addition to the increased fibrinogen and globulin content the thrombocytosis plays an important part in the formation of thrombi. They emphasize that the measurement of the thrombosis time, the counting of the thrombocytes and the examination of the plasma proteins are methods that will reveal a predisposition for thrombosis without having to take into account the vascular factor, the detection of which is difficult. This is important for the treatment. Roentgenotherapy of the bones of patients with polycythemia reduces the number of thrombocytes and normalizes the thrombosis time and the plasma protein.

Testing Pulmonary Function by Means of Histamine.

—To determine the functional capacity of the lung, Heymer and Grosse-Brockhoff employed a test that was introduced by Klein and Nonnenbruch, who had found that the subcutaneous injection of from 1 to 2 mg. of histamine inhibits the oxygen intake of the lung. The authors report their observations on twenty-one persons. In patients with disturbances of the pulmonary circulation, the subcutaneous injection of 1 mg. of histamine is followed by increase in the oxygen saturation deficit of the arterial blood, reduction of the vital capacity and shortening of the respiratory pause. The degree of all these changes shows clearly a dependence on the severity of the clinical manifestations of the disorder. Persons with pneumothorax show the same behavior. The method is especially suitable for the detection of latent disturbances of the lungs and of the pulmonary circulation and is of great value in determining the advisability of collapse therapy.

Dangers of Application of Alpha-Dinitrophenol.

—Observations in two cases convinced de Châtel and Motika that alpha-dinitrophenol is not a harmless drug, for even if given in therapeutic doses it produced symptoms that indicate an

impairment of the kidneys and of the myocardium. The cardiac disturbances were demonstrated in electrocardiographic tests on the patients and they were corroborated in experiments on cats. Moreover, dinitrophenol does not always accomplish its aim, for in one of the patients the highest therapeutic doses changed neither the metabolism nor the body weight, and in the other one the weight did not decrease much until the sense of taste had become impaired and the patient had lost her appetite.

Klinische Wochenschrift, Berlin

13: 1265-1296 (Sept. 8) 1934. Partial Index

- Animal Experiment as Differential Diagnostic Method in Dermatoses Suspected of Being Pemphigus. E. Urbach and S. Wolfram.—p. 1265.
Remarks on Research on Hormones of Hypophysis. A. Jores.—p. 1269.
Studies on Excretory Action of Saliva. J. K. Mayr.—p. 1270.
Pathophysiology of Fat Metabolism in Diabetes Mellitus. S. Leites, E. Sorkin and A. Agaletzkaia.—p. 1272.
*Clinical Experiences with Modified Takata Reaction. A. Jezler.—p. 1276.
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Medizinische Klinik, Berlin

30: 1177-1212 (Sept. 7) 1934. Partial Index

- Tuberculosis of Skin. C. F. Funk.—p. 1180.
 *Tuberculosis and Function of Sex Glands. R. Neurath.—p. 1185.
 Acute Anterior Poliomyelitis in Mecklenburg. H. Brüning.—p. 1187.
 Treatment of Chronic Arthritides During Childhood. H. Beumer and Hilde Peters.—p. 1188.
 *Serotherapy and Prophylactic Vaccination for Scarlet Fever. H. Mommsen.—p. 1189.
 Fundamentals of Treatment of Pylorospasm. H. Wilke.—p. 1193.
 Duration of Nursing Period. W. Kauep.—p. 1194.
 Vaccine Therapy of Whooping Cough. E. Sauer.—p. 1195.
 Cultural Demonstration of Tubercle Bacillus in Lumbar Punctate of Tuberculous Meningitis. F. Passini.—p. 1196.

Tuberculosis and Function of Sex Glands.—Neurath shows curves which prove that, while the mortality from all acute infectious diseases is extremely low during the age of puberty, the mortality from tuberculosis increases greatly during this period and reaches its peak around the second decade of life. If different curves are plotted for the two sexes, it is found that in conformity with the earlier sexual maturation of women the mortality from tuberculosis rises earlier and reaches its peak sooner in women than in men. At the age of 20 the tuberculosis mortality of women is 10 per cent above that of men, at 27 the two curves cut each other, and after that the tuberculosis mortality of men remains slightly above that of women. Girls develop tertiary tuberculosis earlier than boys, and the author considers this a sexual manifestation. He points out further that in nurslings and small children tuberculosis becomes manifest mostly in the form of large inflammatory swellings of the bronchial lymph nodes and in a general tuberculosis or in metastatic foci, in children of school age generally in the form of small localized tuberculous infections of the bronchial lymph nodes with a good tendency to healing, but during the age of puberty true phthisis becomes frequent. These phthises are quite malignant and show only a slight tendency to heal. The fact that in a child, aged 5, who had pubertas praecox, a form of tuberculosis developed that ordinarily develops during the second decade of life, and the fact that castrated animals are less susceptible to tuberculosis, are further indications of a connection between the function of the glands and tuberculosis. On the one hand the susceptibility to tuberculosis is influenced by the sexual status, but on the other hand tuberculosis also influences the sexual sphere. In males atrophy and functional impairment of the gonads and specific tuberculous changes in the testicle and in the epididymis have been noted. In tuberculous females there may be amenorrhea. A contrast between the sexual function and tuberculosis is manifested in the frequently greatly increased libido of patients in the terminal stages of phthisis. Whether the pulmonary process causes this increase in the sexual urge, or whether the increased sexual activity hastens the development of the phthisis, cannot be stated.

Serotherapy and Prophylactic Vaccination for Scarlet Fever.—Mommsen points out that the characteristic of scarlet fever is not the presence of streptococci but rather the formation of streptococcic toxins and their invasion of the blood stream. The toxins are the precursors of the subsequent entrance of streptococci into the blood stream. The aim of the treatment should be to intercept and neutralize the toxins in order to prevent the development of a streptococcic sepsis. The antitoxic serum accomplishes this aim, provided it is given early enough and in sufficient quantities. Only the initial toxic stage is influenced by the serum. The author lists the different scarlet fever serums that are in use in Germany and indicates how much of each type is required in cases of average severity and in severe cases. He points out that the injection of horse serum is not an entirely harmless procedure and should be resorted to only when necessary. He discusses prophylactic vaccination for scarlet fever and states that the problem of active, prophylactic vaccination against scarlet fever has not yet been solved in an ideal manner. He considers this method still in the experimental stage and not yet ripe for general introduction in Germany. Moreover, he thinks that the present epidemiologic conditions require no such measure as prophylactic vaccination. He admits however that, if severe epidemics with a high lethality should develop, the threatened portion of the population should be subjected to prophylactic vaccination.

Münchener medizinische Wochenschrift, Munich

81: 1373-1410 (Sept. 7) 1934. Partial Index

- *Comparison of Effect During Pregnancy of Pure Vitamin A and of Foods with High Vitamin Content. E. Vogt.—p. 1373.
 Ureteritis and Periureteritis as Cause of Gynecologic Disorders. W. K. Fränkel.—p. 1375.
 Is There Causal Connection Between Latent Phlebitis in Lower Extremity and Acute and Chronic Arthritis? C. L. Schmidt.—p. 1378.
 Influence of Hydrostatic Pressure and of Function on Thrombosis of Lower Extremity. K. W. Fischer.—p. 1378.
 Diagnosis and Therapy of Spontaneous Hypoglycemia. R. Kühn.—p. 1380.
 *New Method of Treatment for Uremia. J. S. Schwarzmann.—p. 1381.

Effect of Foods with High Vitamin Content During Pregnancy.—Vogt observed that the administration of artificially produced vitamin A during pregnancy exerts no influence on the course of pregnancy, on the delivery, on the puerperium, on the development of the child or on lactation. However, the increase in the vitamin content of the food, particularly by the addition of cod liver oil, has a noticeable effect, especially on the development of the child and on the lactation capacity of the mother. The author stresses that during the entire period of pregnancy the diet should include an adequate amount of fresh fruits and vegetables. He observed that liver diet is helpful during pregnancy because of its high vitamin content and because it counteracts anemia.

New Treatment for Uremia.—Schwarzmann states that in experiments he observed that the tissue extracts reduce the rest nitrogen in the blood, the quantity of lactic acid and the acidity of the urine, and increase the reduced alkali reserve. From this he concluded that the reduction of dyspnea effected by the tissue extract is due to a reduction in acidosis. This factor induced him to try the tissue extracts in the dyspnea of patients with renal disease and in various forms of uremia. He states that uremic attacks in acute nephrosonephritis (with or without increase in the rest nitrogen), which are manifested by convulsions and loss of consciousness or headaches, nausea and vomiting, or headaches and frequent and deep respiration (Kussmaul's respiration), and finally uremic manifestations in patients with nephrosclerosis are favorably influenced by the injection of a tissue extract prepared from the skin, the pleura and the lungs. To a certain degree this extract is effective also in chronic azotemic uremia when the rest nitrogen is greatly increased. The author stresses that cessation of the attacks cannot have been simply accidental, for in all cases improvement concurred with administration of the tissue extract.

Zentralblatt für Gynäkologie, Leipzig

58: 2161-2224 (Sept. 15) 1934

- Large-Cell Solid Carcinomas of Gonads. E. Fauvet.—p. 2162.
 Sarcomas of Uterus and of Vagina. E. Klaffen and E. Navratil.—p. 2170.
 Technic of Perforation and of Cranioclasia of Head of Fetus. B. Ottow.—p. 2188.
 *Why Is Spinal Anesthesia Especially Dangerous in Cesarean Operation? H. Franken.—p. 2191.
 Ileus As Result of Uterine Perforation During Abortion. W. Jelinek.—p. 2197.

Danger of Spinal Anesthesia in Cesarean Operation.—Franken points out that, although spinal anesthesia is the ideal method for gynecologic operations, it involves dangers when it is employed for cesarean sections. An investigation of the causes of the frequent complication and of the comparatively high mortality revealed to the author that there are two important factors: 1. If labor pains exist and the twilight sleep is not adequate, the woman, by her behavior, may force the anesthetic upward to the medulla oblongata. 2. The peculiar circulatory conditions of pregnant women and the action of spinal anesthesia on the circulation combine to constitute a grave danger. The author concludes that spinal anesthesia either should be entirely avoided in cesarean operations or, if it is not completely abandoned in this operation, the following precautions should be taken: 1. If a woman has uterine contractions, strains and is restless, spinal anesthesia should not be resorted to. 2. The dosage should be so low that the anesthesia reaches only to the umbilicus. 3. In cases presenting pathologically increased blood pressure and corresponding circulatory involvement, spinal anesthesia should be avoided, and whenever it is employed prophylactic circulatory measures should be taken.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 21

CHICAGO, ILLINOIS

NOVEMBER 24, 1934

THE TREATMENT OF CHRONIC ARTHRITIS

GENERAL PRINCIPLES

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CHICAGO

The treatment of chronic arthritis presents a problem that requires a radical revision of current medical opinion in regard to the nature of the disease, its importance as a major cause of suffering and disability, and the necessity of a wide-angled therapeutic attack. Conceptions of many diseases formerly thought of as disturbances of one organ of the body have been broadened by increasing understanding of their morbid anatomy and physiology to include the changes that inevitably involve other systems of the body. The profession has ceased to think of nephritis as a lesion of the kidney alone, or of cardiac disease as confined in its effects to the heart. Chronic arthritis can no longer be thought of as a disease of certain joints but rather as a systemic illness, in which there may be disturbances of the circulation, the general metabolism and nutrition and the gastro-intestinal system, as well as local changes in the joints.

Very early the only objective demonstrable disturbance may be in one or more joints. The immediate cause may be infection or trauma, which, however, becomes effective in producing serious disability because of the intrinsic qualities of the tissues of the patient. Successful therapeutic measures must therefore not only be directed at one single and perhaps immediate etiologic factor but planned to meet multiple causes active in each patient. This broader view of the nature and causes of arthritis is rapidly gaining ground in this country and Canada, largely through the efforts of the American Committee for the Study and Control of Rheumatic Diseases. It is proposed to consider here some of the facts that have led to the recognition of the importance of chronic arthritis as a disease of the body as a whole, the difficulties in attaining an orderly classification based on etiology, morbid anatomy or clinical course, and the necessity of therapeutic attack based on a well rounded conception of systemic effects as well as of local alterations in the joints.

DISABILITY CAUSED BY ARTHRITIS

The suffering and disability entailed by chronic arthritis exceed that from any other of the chronic diseases of temperate climates. A recent survey of

chronic disease in Massachusetts¹ showed that out of an estimated total of 500,000 persons afflicted with a chronic disease, of whom 225,000 were partially and 22,500 totally disabled, there were 138,000 persons ill with rheumatism, of whom 5,600 were totally disabled. The next most frequent cause of disability was heart disease with 84,000 and 2,600 totally disabled, followed by arteriosclerosis with 64,000, digestive diseases with 29,000, diseases of eye and ear with 24,000, apoplexy with 16,000, tuberculosis with 16,000, diabetes with 15,000 and cancer with 11,500.

The increase in average population age in Massachusetts is approximately 1 per cent with each decade. Falling birth and death rates also increase the proportions of persons who survive to the higher ages in which chronic diseases tend to increase. Similar surveys, if made in midwestern and western states, would probably yield somewhat lower figures for chronic diseases than in older populations in which larger numbers of persons have reached the higher age brackets.

Heart disease leads as a cause of death but, whereas the patient with heart disease lives from seven to nine years on the average, the rheumatic patient lives fourteen years or more. The mortality of chronic rheumatic disease is low, but the suffering and disability are enormous. Chronic arthritis offers a major challenge to the medical profession and the public.

Advances in the understanding of rheumatism are not unlike those which have evolved in other forms of disease. A century ago fevers were classified as intermittent, remittent and continued; many yielded to peruvian bark, others did not. Some were clearly identified with clinical disease entities such as yellow fever or pneumonia; others were ascribed to "phlegmasiae" or simply termed "idiopathic." With the discovery of the bacterial and protozoal causes of infections, fevers were rearranged and recognized as symptoms of underlying systemic disease, and treatment was placed on an etiologic basis.

Acute rheumatism was early separated clinically from chronic rheumatism and soon became distinguished as acute rheumatic fever; likewise gout was similarly set apart clinically. The arthropathies of neurogenic origin were recognized, and still later the identification of infections due to specific organisms such as the pneumococcus or gonococcus allowed the separation of acute and chronic arthritis associated with these infections.

There was then left the large group of cases of chronic arthritis, which Garrod in 1890 divided clinically into rheumatoid arthritis and osteo-arthritis. The view was frequently expressed then and in succeeding

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Bigelow, G. H., and Lombard, H. L.: *Cancer and Other Chronic Diseases in Massachusetts*, Boston, Houghton Mifflin Company, 1933.

decades that rheumatoid arthritis was more than a disease of joints and depended on underlying constitutional disturbances.

The application to chronic arthritis of the concept of focal infection under the leadership of Dr. Frank Billings made possible cures of metastatic joint infections, many of them so striking as to lead some observers to the conclusion that all chronic arthritis might be cured if only these patients were studied carefully enough to discover the hidden infection. Attention became centered on infection as a cause of chronic arthritis, frequently to the neglect of other or concomitant causes. General care of the patient, insisted on by Dr. Billings, was forgotten. The search for, discovery and treatment of hitherto unrecognized localized infection became a necessary routine in dealing with chronic arthritis, but it soon was evident that infection could account for but a part of the complex etiology of the disease.

During the same period of the past quarter century, advances in the study of metabolism, heredity, water balance and edema, of the functions of the thyroid and parathyroid glands and of the effect of nervous and vascular supply on nutrition of joints furnished clinical methods that were utilizable in the study of arthritis.

At this time came the World War, with the revelation of the large number of persons unfitted by physical disability for inclusion in the draft, the opportunities for study of arthritis under controlled conditions in groups of soldiers invalidated by reason of exposure, infections and trauma and finally the disclosures of health surveys, necessitated by national and local compensation laws, of the large numbers of persons in civil life who are partially or totally disabled by arthritis. Chronic arthritis has thus come to be recognized as a major cause of disability, with many possible causes which must receive adequate separate study in order that each patient may obtain a maximum benefit.

The removal of a focus of infection from some patients is sufficient to swing the balance toward recovery, and the natural recuperative powers determine healing of the arthritis. But there are many others in whom there is no evident remaining infection, and no amount of search for infection, nor attempts at immunization or desensitization, can be expected to benefit arthritis the continuance of which is dependent on dietary errors, on metabolic disturbances, on vascular abnormalities leading to malnutrition of cartilage, on nervous and trophic derangement or on hereditary or mechanical defects.

When an infection invades a previously normal knee joint the lesion may heal promptly without residual disability, or healing may be delayed. There is exudation, stimulation of connective tissue growth, pannus formation and erosion of cartilage; the joint surfaces are no longer in proper apposition, the blood supply is impaired so that healing is further interfered with, and the trauma of motion and weight bearing accentuate a process from which the initial active infectious cause may have abated or disappeared. It has been suggested that the extensive and progressive disorganization of joints with impaired function in some patients is due to inferior quality of cartilage, which is less able than the normal to withstand infection and injury or to participate in repair.

Any one of several causes may thus initiate the arthritis, but almost without exception other disturbances follow, so that in any patient with chronic

arthritis there are several determinants affecting the progress of the disease.

CLASSIFICATION

In a disease characterized by deformity of joints of varying clinical course, in the etiology of which such diverse elements as infection, trauma, glandular dyscrasias, hereditary inferiority of tissues, altered blood supply and the nutritional changes attendant on advancing age are concerned, it is evident that the first requirement for routine study is a workable classification.

Many attempts have been made to divide arthritis into groups on the basis of morbid anatomy, etiology or clinical course. After long consideration it was concluded by the American committee that, in the circumstances, a simple division of chronic arthritis into (1) chronic atrophic, rheumatoid arthritis and (2) chronic hypertrophic arthritis, osteo-arthritis, will serve best for the present.

The characteristics of atrophic arthritis are its incidence chiefly in younger persons of ptotic habit, especially women, multiple joint involvement with fusiform appearance of joints of the hands, often ulnar deflection, and later ankylosis. The onset is insidious or acute. In many patients, constitutional effects with slight fever, anemia and poor nutrition are evident.

Hypertrophic arthritis, osteo-arthritis, is found in persons at or beyond middle life, often well nourished, and produces disability varying from slight to severe crippling. It is usually polyarticular but may be monoarticular. Lipping of joints and hyperostoses are frequent; ankylosis is rare. Fibrous thickenings, Heberden's nodes, with later bony hyperplasia at the terminal joints of the fingers, are frequent. The effects of the trauma of work are often noted in the hands and spine of the laborer.

The committee of the British Medical Association has summarized its studies in an admirable report² in which is offered a somewhat more detailed subdivision of clinical and pathologic types. Both rheumatoid arthritis and osteo-arthritis are regarded as having two types, one with and a second without infection. There are added chronic villous arthritis, occurring mainly in women at the menopause, and spondylitis. Of the latter, two types are distinguished: (a) ankylopoietica in which the joints of the spine tend to fuse and in which infections as well as trauma are often concerned, and (b) osteo-arthritica, laborer's spine, in which the effects of wear and tear of hard work are evident and osteophytic outgrowths prominent.

The grouping of chronic arthritis into atrophic and hypertrophic should be regarded as tentative, to clarify discussion and facilitate clinical study. Some students of arthritis believe that the two groups represent clinically different diseases. Certainly the onset of disease in many patients with the atrophic type is associated with infections and, in many of those suffering from the osteo-arthritic, hypertrophic type, the anatomic alterations are clearly dependent on vascular and other tissue changes that characterize senescence. There are, however, borderline cases which it is difficult to place in one or the other group. Pathologic tissue changes characteristic of each group are sometimes found in the same patient, and roentgen films of some joints suggest the atrophic, while those of other joints, such as of the spine, suggest the hypertrophic type of arthritis. The

2. Causation and Treatment of Arthritis and Allied Conditions, Brit. M. J. 1:1033 (June 17) 1933.

kind of trauma and the location of the joint thus seem to determine in part the reaction that occurs.

Other clinicians, while admitting the desirability of a working classification of this sort, maintain that the pathologic and clinical differences between the two groups depend on the time of life when damage, whether due to infection, physical trauma or interference with nutrition, occurs, and on the kind of reaction to injury exhibited by the tissues of the individual patient. Gonococcic infection produces in one patient a quickly healing arthritis; in another, arthritis and tenosynovitis with limitation of motion from scar tissue and adhesions; in still another, a multiple arthritis which continues to progress to the clinical picture of advanced atrophic arthritis, or to the production of spondylitis ankylopoietica of the British classification.

The effect of age on the response of joints to injury is demonstrable in animals. Experimental ligation of the blood supply of the patella produces a hypertrophic type of arthritis in adult dogs but causes but little change in young dogs.³ Clinically, the hypertrophic type of chronic arthritis in man is more common in older persons, whereas the atrophic type appears in earlier decades of life. Again, in atrophic arthritis there is sometimes clearly evident a hereditary element, as shown by the incidence of arthritis in some families, as in grandmother, mother and daughter. Here is suggested a cartilage inferiority as regards healing and reaction to infection or trauma, analogous to family susceptibility or resistance to infectious diseases, to the early development of hypertension or to local tissue reaction in scars, in which in one person a cut of the skin heals with a slight scar and in another with an unsightly keloid.

In chronic arthritis one is therefore dealing with a disease which may be initiated by infection or trauma but the subsequent course of which is influenced by many conditions of individual and hereditary tissue peculiarity, age, and general and local nutrition.

The usual combinations of these conditions result in a disease that conforms clinically more or less closely to one or the other of the two great groups of atrophic or hypertrophic arthritis. It is to be noted that while such a division is extremely valuable clinically, it does not justify the assumption that one factor, such for example as infection, was or was not the precipitating cause of the disease years before. Infection may have initiated the process the later course of which is determined by the kind of response that the tissues are able to make by reason of their hereditary quality, vascular supply and exposure to further trauma.

Viewed in this way, the grouping of chronic arthritis into atrophic and hypertrophic is really a statement of how this or that patient has reacted to trauma involving his joints and is of value because it indicates the kind of problem, judging from previous clinical experience, he is likely to present in the future, as well as the difficulties he will encounter, and the measures to be taken to avoid them.

TREATMENT

The treatment of chronic arthritis consists in the removal or correction of such recognizable causes as may be found active when the patient comes for help, the prevention of mechanical defects and the correction of those already present, and the institution of

general measures to return the patient and his tissues to as normal a condition as possible. The patient and his disease are to be treated rather than his joints or one assumed etiologic factor alone. Successful management will depend on a highly individualized program, which ideally will meet the several requirements of each patient. Routine treatment of all patients by any one method cannot in the nature of the case succeed.

Before the several lines of therapeutic attack on chronic arthritis are considered, it is well to recall the natural history of the disease. In some patients the arthritis seems steadily to advance, but in the majority, especially the atrophic type, there are periods of spontaneous remission with improvement, which may last for months. Any harmless therapeutic measure, whether actually effective or not, will, if instituted at the beginning of a natural remission, be followed by improvement and thus be credited with a value it does not deserve. The conclusions of many studies of this or that method of treatment during the past quarter century are to a large extent invalidated by failure to take into account this tendency to remission in arthritis. Then, too, the assay of results of therapeutic measures must include subjective as well as objective elements. The report of a patient as to how he feels is influenced to a considerable extent by his state of mind, whether of hope or discouragement.

INFECTIONS

Infections frequently mark the onset of arthritis, which is destined to progress into a chronic disease. The recognition of chronic focal infection as a cause of disease of the joints is one of the great advances in medicine of this century, and the treatment of chronic arthritis properly includes a search for and eradication of chronic infections. Operations for the removal of infections obviously should be planned to avoid shock to the patient. Sometimes removal of infection will suffice to swing the balance in favor of the patient, and his recovery is assured. More often, however, infection is only one, though possibly the precipitating, factor in a process that is continued by one or usually several other factors. Here dependence on measures directed toward the infection alone will obviously result in failure. The importance of underlying hereditary and general influences is emphasized when one recalls the high incidence of focal infections in persons who do not suffer from arthritis or other demonstrable organic disease.

It is not within the scope of this paper to review the many reported results of the removal of infections in chronic arthritis. Two recent reports, however, exemplify some of the etiologic and therapeutic relationships already cited. Stainsby and Nicholls⁴ treated rheumatoid arthritis by removal of the tonsils and by vaccines. Of twenty patients treated by tonsillectomy alone there was improvement in 60 per cent; of eighty-three patients treated by tonsillectomy and vaccines there was improvement in 57.8 per cent; of 194 treated by vaccine alone there was improvement in 35.6 per cent. Miltner and Kulowski⁵ found that the benefit of the removal of focal infections in chronic arthritis depended on age, type of disease and its duration. Of thirty-three patients with atrophic arthritis under 16 years of age, 73 per cent were cured and 16 per cent

3. Goldhaft, A. D.; Wright, L. M., and Pemberton, Ralph: The Influence of Age in the Experimental Production of Hypertrophic Arthritis, *Ann. Int. Med.* 6: 1591 (June) 1933.

4. Stainsby, W. J., and Nicholls, Edith E.: *J. Lab. & Clin. Med.* 17: 881 (June) 1933.

5. Miltner, L. J., and Kulowski, Jacob: *J. Bone & Joint Surg.* 15: 383 (April) 1933.

improved. Of sixty-three patients over 16 years of age, 15 per cent were cured and 58 per cent improved. Of 100 patients with hypertrophic arthritis, 95 per cent showed demonstrable foci, dental foci predominating, but in only 9 per cent was there marked improvement following their removal.

These and other studies indicate that infection is a larger contributory element in the continuation of the atrophic than of the hypertrophic group. There is diversity of opinion, based on the results of blood cultures, as to the incidence and significance of bacteremia in chronic arthritis, but most investigators have found bacteria in cultures of the blood in a larger proportion of patients in the atrophic than in the hypertrophic group. Whatever may be the final conclusion as to this controversial matter, as well as to the significance of streptococcus agglutinins, it seems quite possible that in chronic arthritis the finding of bacteria in the blood may be of greatest importance as an indication of lowered humoral and cellular resistance incidental to the general disease. Bacterial invasion of joints may occur early and be of primary etiologic importance but conceivably may follow later under conditions of lowered resistance in a patient whose arthritis originally resulted from a combination of other causes.

ALLERGY

Evidence is growing that part of the symptoms of recurrent joint pain and swelling may be due to an allergic response of sensitized joint tissues rather than to actual new lodgment of bacterial bodies. Both experimental and clinical observations suggest an analogy between the urticaria and rashes of serum disease and the shifting swelling, redness and pain of the joints in acute rheumatic fever. Likewise in chronic recurrent iritis many facts favor the view that some recurrences are due to reactions of the uveal tract previously sensitized by infection, through the renewed invasion of the ocular tissues, not by bacteria but by proteins possibly of bacterial origin. Applying this concept to chronic arthritis, exacerbations of joint swelling and pain may thus result from superficial mucosal infections such as result from minor colds. The cause of the exacerbation may thus be infectious but not associated with any hidden or deep seated removable infection. Patients in whom there remains no demonstrable focus of infection frequently suffer from recurrence of arthritis following acute respiratory infections and colds.

Freedom from exposure to streptococcal infections, as demonstrated by Coburn in the treatment of patients with rheumatic fever by their removal to Puerto Rico, where streptococcal infections are rare, and the favorable effect on patients with chronic arthritis and chronic sinus infections of a sojourn in the dry climate of the Southwest emphasize the importance of preventing renewed exposure to superficial infections. Prevention here consists not in renewed search for hidden foci but in decreasing the probabilities of exposure to infection and in improving general nutrition and resistance.

VACCINES

Treatment by the injection of vaccines, usually of streptococcal origin, is widely practiced, and undoubted instances of improvement under this treatment have been reported by excellent observers. It must be evident however that, in a disease in which in each case several causes are almost always active, dependence on one method alone results in the neglect of other pro-

cedures of equal importance to the welfare of the patient and, if vaccines are used in combination with other necessary methods, much caution is needed in evaluating the contribution of vaccines to the improvement. Too often in the past the natural history of arthritis with its spontaneous periods of remission and exacerbation has been forgotten.

GENERAL MANAGEMENT

With the conception of chronic arthritis as a disease affecting the entire body rather than the joints alone, the plan of treatment at once is broadened and individualized for each patient. There is no single accepted or acceptable method of treatment of chronic arthritis. It is here possible only to refer to general principles.

Early recognition and treatment of the condition that threatens the patient offers the greatest hope of reducing invalidism from this cause in years to come. In patients first seen when the disease is more advanced, much can still be done to prevent deformity and ankylosis, and, if ankylosis seems inevitable, to maintain the joints in the most useful functional positions.

In atrophic arthritis the restoration of general nutrition is of first importance and is often extremely difficult, requiring for its attainment relief from pain, relative or complete bed rest, and removal of sources of nervous irritation and worry, in addition to a balanced diet.

The diet should be appetizing and include an abundance of vegetables and fruit, protein and fat. Food idiosyncrasies, if present, must be considered in arranging the dietary. Long illness and poor appetites often lead patients to take habitually an excess of concentrated carbohydrates, and lack of exercise further interferes with carbohydrate and other metabolism. Pemberton has found that decrease in carbohydrates with increase in proteins and fats favors reduction in joint swellings. The replacement of concentrated carbohydrates with protein, fat, vegetables and fruits increases the vitamin content of the food and supplies a residue that aids in the correction of the tendency to bowel atony and constipation.

The administration of small doses of thyroid substance sometimes stimulates the appetite, increases the sense of well being of the patient and, when hypothyroidism is present, may contribute to resistance to infection. Anemia often requires the reinforcement of the diet with iron. Although many patients with atrophic arthritis are underweight, some tend to become fat, especially if they are confined to bed, and here the diet, particularly the carbohydrates, must be reduced. In hypertrophic arthritis occurring in patients with a tendency toward overweight or obesity, reduction in carbohydrates and in the total diet contributes to general improvement as well as to reduction of the load on weight-bearing joints. The relief of pain by suitable analgesics such as those of the salicylic group is necessary for the comfort of the patient. The dangers of the use of a number of newer drugs, such as cinchophen for long periods, have been demonstrated by the tragic experiences of recent years.

Referred pain, arising from pressure or irritation of spinal nerves in osteo-arthritis, and requiring careful study to distinguish it from pain originating in the heart, abdominal viscera or peripheral nerves, is often relieved by intelligent application of corrective orthopedic measures.

The benefits of orthopedic measures to correct deformities and increase the functional usefulness of

joints are not confined to the joints. The patient, bed-ridden until the contractures of the knees were corrected, is now able to walk and take exercise, has an improved appetite, assimilates food better and, most important of all, has now a hopeful instead of a hopeless attitude toward life.

Physical therapeutic measures to improve circulation and local nutrition by massage, heat cautiously applied in suitable cases, exercise in the main active rather than passive, and heliotherapy, natural and artificial, may be applied to meet the special conditions in each case.

SUMMARY

Arthritis is a major cause of suffering and disability, and it entails economic distress greater than that of any other disease in temperate climates. The several factors concerned in the onset and continued course of chronic arthritis include infection, trauma, interference with normal blood and nerve supply, hereditary cartilage and tissue inferiority, and general causes such as fatigue, exposure, nervous strain, general malnutrition and glandular dysfunction.

Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone. For clinical purposes this disease is divided into two groups, atrophic or rheumatoid arthritis, and hypertrophic arthritis or osteo-arthritis, although it seems possible that these types often represent the results of similar series of events in persons of different ages and intrinsic qualities of tissues.

Treatment must be highly individualized to meet the several requirements of each patient. The employment of one method of treatment for all patients, in a disease whose etiology and course vary with each patient, seems unwarranted. There is also the danger that relatively minor procedures such as some dietary, physical therapeutic or other measures, perhaps valuable in themselves, may be unduly stressed in the clinic so that patients are given an erroneous impression of their importance. Here as elsewhere in medicine there is constant need of rugged honesty, both moral and intellectual, and sincerity of purpose.

Treatment based on the broader conception of chronic arthritis as a general disease will meet the requirements of a larger number of patients, and the percentage of cures or marked improvement will be increased. While a spirit of optimism is necessary in this difficult field, it must still be recognized that there will be some patients whose disease is far advanced for whom but little can be accomplished. The number of these will be materially decreased as adequate broad visioned treatment is instituted at an earlier stage, before irreparable damage has been done.

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Invention of Histologic Technic.—In 1835 Purkinje, an Austrian priest of Gipsy family, became possessed of a microscope. In a short space of time he had discovered the nerve cell, and this discovery, added to that of Gall of the nerve tract, was the instigation of all later work. He had invented a hardening reagent, bichromate of potash, which would allow sections of soft tissue to be cut; a machine, the microtome, to cut the sections; a stain, carmine, which would bring out the details; a clarifying reagent, oil of cloves, which would make microscopical examination possible; and a method of making permanent preparations with Canada balsam. Purkinje's work was epoch making in the progress it caused.—Collier, James: The Harveian Oration on "Inventions and the Outlook in Neurology," *Brit. M. J.* 2:707 (Oct. 20) 1934.

THE MEDICAL TREATMENT OF CHRONIC ARTHRITIS

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It is customary nowadays to open any discussion on the treatment of chronic arthritis with a preliminary paragraph on the classification of the disease. This is a rational procedure, but unfortunately the terminology now in use is confusing to many physicians, chiefly because of the multiplicity of synonyms. Many of these synonyms might well be forgotten. As a matter of fact the modern classification of chronic arthritis is quite simple, much simpler than that of chronic nephritis or chronic heart disease. The differentiation of chronic arthritis into two groups has resulted largely from careful pathologic studies of the disease, but there are definite clinical features of each type as well.

Pathologically the two great groups are so different that it is hard to see how any one could confuse them. Osteo-arthritis, or hypertrophic arthritis, is well named, because it is a degenerative process which affects the bone and cartilage. The term hypertrophic arthritis is also appropriate because of the hypertrophic changes that take place in the bone around the margins of the articular surface. Pathologists look on osteo-arthritis as a senescent process similar to arteriosclerosis or gray hair. Keefer and Myers¹ have recently shown that these degenerative changes in the joint are present in a high percentage of old people who come to autopsy after death from some other malady. In other words, hypertrophic arthritis is hardly a disease but a natural biologic process and simply one phase of senescence. The Germans and French often speak of this condition as an "osteo-arthritis," a term which would indicate that it is not inflammatory in nature. Hypertrophic arthritis is characterized by some enlargement of the ends of the bone and by an absence of soft tissue swelling. Ankylosis does not occur in this form of arthritis.

Rheumatoid arthritis, or chronic infectious arthritis, is a chronic progressive inflammatory disease, characterized in its early stage by migratory pain and swelling in various joints and in the later stages by ankylosis and deformity. Because of its capacity to cripple, it presents one of the great public health problems of civilization. The belief is quite general that rheumatoid arthritis is a chronic infection, and there are a considerable number who look on it as a chronic streptococcal infection. In contrast to hypertrophic arthritis, the joints in rheumatoid arthritis usually show soft tissue swelling.

If one limits oneself to the aforementioned terms, it would seem that the differentiation between these two types of arthritis is simple enough. It must be admitted, however, that there does exist a so-called mixed type of arthritis in which in addition to soft tissue swelling of one or more joints, definite changes in the bone and cartilage are also present. The existence of this mixed type leads Rigler and Wetherby,² and more recently Archer,³ to conclude that hypertrophic

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Keefer, C. S., and Myers, W. K.: The Incidence and Pathogenesis of Degenerative Arthritis, *J. A. M. A.* 102:811 (March 17) 1934.

2. Rigler, Leo, and Wetherby, Macnider: Roentgen Findings in Chronic Polyarticular Arthritis, *Am. J. Roentgenol.* 29:766 (June) 1933.

3. Archer, B. H.: Chronic Nonspecific Arthritis, *J. A. M. A.* 102:1449 (May 5) 1934.

and rheumatoid arthritis are "different manifestations of the same disease." If this were the case, there would certainly be little reason for classifying chronic arthritis at all. This confusion, which exists in the minds of some, results, I believe, from inadequate study of the life history of the two diseases. If, as already pointed out, hypertrophic arthritis is present in almost a hundred per cent of elderly patients, it is hard to see how it could have any possible connection with rheumatoid arthritis, which usually appears in the earlier decades of life and which, in its incipient stage, is purely a synovial disorder characterized by no changes whatever in the bone or cartilage. Archer finds it difficult to understand how a patient could have a Heberden's node (of hypertrophic origin) on one joint and a rheumatoid enlargement of another joint on the same finger or even on the same hand. However, there is nothing to prevent a gray-haired old man from contracting an infectious seborrhea, and there is no reason why an old woman with Heberden's nodes should not contract an infectious arthritis, provided she has a focus of infection and her general resistance becomes sufficiently lowered. In other words, what has the existence of Heberden's nodes to do with contracting an infectious disease, whether it is tuberculosis or rheumatoid arthritis?

But there is another phase to this question of so-called mixed arthritis, a term, by the way, which seems to me unnecessary. It is a well known fact that any chronic irritation in a joint, if maintained long enough, will eventually lead to hypertrophic changes in the bone. This has been demonstrated repeatedly on animals by injection of sand and other foreign material into the joint cavity. Fractures that involve the articular surface of a bone often lead to subsequent hypertrophic changes in the joint, regardless of the patient's age. One of the commonest of all irritants is infection. Any chronic infection of a joint may lead, in the course of time, to more or less hypertrophic change in the joint affected. For example, both gonococcal arthritis and tuberculous arthritis may lead eventually to hypertrophic bony changes. This is no reason, however, for calling gonococcal arthritis and tuberculous arthritis "different manifestations of the same disease." Rheumatoid arthritis, like other infections of the joints, is no exception to this rule. Starting as an inflammation of the synovial membrane, the original infection may be complicated finally by osteo-arthritic manifestations.

The time to determine the nature of a morbid process is in its incipience. In the late stages of any chronic disease the picture becomes so blurred by many complicating factors that the real character of the pathologic process is readily obscured.

TREATMENT OF HYPERTROPHIC ARTHRITIS

If, as I have already stated, hypertrophic arthritis is a senescent lesion, one cannot hope to cure it in the real sense of the word. Fortunately many individuals with this type of arthritis do not need a cure, because they have no symptoms. Symptoms develop when a hypertrophic or "worn-out" joint is subjected to acute or chronic trauma. This trauma is referable in many cases to overweight, especially when the symptoms occur in the weight-bearing joints. However, the trauma may result from many other causes, such as occupation, bad posture and deformities. The obvious method of treating this condition, therefore, is first to remove the cause. The patient cannot be cured of his senescent joint

changes, but he can often be relieved of his symptoms if the proper therapeutic measures are employed.

First, then, under the medical treatment of hypertrophic arthritis is removal of the source of trauma to the affected joint. When the symptoms are in the knees, the condition can usually be traced to overweight. There is one special type of hypertrophic arthritis that is seen very frequently in the clinic. A middle-aged woman, considerably overweight, comes in complaining of pain and stiffness in the knees, Heberden's nodes on the fingers and often pain and stiffness in the lumbar spine. This syndrome appears so frequently at the time of the menopause that it has been called menopausal or climacteric arthritis. These patients are often greatly relieved by the simple expedient of reducing the weight from 20 to 25 pounds (9 to 11 Kg.) by means of a low calory diet. If the basal metabolism rate is below normal, thyroid extract can be administered with benefit.

The next most important phase of the treatment of hypertrophic arthritis is cessation of overactivity of the joint. By this I do not mean complete rest or immobilization but considerably less exercise than the patient has been accustomed to take. Many of these middle-aged or elderly patients are convinced that excessive exercise is the road to cure, not realizing that the relief they obtain from exercise is only temporary and that the joint is being subjected to additional injury by such measures.

This type of obese middle-aged patient usually suffers from constipation and the intestinal tract should receive attention. There is nothing better in my opinion than the well known combination of agar and liquid petrolatum. Sometimes a roughage diet consisting chiefly of fruits and vegetables will answer the purpose.

Many patients with hypertrophic arthritis get relief from a visit to one of the spas. Rest, relaxation and possibly the copious drinking of water do as much for the patient as the baths and physical therapy.

Drugs are of very little value in this form of arthritis. Salicylates can be employed to relieve pain, and iodides are said to be helpful in some cases.

Heat in all its forms is extremely valuable and is discussed by Dr. Loring T. Swaim under the heading of "The Orthopedic and Physical Therapeutic Treatment of Chronic Arthritis."

TREATMENT OF RHEUMATOID ARTHRITIS

Rheumatoid arthritis is one of the great diseases of medicine. The etiology of this arthropathy is still under debate and cannot be discussed at length in this paper. Suffice to say that rheumatoid arthritis has a specific pathology and a characteristic syndrome, and that in most quarters it is looked on as a chronic infection. A good deal of work has been done on the bacteriology of rheumatoid arthritis, and a number of investigators have succeeded in recovering streptococci from the blood and joints of patients suffering from this disease. Other bacteriologists have failed entirely in their attempts to recover streptococci from the lesions of rheumatoid arthritis. This discrepancy in results is difficult to explain but is possibly referable to minor differences in culture mediums. Some have suspected that the streptococci in question were contaminations from the air or skin, but it is hard to reconcile such a theory with the carefully controlled studies of Callow,⁴ who found streptococci in the blood of a high percentage

4. Callow, B. R.: Bacteriologic Investigation of the Blood in Rheumatic Fever, *J. Infect. Dis.* 52: 279 (May-June) 1933.

of patients with rheumatic fever. Callow's studies were carried out under the direction of William H. Park, who presumably would have recognized contaminations as such. If time and space permitted, other evidence such as the presence of specific streptococcus agglutinins and precipitins in the serums of rheumatoid patients could be cited in support of the streptococcic origin of rheumatoid arthritis.

If current ideas about the infectious nature of rheumatoid arthritis are correct, the treatment of this disease should be quite different from that which has just been outlined for senescent osteo-arthritis. In the latter condition the elimination of trauma and stimulation of the local circulation are the important factors. If, however, in rheumatoid arthritis one is dealing with a chronic infection, the therapeutic approach should be similar in a general way to that which would be taken toward any other chronic infection. Unfortunately the treatment of rheumatoid arthritis suffers for lack of standardization. Stokes and his associates⁵ recently published an article on the "standard treatment" of syphilis. A similar article could be written on the standard treatment of tuberculosis. It would be very difficult, however, to write an article on the standard treatment of rheumatoid arthritis for the simple reason that there is no standardized therapy for this disease. I have often thought that it would be an interesting experience for an arthritic patient if he should start in Boston and make a circuit of the United States and Canada, taking the treatment for his disease in various medical centers as it was prescribed by the leading authorities in those communities. In some places focal infection would be stressed. In other clinics he would receive vaccine. In still others he would be put on a rigid dietary regimen, and finally he might receive physical therapy and orthopedic treatment.

In order to get some general idea as to how the various forms of treatment for rheumatoid arthritis should be rated, I recently sent a questionnaire to sixteen of my friends in various parts of America who are interested in rheumatoid arthritis. With one or two exceptions, these men are professors in leading medical schools and all of them have an excellent background in the handling of arthritic patients. In the questionnaire I asked these physicians to rate by number the importance of the following methods of treatment:

- Blood transfusions.
- Climate cure.
- Foreign protein therapy.
- Hydrotherapy.
- Hyperthermia.
- Intestinal hygiene (including colonic irrigations, purgatives and the like).
- Low carbohydrate diet.
- Drugs.
- Physical therapy (including massage and exercise).
- Removal of foci of infection.
- Rest.
- Streptococcus vaccine.

The sixteen physicians were also asked to make any comments that occurred to them concerning these various forms of treatment. I realized, of course, that this was a very artificial method of getting at the relative merits of twelve different forms of therapy, but it occurred to me that by means of such a questionnaire

I might be able to draw certain conclusions concerning the trend of modern therapy in rheumatoid arthritis.

The answers were interesting and fulfilled very well the purpose of the questionnaire. The results ran about as follows:

Blood transfusions did not evoke much enthusiasm. None of the voters rated them high on the list. Several remarked that they were useful in patients with marked anemia.

The climate cure got a much better reception. It was given honorable mention (first, second or third place) in five out of the sixteen questionnaires. Several voters mentioned the fact that a dry hot climate, such as that of Arizona or New Mexico, is especially good for arthritic patients who are also suffering from sinus infection.

Foreign protein therapy got a very lukewarm response. None of the voters placed it high on the list, though one physician remarked that typhoid vaccine was his favorite treatment in active cases. The general reaction to foreign protein treatment was that it was a rather highly specialized form of therapy for special cases.

Hydrotherapy received only one vote in the first three places, and the general opinion was that it was of value chiefly in the relief of symptoms.

Hyperthermia by means of the "short wave" or diathermy elicited very little enthusiasm. One physician remarked that there was no theoretical basis for it, as it would deplete an already ill patient rather than build him up.

Intestinal hygiene, including colonic irrigations, purgatives and so on received only one honor vote, and this was third place. One physician writes "I feel convinced that if one attended to intestinal hygiene *per se* he would get nowhere, unless under intestinal hygiene the concept of a proper diet was included." Another voter aptly remarks "One should pay the same attention to intestinal hygiene in the arthritic as in any other ill patient."

A low carbohydrate diet received fairly enthusiastic support, getting "honorable mention" in five out of sixteen questionnaires, though it did not receive first place in any of the lists.

Drugs did not receive honorable mention in a single questionnaire. One doctor writes "Drugs should be considered a very minor aspect in the treatment of arthritis." Iron of course was mentioned frequently as indispensable for secondary anemia. All agreed that salicylates were of value only for their analgesic effect.

Physical therapy, including massage and exercises, received on the whole rather enthusiastic support, getting honorable mention in eight out of sixteen questionnaires. Even here, however, there were skeptics. One voter writes "No results after large experience." Another writes "Physiotherapy may give symptomatic relief but is not a cure. With some patients the fatigue following treatment does more harm than good."

Removal of foci of infection is evidently a popular therapeutic measure, as it received "honorable mention" in eleven of the sixteen questionnaires. In seven questionnaires it received first place, in three second place and in one third place. Several voters, however, stressed the apparent futility of removing foci of infection late in the course of the disease.

Rest received the highest number of "honors." Twelve out of sixteen voters gave it honorable mention,

5. Stokes, J. H.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J.; Parran, Thomas Jr.; Vonderlehr, R. A., and Usilton, Lida J.: Standard Treatment Procedure in Early Syphilis, *J. A. M. A.* 102: 1267 (April 21) 1934.

and in seven questionnaires rest received first place. Several physicians stressed the importance of mental as well as physical rest.

Streptococcus vaccine, either stock or autogenous, met with only moderate enthusiasm. It received honorable mention in five out of sixteen questionnaires. Some of the voters were frankly skeptical concerning its beneficial effects. Others felt that whatever virtue resided in streptococcus vaccine was nonspecific in character.

Summarizing, then, it may be said that this questionnaire, though admittedly a very rough gage, brought out the following facts: Apparently the most popular therapeutic measures at present in vogue in the treatment of rheumatoid arthritis are rest, removal of focal infections, and physical therapy. Climatotherapy is also held in considerable esteem, while a low carbohydrate diet and streptococcus vaccine both received a fair amount of recognition. Through an oversight, vitamins were not listed in the questionnaire, but a number of physicians, in discussing diet or medication, spoke of vitamins as an important part of their treatment of rheumatoid arthritis.

AUTHOR'S METHOD OF TREATMENT

My own method of treating rheumatoid arthritis is based on experience that has come from the handling of these patients in the outpatient clinic, in the hospital ward, and in private practice. The treatment differs somewhat with the duration of the disease and the degree of its activity. As a matter of convenience in discussing the therapy of this disease, the cases may be divided roughly into four groups, representing four different stages or aspects of it:

1. Mild early cases.
2. Active febrile cases.
3. Well established chronic cases.
4. Advanced bedridden cases.

GROUP 1.—Mild Early Cases (from three to eighteen months' duration).—This type of rheumatoid patient is usually seen first in the outpatient clinic or in office practice. The patient is often a young adult, though he may be of any age. The disease is still in its early phases and the cartilage of the joints has suffered little or no injury. The symptoms are mild and the disease is running a sluggish course. There may be several fusiform fingers, one or two swollen knuckles, discomfort in the wrists and often swelling or pain in the knees or ankles. None of the joints show ankylosis or deformity.

The diagnosis is based on the clinical picture, an accelerated sedimentation rate of the red blood cells and often a slight increase in the immature cells of the blood. About 60 to 70 per cent of these early cases will show specific agglutinins for *Streptococcus hemolyticus*.

(a) **Foci of Infection:** The therapeutic procedure that I consider of first importance in this type of case is the removal of focal infections. If the tonsils appear to be infected, or even if they are under suspicion and if the patient is under 50 years of age, a tonsillectomy will probably be recommended. It has been learned from experience to distrust all tonsils. I am much more conservative in my attitude toward devitalized teeth and rarely advise their extraction unless there is definite evidence of periapical infection. In respect to sinuses, the advice of a good laryngologist is sought, preferably one who is not too radically minded, and I am very prone to follow his advice with regard to the treatment

of whatever sinus infection exists. The possibility of infection in the genito-urinary tract and other parts of the body is also eliminated.

A great deal of success in the treatment of focal infection depends on who removes the focus. A tonsillectomy performed by a clumsy operator is more apt to bring on an exacerbation of joint symptoms than it is to cure the patient. I believe that it is better treatment to remove the focus and then build up the patient than it is to build up the patient and then remove the focus.

(b) **Rest:** I agree with the physicians who answered the questionnaire that rest is a very vital part of the treatment of rheumatoid arthritis. In this ambulant type of case, however, rest is a difficult form of therapy to enforce, chiefly because the patient, whether man or woman, is anxious to keep up the daily routine of duties. If these patients in the early stages of rheumatoid arthritis can be persuaded to give up work and take a rest cure for from six months to a year, a much higher percentage of them would make a complete and permanent recovery. As it is, and chiefly perhaps because of economic reasons, the physician must compromise on the rest issue, and the patient is advised to take from one to two hours' rest in bed every day after lunch. If a real rest cure can be taken away from home, it is far preferable, because the patient gets a mental and emotional rest as well as a physical one.

(c) **Vaccine:** Most rheumatoid patients in this early group receive streptococcus vaccine intravenously. The vaccine is a stock hemolytic streptococcus vaccine, prepared from several "typical strains" recovered from the blood and joints of patients with rheumatoid arthritis⁶ and all of which are agglutinated by the serum from rheumatoid patients. I have no intention of giving up streptococcus vaccine in the treatment of rheumatoid arthritis because of a certain reaction that exists now in various quarters against its use. I have seen too many patients improve under this form of treatment to question its value in a considerable number of cases. No doubt vaccine therapy has been abused, chiefly by those clinicians who have given vaccine and ignored other important phases of the treatment; but *Streptococcus hemolyticus* vaccine given in small doses by the intravenous route seems to me to have a definite place in the therapy of rheumatoid arthritis.

The streptococcus vaccine, as it is employed, is made up in various dilutions for intravenous therapy. Dilution 1 contains 1 million streptococci to 1 cc. of vaccine. Dilution 2 contains 10 million streptococci to 1 cc. Dilution 3 contains 100 million streptococci to 1 cc., and dilution 4, 1,000 million. The first dose is usually 0.05 cc. of dilution 1 (50,000 streptococci) intravenously. Each succeeding dose is increased by 0.05 cc. When a dosage of 1 cc. has been reached, treatment with dilution 2 is started with 0.1 cc., and the dosage increased by 0.05 cc. with each injection, and so on through dilution 3.

If for any reason the intravenous method is contraindicated, the subcutaneous route can be used. For this method, *Streptococcus hemolyticus* vaccine contains one billion streptococci to each cubic centimeter of vaccine. The first dose is 0.05 cc. Each succeeding dose is increased by 0.05 cc. but rarely exceeds 1 cc.

6. Cecil, R. L.; Nicholls, Edith E., and Stainsby, W. J.: The Bacteriology of the Blood and Joints in Chronic Infectious Arthritis. *Arch. Int. Med.* 43: 571 (May, 1929); The Etiology of Rheumatoid Arthritis, *Am. J. M. Sc.* 181: 12 (Jan.) 1931.

In both the intravenous and the subcutaneous method the interval between doses should be from four to five days. If the patient has a severe local or mild general reaction with definite increase of joint pain following the injection, the previous dose of vaccine is repeated or the amount reduced. A large part of the success in vaccine therapy depends on the persistence with which it is prosecuted. As a rule, very little benefit can be expected during the first two or three months of treatment. The injections should therefore be continued for at least three or four months.

It is very important in using streptococcus vaccine to avoid overdosage, especially when the intravenous method is employed. An overdose of foreign protein or typhoid vaccine may cause a chill and fever and still react favorably on the patient's symptoms. On the other hand, an overdose of streptococcus vaccine by the intravenous route may bring on an acute and sometimes a severe exacerbation of symptoms in the joints. Episodes of this kind probably have an allergic basis. It seems likely that whatever virtue streptococcus vaccine has in rheumatoid arthritis is more in the nature of a desensitizing function than an immunizing one.

(d) **Drugs:** Drugs play a comparatively minor part in the treatment of rheumatoid arthritis. The few that I do use, however, are important. Iron in the form of ferric ammonium citrate or reduced iron is valuable in counteracting the secondary anemia, which is so common in this disease; and arsenic seems to have a beneficial effect in many cases. One is very prone to use both of these drugs in treating early ambulant cases. I have been quite disappointed in the results obtained from various forms of sulphur and the various preparations of iodine that have been recommended. The salicylates of course are helpful in relieving pain but have no specific effect on the course of the disease.

My experience with gold salts in the treatment of rheumatoid arthritis has been rather limited. However, the results reported by Forestier⁷ in France and by Slot and Deville⁸ in England are very encouraging. Forestier considers sodium gold thiopropanol sulphionate the best chemical agent for the treatment of rheumatoid arthritis. Slot and Deville assert that in rheumatoid arthritis the results of gold therapy are superior to those of all other methods of treatment. In their opinion gold therapy marks a distinct advance in the treatment of this disease. Patients whom I have treated by this method have never shown very striking results. Perhaps a larger experience with gold therapy, however, might change my opinion.

(e) **Low Carbohydrate Diet and Vitamins:** Practically all of my patients in this group of early mild cases are put on a low carbohydrate maintenance diet, which is reinforced by a vitamin program. The vitamins usually employed are (1) vitamin A in the form of concentrated cod liver oil (or haliver oil), preferably in capsules, (2) vitamin B in the form of brewers' yeast or some of the specially prepared forms of wheat germ such as embo or bemax, (3) vitamin C as orange juice and tomato juice, and (4) vitamin D in the form of viosterol. This is taken in capsules with the cod liver oil. It must be acknowledged that this form of therapy is largely empirical, though the studies of Fletcher⁹

would indicate that vitamin B has value in correcting the atony of the colon, which is so frequently seen in chronic arthritis; and more recently the studies of Rinehart¹⁰ would indicate that a vitamin C deficiency might have some relation to rheumatoid arthritis. Rinehart has shown that joint lesions with a pathologic condition quite similar to that of rheumatoid arthritis can be produced in guinea-pigs that have been subjected to a vitamin C deficient diet and then injected intracutaneously with virulent streptococci.

(f) **Elimination:** I believe in elimination through the bowels, the bladder and the skin, but of the three elimination through the intestinal tract is the most important. Agar and liquid petrolatum are excellent for obtaining regular bowel movements, but in some cases more drastic measures may be necessary. I have seen very few patients benefited by colonic irrigations.

(g) **Baths:** Much has been written about baths of every kind in the treatment of rheumatoid arthritis, but the significant factor in all of them is probably heat. I recommend hot baths to all patients with rheumatoid arthritis as one method of giving them temporary relief of symptoms. It is not generally realized that several degrees of fever can be readily produced in a patient by the use of a very hot bath. The formula that I use is as follows:

BATH FORMULA

The tub is filled with hot water at a temperature of about 100 F.

The patient gets in the bath, and the temperature of the bath is gradually raised to 104 F.

The bath is maintained at this temperature by means of a bath thermometer, and the patient remains in the bath, submerged up to the neck, for from thirty to forty-five minutes.

A cold wet towel can be applied to the forehead to lessen the discomfort.

The patient should then be sponged off with cold water or alcohol and go to bed.

This bath should be taken on an empty stomach. The patient can take some food, preferably liquids, after the bath is over.

(h) **Physical Therapy:** Under physical therapy are included heat in various forms, massage and active and passive exercises. Most patients with rheumatoid arthritis feel better when the painful joints are subjected to heat, but this is not a universal experience. In some instances the pain is actually increased by the application of diathermy or infra-red rays. The value of physical therapy and the various forms of exercise are discussed in detail by Dr. Swaim.

(i) **Climate:** I believe in the beneficent effect of a warm dry climate with minimal barometric variations. Holbrook¹¹ has recently written an interesting and helpful article on the treatment of rheumatic arthritis and in this article he discusses climatic therapy at considerable length. I agree with Holbrook's statement that the various forms of heliotherapy constitute the major portion of specific climatic therapy. Unfortunately, a comparatively small number of rheumatoid patients can afford to make the pilgrimage to the Southwest, and those who cannot take advantage of that climate should have as much exposure as possible to sunlight at home.

(j) **Psychotherapy:** Most patients with rheumatoid arthritis suffer a great deal from mental depression and consequently need an abundant measure of psychother-

7. Forestier, Jacques: *The Treatment of Rheumatoid Arthritis with Gold Salts Injections*, *Lancet* 1: 441 (Feb. 27) 1932.

8. Slot, Gerald, and Deville, P. M.: *Treatment of Arthritis and Rheumatism with Gold*, *Lancet* 1: 73 (Jan. 13) 1934.

9. Fletcher, A. A., and Graham, Duncan: *The Large Bowel in Chronic Arthritis*, *Am. J. M. Sc.* 179: 91 (Jan.) 1930.

10. Rinehart, J. F.: *Does Vitamin C Deficiency Play a Role in Rheumatoid Arthritis?* *California & West. Med.*, to be published.

11. Holbrook, W. F.: *Evaluation of Therapy in Chronic Atrophic Arthritis*, *Ann. Int. Med.* 7: 457 (Oct.) 1933.

apy. On the other hand, there are some individuals, usually men, who do not take their affliction seriously enough and the physician in all fairness to the patient should make clear to him the serious potentialities of the disease. The small, slender type of neurotic woman is particularly susceptible to rheumatoid arthritis and often responds poorly to treatment. It is this type of patient that needs the greatest amount of moral encouragement. Unless the physician makes very earnest efforts along this line he will fail to get the full cooperation and confidence of the patient, factors that mean much in the stubborn fight against the disease.

GROUP 2.—The Active Febrile Cases.—These patients are usually seen at home or in the hospital. They have a fever which may amount at times to a rise of several degrees Fahrenheit. Several joints, usually including one or both knees, are swollen, hot and painful. Some of these cases might easily be mistaken for rheumatic fever were it not for the absence of cardiac symptoms and their failure to yield to salicylates. In some instances, rheumatoid arthritis is ushered in with active febrile symptoms, though the sluggish insidious mode of onset is much more common. On the other hand, acute febrile exacerbations may develop in some of the sluggish cases following an operation, the birth of a child, an attack of grip, or some other intercurrent illness. Holbrook¹¹ points out that this type of case often yields dramatically to the removal of a focus of infection, and I concur with him in this point of view. In a goodly number of these patients, however, the foci have already been removed during some previous attack, and it remains for the physician to treat the condition by other medical measures. In this connection, the existence of fever and actively inflamed joints is not a contraindication to the prompt removal of a focus of infection.

In my experience the active febrile type of case responds particularly well to foreign protein, or so-called fever therapy. I cannot agree with Holbrook that "shock" therapy, either by vaccine or by nonspecific therapy, is a hazardous procedure in patients with early or subacute forms of atrophic arthritis. This is just the type of case in which fever therapy is most valuable. I am aware, of course, that a good many physicians consider foreign protein by the intravenous route a radical and rather dangerous method of treatment, but in my hands I have seen no untoward results. For this work I use triple typhoid vaccine, which in its original strength contains 2,500 million organisms. A 1:10 dilution of this vaccine is made up, so that 1 cc. contains 250 million. The first injection consists usually of 50 million bacteria (0.4 cc.), and this dose is increased with each succeeding injection until a dosage of 500 or 600 million bacteria may be reached. If the dosage is not increased with each injection, the reactions become less and less marked. I usually give the patient from six to eight shocks during his stay in the hospital.

There are some, of course, who prefer to produce artificial fever by the "short wave" or by diathermy. I have produced hyperthermia by means of diathermy in a number of cases, usually with temporary benefit, but on the whole the results have not been so satisfactory as with typhoid vaccine, and certainly the latter method is much simpler to employ. In my experience typhoid vaccine injections actually give the patient less discomfort than the hot box.

The active febrile patients usually suffer considerable toxemia and rapidly become anemic and underweight.

They will need iron and arsenic in full doses. Following the suggestion of Haden,¹² I have given small doses of nearsphenamine to these patients with very good results.

Six or seven intravenous injections of typhoid vaccine will often reduce the patient's temperature to normal and the joints will show surprising improvement. At this stage the patient may be allowed to go home and treatment can be followed either at home or by visits to the office or clinic. Occasionally actual cure will result from this regimen, but more often the patient continues to have mild symptoms in the joints and falls into the category of a group 1 case. The treatment will then become that which has already been described under the group 1 heading.

GROUP 3.—Well Established Chronic Cases (from two to five years' duration).—This type of case is not incurable but presents much more of a problem than the two just described. The joints will usually have suffered more extensive injury than in the first two types. The cartilage may have been partially destroyed and the synovial membrane may have become thickened. Many of these patients present a typical villous arthritis in one or both knees.

This type of case needs institutional and orthopedic care. Unfortunately, institutions for handling such cases do not exist; that is, no sanatorium has been built as yet in this country for the exclusive study and treatment of rheumatoid arthritis. There is no more pressing need in America today than for institutions that will take care of arthritic patients. Given such institutions, in charge of men who are devoting their lives to the study and treatment of the disease, many of these patients with well established rheumatoid arthritis could be eventually rehabilitated and restored to active participation in life. Ober¹³ has a plan for the institutional management of arthritis in large communities. This is worth a careful study by those who are interested in the institutional treatment of chronic arthritis.

It is difficult to handle these well established chronic cases in the office or outpatient clinic. One always feels that whatever is gained by the treatment and by contact with the physician is offset by the discomforts of making the trip. This of course is not always the case. I have seen a few rather advanced cases of rheumatoid arthritis successfully handled in the office or outpatient department by a therapeutic regimen such as that outlined for the early mild cases. As a rule, however, they make some improvement at first and then become stationary.

In this type of case the medical man will need the almost constant help and cooperation of the orthopedic surgeon. Even with present institutional facilities, many of these cases yield surprisingly well to skilful treatment.

GROUP 4.—Advanced Bedridden Cases (of five years or more duration).—This type is represented by those unfortunate patients with rheumatoid arthritis in its terminal phase, in which treatment has availed nothing and the patient has gone on to the final stage of ankylosis and deformity. It is needless to say that little if any help can be extended to these patients by medical measures. Some of them are examples of neglect on the part either of the physician or of the patient himself.

12. Haden, R. L.: The Treatment of Chronic Atrophic (Rheumatoid) Arthritis, *Tr. Am. Clin. & Climatol. A.* 49:1 (May 9-10) 1933.

13. Ober, F. R.: A Plan for the Management of Arthritis in Large Communities, *New England J. Med.* 206:392 (Feb. 25) 1932.

There is also the type of patient who was born with a marked hereditary predisposition to the disease, and on him all forms of therapy may fail. Thanks to modern methods of treatment, fewer and fewer patients in this unfortunate group are seen. The therapeutic problem in this fourth type of case resolves itself into one of making the patient as comfortable as possible under the circumstances. Some relief can, of course, be achieved by the application of heat and massage. Such a patient demands a strong, capable and sympathetic nurse. Because of ankyloses, movement is extremely difficult and a change of position is necessary from time to time to relieve the strain and discomfort that result from lying too long in one posture.

COMMENT

In this presentation I have tried to summarize briefly my own point of view on the treatment of chronic arthritis, a point of view that is based on a fairly wide experience with the disease. This is, however, only one man's opinion, and the treatment of arthritis is still far from being standardized. I am sure it is no reflection on the men who are working on the arthritis problem to say that their opinion on the etiology and treatment of the disease changes from time to time and will continue to change until the nature of the malady is much better understood than it is at present. As I have already indicated, many physicians believe that rheumatoid arthritis is a chronic infection. My own belief is that it is a chronic streptococcal infection. But just what the underlying factors are that lead to its development, and just what factors determine recovery or progressive decline into the ankylosed state, no one pretends to know. However, much has been learned from investigation and from experience, and one can look forward with confidence to more and more light being shed on the problem during the coming years.

SUMMARY

1. The treatment of chronic arthritis differs materially for the different types of the disease.
2. Hypertrophic arthritis, being a degenerative process, is best relieved by the elimination of all trauma to the affected joints and by the application of such measures as will stimulate the local circulation.
3. Rheumatoid arthritis appears to be a chronic infection and should be treated as such.
4. Unfortunately there is no standard therapy for rheumatoid arthritis at the present time, but there are certain measures, such as rest, elimination of focal infections, physical therapy and regulation of diet, that have wide acceptance. Climatic therapy and vaccine therapy are also well thought of in many clinics.
5. My method of treating rheumatoid arthritis can be summed up in one word, "rehabilitation." This begins with rest and elimination of all foci of infection. Patients that show evidence of streptococcal infection receive streptococcus vaccine, usually by the intravenous method. In addition to these measures, a carefully regulated diet, reinforced by vitamins, adequate climination through the intestine, bladder and skin, and carefully supervised physical therapy are looked on as valuable adjuncts in the treatment. Iron and arsenic are the most valuable drugs for building up the patient, and salicylates are in high favor for relieving pain and discomfort.

33 East Sixty-First Street.

THE ORTHOPEDIC AND PHYSICAL
THERAPEUTIC TREATMENT OF
CHRONIC ARTHRITIS

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BOSTON

The orthopedic treatment of chronic arthritis should start at the very beginning of the arthritis and should be carried along in close cooperation with the medical care.

There are three objectives in the treatment of chronic arthritis: (1) to control and stop the disease, (2) to prevent deformity during the course of the disease, and (3) to restore the patient to his normal life as functionally capable as possible. A fourth objective might be added to prevent recurrence of the disease. This might seem unnecessary but is an important factor in the follow up of every case. I consider this as important as any part of the treatment, since relapses are common.

The medical problem in the first of these objectives demanded of treatment I shall not discuss, yet there is a very practical way in which the orthopedist can materially aid in the success of the medical treatment. He can secure the best use of the body through training, just as is done in the development of every athlete; and the body resistance and strength come only with physical and functional perfection. This means good posture. Like every machine, to do its best work the body must be used correctly. The physiologic function must be as near normal as possible, especially in the chronic arthritic patient, who seems so totally unable to cope with his disease.

Faulty posture, or poor body mechanics, due to whatever cause—fatigue, carelessness, disease—does handicap the body in its work. A crumpled posture with sagged ribs causes pressure and displacement of the thoracic and abdominal organs. Their capacity to do normal work is inevitably decreased. Secretions and muscular activities are changed or inhibited entirely. Even under ideal conditions of rest, diet and hygiene this unnecessary hindrance to normal physiologic activity may prevent recovery, resistance may never be developed, and the many unknown factors may never be overcome unless the resistance of health can be secured. Such health comes only from the inside, depending on whether normal physiologic function can be restored.

OBJECTIVES OF TREATMENT

All arthritis is a constitutional disease. Inflamed joints are only a symptom of it. It seems evident that the fundamental physiology of the patient with rheumatoid arthritis is not normal. The heat regulating apparatus is disturbed. The circulation is out of order, as manifested by variations in the superficial circulation of the skin and extremities, especially the fingers and toes. These variations are undoubtedly present in other parts of the body, especially the organs of the abdomen, which are not accessible to observation. The vasomotor control is unstable. The basal metabolic rate is very often subnormal. The blood pressure is low. The function of the gastro-intestinal tract is below par. There is always secondary anemia. This evidence points toward a disturbed physiologic and

subnormal functioning of many parts of the body. Much of this disturbed physiologic functioning can be ascribed to incorrect use of the body and faulty posture, which crowds the abdominal viscera. It is not at all infrequent to find that correction of posture by systematic corrective exercises and rest, with corrective positions, remedies many of the functional physiologic failures that I have mentioned. Therefore, from the very beginning of the treatment of arthritis the orthopedic surgeon, by correction of posture, can very materially aid the medical man in his fight to stop the disease. The correction of posture can be best started by rest positions in bed, where the treatment of every case of arthritis should begin. Regular positions of hyperextension, with the pillow under the shoulders, with the hands under the head, will expand the chest, widen the costal angle and raise the diaphragm. This raises all the organs of the abdomen, and the normal pump action of the diaphragm gives better circulation throughout all parts of the abdomen and extremities. A three weeks trial of this position for one-half hour three times a day is adequate to convince one of the truth of this statement.

Another position of circulatory importance is the face prone position, which is simply lying face down over a pillow. It changes radically the position of all the abdominal organs and thus relieves pressure and pull when the patient is on his back in bed. Combined with this corrective work, physical therapy is of immense importance in the stimulation of circulation of the joints by the use of general body exercise. This consists of breathing, abdominal exercise, rib stretching and the use of the trunk. General massage also stimulates circulation in the extremities, but one must be careful about touching joints that are inflamed.

While the patient is in bed, heat can be used with great benefit. It promotes better body temperature. Hot air bakes, steam baths and hot packs to the abdomen and back are often used. Local circulation is improved by packs, bakings, diathermy, infra-red radiation and sunlamps. These relieve pain and promote rest, relaxation and circulation. Fatigue must be avoided. Later good use of the body can be maintained during the convalescence while the patient is unable to stand or sit correctly, by the temporary use of supports. These are corsets, braces or even jackets. It is not necessary to go into details here. This can be found in the literature. Suffice it to say here that correction of body mechanics is being found of increasing value in the treatment of arthritis as developing a background for the restoration of normal physiologic function and functional stability, on which normal chemistry and resistance to the disease and environment depend.

Resistance to environment seems to be completely lost in most arthritic patients of the rheumatoid type. Restoration of the physiologic function as well as control of the environment seems increasingly necessary for recovery.

The second way in which the orthopedic surgeon is able materially to help the arthritic patient is through prevention of deformity early in the disease. It seems as necessary to prevent deformity as to control the disease itself, because in the past it has been found that many patients who have been cured of arthritis have been unable to lead a normal life because of the deformities that have resulted. The keynote of prevention of deformity then is to anticipate what is likely to happen and to see to it that flexion, which is the characteristic deformity of all rheumatoid arthritis,

does not occur. Almost every deformity in arthritis is a flexion deformity. Flexion is due to contraction of muscles. Contraction of muscles is the result of an attempt to stabilize or splint the joint during the acute, painful stage. If nature's attempt at splinting is anticipated and the joint is put at rest in light plaster splints before the muscles have been brought into play to protect it, the necessity for muscle spasm is avoided. The patient relaxes the protected joint with comfort. Rest is secured with the relief from strain and irritation. The artificial protection is given the joint before the muscles have had a chance to produce flexion deformity. It has been found that the disease itself subsides much more quickly, the patient has more comfort, requiring less analgesic medicine, and the acute stage of the disease is materially shortened. Early protection is necessary, however, to accomplish this end. Thus much time is saved, the patients are relieved of the necessity for splinting the joints themselves, and the joint deformity is far less likely to occur.

There are, however, certain dangers that must be recognized: Rheumatoid arthritis tends toward ankylosis. In order to avoid this danger the supporting plasters must never be left on a joint more than forty-eight hours. Usually by this time the joint inflammation has subsided sufficiently to allow gentle motion. The plaster is bivalved and the joint is moved a little each day, so that the danger of adhesions is overcome. The irritation of these daily exercises is minimal, as during the greater part of the time the joint is at rest. Gradually the time of exercise is lengthened while the time of rest is shortened, until finally the joint needs protection only at night. Protection at night is more important than during the day because if people are observed when they are asleep it is found that the joints are invariably flexed at this time. After the disease is quiescent the use of the joint is permitted during the day. It has been my experience that in this way not only are deformities prevented by being anticipated, and protection given in time, but more motion is secured in the joint as a result of this early rest.

It seems probable that much of the inflammation in the joint during the acute stage is aggravated by the trauma of use, and much damage is produced. In support of this theory it was found that the right hand of a right-handed person was invariably worse than the left, and vice versa. Use, therefore, during the acute stage injures the joints. Since I have been using splints and protection I have had better functional results in the final outcome than when the joint was not protected. It is a very simple thing to make plaster splints. It can be done in the hospital or at home with slight expense or trouble. The splints can be renewed whenever necessary. They are comfortable, easily adjusted and usually fool proof, but they should not be left on too long. One must constantly have in mind the possible deformities that will occur in joints, and with the first indication of inflammation in a joint, the doctor in charge should be on the lookout for trouble and forestall it. In making splints for the joints, position is important. If ankylosis is going to take place, the most usable position should be thought of and also the one of greatest relaxation for the joint in which all muscle spasm is relieved. This simply requires a little thought and imagination.

The third object in orthopedic treatment of chronic arthritis is correction of deformity and the restoration of joints to normal function as far as possible. This

may first be attempted by the same method I have described for prevention. A joint that has already begun to flex but is not too bad very often will straighten out if the plaster splint is applied, and without strain the joint is held in a rested relaxed position for a day or two. It will be found at the end of this time that the muscles have relaxed so that the joint can be straightened several degrees farther. A new plaster is then applied in the new, corrected position. Again the joint is rested. This may be repeated indefinitely as long as correction is being obtained. The plaster, however, must be bivalved and the joint allowed exercise as in the case of early prevention. In this way in all parts of the body many cases of contracted joint deformity can be corrected. It requires meticulous care and constant supervision.

The second method of correction of deformity is by corrective splints such as the Thomas caliper splint for the knees, various banjo splints for the hands, cock-up splints for the wrists and the airplane splint for the shoulder. The third method, in cases in which correction cannot be obtained by those already mentioned, is manipulation of the joints under an anesthetic. Breaking up of adhesions is often of great value. One must, however, carefully select the case and be absolutely sure that the arthritis itself is in the quiescent stage, because manipulation of an active joint often results in complete ankylosis and increases this tendency to fusion. Manipulation should also be very carefully done, because there is danger of breaking the bones when the bones are much atrophied. It is not at all uncommon to obtain a traumatic fracture of the lower end of the femur as a result of manipulation of the knee, and fracture of the radius is not uncommon in manipulation of the wrist.

The fourth method of correction of deformity is by open operation. Operation on arthritic joints is not the serious matter it once was considered. Apparently arthritic joints heal easily and are no more apt to become infected than any other kind of joints, and the operation on an arthritic patient carries no more risk than on other depleted persons. It is, however, absolutely essential that in operating on an arthritic joint the disease itself should be as near a quiescent state as possible. It is, of course, sometimes necessary to operate before the quiescent stage is complete in order to prevent catastrophe, but as a rule one should wait until the disease is quiescent.

Time does not permit me to go into the technic or description of all the various operations. These can be obtained from the several articles on this subject. There are, however, a few operations that have been satisfactory in the hands of men who are accustomed to operating on arthritic patients. One of the most successful of these is the posterior capsuloplasty developed by Dr. Philip D. Wilson. When the posterior capsule is tight and contracted and has become very much thickened, manipulation is not successful. Correction is impossible without splitting the posterior capsule and stripping the lower end of the femur in back. This operation is most successful in correction of the flexed position of a knee when there is only a little subluxation and the patella is free. Synovectomies are of value in joints blocked by synovial overgrowth. Arthroplasties have been performed on the knee quite successfully in many cases. Arthroplasties on the elbows are almost invariably successful, giving a very

satisfactory, useful arm. Operations on the hands so far have not been entirely satisfactory, although progress is being made in developing different forms of technic for such operations. Occasionally operations on the hips are useful, but they are apt to leave a rather unstable joint. They are, however, used in many cases to give a movable joint. Osteotomies can be used to correct adducted legs when the hip is stiff. One of the most important things to remember in the operative work on arthritic joints is that the patient should have a period of intensive training before the operation is performed. We have found at the Robert Breck Brigham Hospital that a month or two of training of the affected leg or arm in muscle exercise and control is important because motion can be begun sooner after operation as a result of such training. The patient is prepared to do the various exercises required as soon as the wound is healed, and far better results have been obtained in operative cases by this preoperative training.

Here logically is the place for physical therapy. The principles back of physical therapy in arthritis are age old. They are directed toward improvement in local and general circulation, relaxation, and the development of muscles. Good circulation produces healing, and heat in any form, dry, moist or diathermy, improves circulation, drawing blood to the part. It is the first physical agent to be thought of in arthritis. The general principle of all heat is to dilate the superficial blood vessels, to bring circulation to the inflamed joint and in this way promote healing and relieve pain, congestion and swelling. Heat has also been used in a general way in order to promote sweating and general relaxation and to raise the temperature to produce fever. Many methods have been used for this, such as the big dry baker, the mud bath and the steam bath, and, recently, diathermy to raise the temperature of the body has been tried with reported success.

The second physical agent used is massage. This stimulates the circulation in the skin and muscles and secures a fresh blood supply to unused muscles. It acts as a passive exercise and has been found to be very beneficial in the treatment of arthritis. However, the massage of swollen joints is not indicated, is apt to produce trouble and should never be done. General massage promotes better general physiologic function and better muscle tone and is very beneficial for those who, being bedridden, are unable to take any form of exercise.

Exercise is the third physical agent. As soon as a person is able to do exercises himself, active exercise is the best way to secure muscle massage and heat regulation. In exercising one should always consider the use of the joint, for overuse is detrimental to it. Exercises should be directed toward body correction first. Such corrective posture exercises as deep breathing, abdominal muscle control, rib stretching and use of the diaphragm and trunk are ideal and are permissible even in bed with patients who are unable to use their joints. Regular, systematic training in breathing and use of the diaphragm have permanent beneficial effects on the circulation and functions of the body. They have often been found of great benefit at the early stage of the disease in keeping up the tone, circulation and physiologic function of the body. Fatigue should be avoided in all cases of arthritis. Exercises should never be pushed to the point of fatigue.

I have said very little about hypertrophic arthritis, or osteo-arthritis, because it has much less serious consequence than the rheumatoid disease. It is a degenerative disease of increasing years and is the result of gradual injury of the joints. It is a reaction to trauma. When the trauma stops the changes stop, and the principle of orthopedic treatment is the rebalancing of the weight to stop the strain on the feet, knees, hips and back. Correction of the mechanical use of the body and a support for the joints involved, such as plates, knee splints, back braces, corsets and Thomas collars, which relieve the mechanical strain, are called for. The details of orthopedic treatment can be best found in orthopedic textbooks.

CONCLUSION

Arthritis is a constitutional disease. It requires all the care that can be given to control it, as it involves the joints, and deformity is a result of the disease. Orthopedic consultation should be obtained at the beginning of the disease before deformity has occurred. The attempt to correct the deformity is quite unsatisfactory, and prevention is comparatively easy in the early stages. This is secured by the use of light splints in anticipation of what is likely to happen; protecting joints during the acute stage is the quickest way to relieve pain in them. Splints should never be continued for long periods. Rest shortens the convalescence. Joints that have been deformed can be corrected in many cases by the use of supports applied serially, by various forms of apparatus that cause forced stretching, by manipulation and by surgery. However, joints are never so good after deformity has once occurred, no matter what method of correction is used, as if the deformity had never been allowed to take place. To this end the challenge to the orthopedic surgeon is to work in conjunction with the medical man from the very beginning of the arthritis and never to relax his efforts to promote normal physiologic function by correction of postural defects and to keep the joints from developing contraction deformities.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. IRONS, CECIL AND SWAIM

DR. WALTER BAUER, Boston: An accurate diagnosis is the first requisite in treating any patient with joint disease. Accurate diagnosis and classification of joint disease are much easier if one employs a simple classification such as that proposed by Allison and Ghormley, who divide joint disease into two groups: (1) etiology known and (2) etiology unknown. The arthritides discussed here fall into the unknown group. One must appreciate that these two forms, degenerative and rheumatoid arthritis, are in no way causally related even though one individual may have both diseases. Degenerative (hypertrophic) arthritis is not caused by a bacterial agent. It represents a form of joint disease in which the joint changes are degenerative in nature, resulting from the "wear and tear" of life and increasing age. Such joint changes may be present and yet cause no symptoms. Treatment is often not indicated; if so, weight reduction and the correction of faulty body mechanics are most important. One must remember that no treatment can be expected to restore the joint to normal. It can only relieve an already diseased joint. After listening to these papers, one appreciates that no standardized treatment for rheumatoid arthritis exists. There are a number of reasons for such a state of affairs: 1. It is a disease of unknown etiology. 2. The natural course of the disease without treatment is not known. 3. The disease is characterized by remissions and relapses. Remissions may last months or years. Therapy has often been given credit for such remissions, and

in consequence all manners and forms of treatment for the arthritic patient exist. 4. Each arthritic patient is an individual problem and therefore should not be subjected to a standardized form of treatment. No one has a right to speak of therapeutic results unless the conditions of study are very rigidly and adequately controlled. There is no specific treatment. Rest, both mental and physical, is most important. However, maintenance of joint motion is essential. Physical therapy is most important. I cannot subscribe to all the claims made for posture. The diet should be well balanced, adequate in respect to vitamins, calories, calcium, phosphorus and iron. There is no proof that a low carbohydrate diet is indicated or efficacious. Next in importance are removal of focal infections, orthopedic measures, foreign protein therapy, hyperpyrexia, climate, psychotherapy, drugs and vaccines. Vaccine therapy allows for frequent visits, thereby enabling one to observe the course of the disease and suggest many helpful measures.

DR. LINN J. BOYD, New York: The chronic nonspecific arthritides can be resolved into two components: first, the constitutional element; second, the releasing factors. The danger of the constitutional approach lies in an unjustified therapeutic resignation arising out of a misconception of "constitution." Paradoxically, although many syndromes now compose the heterogeneous conglomerate of chronic deforming arthropathies and though one may fully anticipate the removal of many under new names, it is possible that attention has been focused too intently on the joint manifestations. Careful study of several hundred case histories indicates clearly a prodromal stage of fleeting neuralgias, localized cyanosis, "dead fingers" and a wide range of symptomatology suggestive of the view that the joint picture is a late event in the evolution of the disease. To review the releasing factors here would be impossible and unprofitable. Although many groups of releasing factors are appreciated, they are frequently not considered in the single case: direct traumas by mechanical disturbances are continually overlooked as well as marked overweight and underweight; I have seen the combination of Perthes' disease and Köhler's disease only twice, both instances occurring in pituitary dwarfs; Beck's disease is apparently characterized by goiter and arthritis; probably other endocrine glands may play rôles, so that there is an endocrine panel in the constitution. The suggestions afforded by the joint lesions of gout, of ochronosis, are indicative of joint damage of metabolic origin. The joint phenomena of syringomyelia and tabes imply the possibility of neurotrophic phenomena in arthritis. The doctrine of focal infection was a great advance in the conception of the chronic nonspecific arthropathies and occasional cases may be encountered in which the removal of a focus is followed by prompt remission of symptoms. In my experience these cases are not common even in the so-called infectious group. I advise removal of foci with the expectation of preventing the development of some serious diseases but without much expectation of influencing the existing arthritis. In regard to vaccines, I have gradually found less and less occasion for their use, although at times they yield brilliant results. I use iodine almost as a routine procedure; I prefer ordinary tincture of iodine, giving drop doses well diluted in water, going from one to nine drops daily and then down. Several such courses are repeated.

DR. W. PAUL HOLBROOK, Tucson, Ariz.: A tremendous advance in the care of arthritic patients would occur if physicians would accept the broad constitutional, many-sided etiologic factors that Dr. Irons brought out in his paper. The disease is constitutional and must be approached not from one angle but from every possible deviation from the normal in the individual patient. There was one point in Dr. Cecil's paper that I thought warranted emphasis: the question of vaccine. It should be remembered that vaccine or any other so-called specific therapy, if it is recommended as a specific therapy, is used by the general practitioner to the exclusion of the fundamental physiologic program. If that is not true, there should be no criticism of the use of vaccine by competent investigators. The hazard exists only in ignoring the more fundamental problems of the patient's disease. So far as Dr. Swaim's paper is concerned, I simply want to emphasize the importance

of his statement, because, of the last 1,000 patients that I have seen with atrophic arthritis, 85 per cent entered the clinic with a preventable deformity.

DR. MAURICE F. LAUTMAN, Hot Springs, Ark.: The greatest step forward in the conquest of arthritis was made when the fact was established that arthritis is not primarily a disease of the joints but rather a constitutional disease that eventually affects the joints. Dr. Irons' excellent dissertation leaves but little to be added. His insistence on a broad-viewed attack on the disease makes it clear that any successful plan of treatment must include the correction of every physiologic abnormality. I believe, however, that the simultaneous employment of every measure that offers any possibility of help for these patients is infinitely more effective than temporizing first with one plan of attack and then with another. One phase of the treatment of arthritis that deserves greater emphasis in this country is the spa treatment. This does not refer to this or that fanciful constituent of the water at any particular spa but rather to the regimen at the better type watering place or health resort. Most of them are situated inland and from a climatic standpoint are ideally suited to the arthritic patient. The communities that house them are usually small and free from industry, and the clear air and restful surroundings are a tonic in themselves. The change in environment with freedom from household cares and business worries permits a degree of mental rest that is so important and yet so difficult to obtain at home. Patients coming to a health resort usually do so because of some friend who has achieved a spectacular cure, and the idea of coming to a place where they are going to get well is an excellent mental stimulus for these habitually discouraged patients. Being imbued with the idea of getting well, they enter wholeheartedly into the business of getting well, cooperating much better and following instructions to the letter. The value of hydrotherapy and physical therapy has become increasingly evident in recent years. The beneficial effect of supervised exercise, hydrotherapy and physical therapy is always enhanced by the employment of adequate periods of rest, which the spa regimen affords, and any one who treats many cases of arthritis will agree that a regimen which includes the correct application of rest, exercise, diet, hydrotherapy and physical therapy will meet most of the requirements for the successful treatment of arthritis.

DR. S. C. WOLDENBERG, New York: Sulphur therapy in the treatment of arthritis was introduced at the veterans' hospital, Bronx, New York, in February 1932. Research in Europe had established its value and it was introduced as an adjunct to a comprehensive treatment called for by the individual needs of each patient. The results obtained exceeded our most sanguine hopes. There are more than 60,000 veterans disabled by arthritis. They show a disease history averaging over ten years, some with continuous hospitalization exceeding two or three years. Of 150 patients aged from 38 to 42 years, treated with sulphur, two thirds were advanced cases; six had every joint involved. Maximum hospitalization under the sulphur therapy was 129 days. All were cases of atrophic arthritis. The colloidal sulphur (sulphur diaspore) used was in two forms: 10 mg. for intravenous medication and 20 mg. for intramuscular medication. A high temperature, inflamed joints and marked perspiration followed the intravenous injections in many acute cases. After the fifth or sixth injection the spasticity of the muscles, the effusion in the joints and the pain began gradually to disappear. We made one radical departure. Whereas 5 mg. of sulphur twice or three times a week had been the maximum known, we found it necessary to give as much as 10 mg. every day in severe cases to obtain beneficial results. The cystine in this group ranged from 6.5 to 9.8 per cent prior to treatment. Sulphur was given until a normal of from 12.5 to 13.5 per cent resulted. The sedimentation rate was inversely proportionate to the percentage of cystine. Treatments, it was found, decreased the leukocyte count when a high count was observed. I believe that it must be considered a possibility that infection, metabolic deficiency and circulatory disorders—not one, but all—are factors, although any one of them might be responsible for the break in compensation that brings on the onset of arthritis. Each case

requires individual study. Sulphur therapy, despite its great value in our opinion, can be recommended only as an adjunct. That the sulphur deficiency in patients with arthritis can be remedied is confirmed by our experience. Treatment was found effective in freeing the patient from pain, removing acute symptoms and improving metabolic stability. Although clinically each case showed decided improvement, no joint changes demonstrable in a roentgenogram were apparent as a result of treatment. The results obtained warrant further study under auspices appropriately suited to this purpose.

DR. HEINRICH F. WOLF, New York: Dr. Irons succeeded admirably in stating the problem and indicating a promising approach. But when he speaks of a workable classification, the question arises just what that means. When one speaks of therapy, a classification on pathologic anatomic grounds is of no value except for prognostication. Grouping may become a dangerous procedure as, in giving treatments, one is always dealing with an individual case and not with a group. This is evident in the use of physical therapy procedures. Rheumatoid arthritis is considered of infectious origin. Suppose the foci have been removed. There still remains a rheumatoid arthritis. But while therapeutic procedures, such as heat, may have been wholly unsuccessful before the removal of the foci or may even have aggravated the condition, they may be very helpful after the removal of the foci. That means that the identical pathologic condition in the same patient reacts as two entirely different disease entities. Or let osteo-arthritis be considered. It makes all the difference whether this condition is due only to wear and tear or whether it is complicated by an infectious process. In the latter case, according to present views, there exists an osteo-arthritis combined with a rheumatoid arthritis and the classifications are topsy-turvy. I advocate a management of the acute arthritis which differs radically from that suggested by Dr. Swaim. Is rest, as he recommends, a treatment? I have pointed out in my textbook on physical therapy that the ideal treatment of acute joint conditions is the application of iced compresses. They reduce the inflammatory process, the edema, the arterial hyperemia that is harmful because of the disturbed lymph circulation. They relieve the pain immediately and greatly shorten the course of the disease. I don't know of failures. The physiologic basis for this treatment has been established by Landis, Drury and Jones, Goldsmith and Light. Their experiments explain the disastrous effect of heat applications. I advocate even massage after the very acute symptoms have subsided and no pus is present. Under massage, I understand very gentle effleurage. It instantly relieves the spasm and the pain. The remarkable relief of pain by the use of iced compresses and gentle massage permits early motion and thus aids restoration of function.

DR. WILLIAM J. KERR, San Francisco: These papers bring together the soundest information available on the subject of chronic arthritis, with especial reference to the atrophic arthritis. A good many discussions in the arthritis committee have been held during the last two or three years about bacteria, positive blood cultures and specific vaccines in chronic arthritis, and it seems to me that an opportunity has been lost to make some controlled studies. If physicians were as careful in making blood cultures of other patients who have debilitating diseases as they are in atrophic arthritis, about as many positive cultures in the blood as in that disease would be found. The profession may be going through the same experience it did many years ago in Hodgkin's disease. It has seemed to me that there are a number of methods of treatment that have a common denominator, and perhaps this should be kept more in mind when considering every new method of treatment introduced. I believe that in most every valuable method of treatment there is improvement in the circulation of the joint by local treatment at the site, or improvement in the circulation of the joint or joints through improved general circulation. I wish only to mention some of the methods by which this may be brought about. Among the general measures may be suggested climatic change. If this is considered in the proper light, I think it will be agreed that a warm climate will perhaps open the periphery a little more, and perhaps the contrasts between day and night that are experienced in the southwestern

desert regions will help to reeducate the vessels to the joints to promote better local circulation. The various methods of producing nonspecific protein shock, or the use of drugs by which a reaction is brought about, will tend to open up the periphery and improve the circulation of the joints. Perhaps many of the so-called specific vaccines react in this manner. Possibly there is a streptococcus toxin that may act like tuberculin and may have to be considered differently. Possibly vitamin C, which has a very important action on the cement substance of vessels, will be found to be beneficial. The use of sympathectomy or other measures affecting the vasomotor nerves leads to an improvement in the circulation to the joints affected. There are, of course, the various local measures of treatment, which bring about hyperemia, either passively, such as hydrotherapy, warm baths and mud baths, which tend to bring about temporary improvement in circulation, and then the use of cold packs or ice, which bring about a reactive hyperemia. The use of liniments, counterirritants, blisters and so on act by producing hyperemia locally. Then there are massage and a variety of other measures.

DR. H. M. DAVISON, Atlanta, Ga.: The last eighteen months Dr. Mason Lowance and I have been using a cabinet type of fever producer called a hyperpyrexator. This machine produces the heat by the use of the infra-red burner. The advantage is that the fever production is not caused by the introduction of any foreign substance. The temperature produced may be controlled, and the patient suffers relatively little discomfort. The treatment is safe and may be given in the doctor's office. A large percentage of the cases have been sent to us and treated in conjunction with the orthopedic surgeon or other internists. They had already been treated by different methods for periods varying from six months to fifteen years. The temperature of these patients has seldom been raised above 103.5 F. The number of treatments varied from three to thirty. We have treated 120 cases. Approximately 33 per cent of the patients have had total relief from pain and varying degrees of therapeutic functional improvement. These cases varied from one rather marked deformity to lesser degrees. The varying amount of therapeutic functional improvement in some cases has been marked. In others it has been slight, depending somewhat on the type of deformity. In addition to this 33 per cent of total relief, 40 per cent have received marked improvement. Only 3 per cent have not been improved at all, and only 8 per cent have received so little improvement that the patients themselves did not count the treatment worth while. We believe that this method of producing therapeutic fever will prove to be a valuable adjunct in the treatment of chronic arthritis.

DR. S. ADOLPHUS KNOFF, New York: Being interested mainly in tuberculosis and hardly ever seeing any cases of arthritis, I have but little to add. There is, however, one physical therapeutic means which I employ for tuberculous patients with apical lesions, which I think should also be helpful in the management of arthritic cases. I refer to diaphragmatic respiration, which, I think, justly deserves to be classified as a physical therapeutic means. When one deals with an intelligent patient, this method of breathing is not difficult to teach, but with the less intelligent it often requires a good deal of patience and time. I have described the method in my official report to the United States government on tuberculosis and in a number of other contributions. I shall be glad to send a detailed description of how to teach this method to any one who asks for it. What benefit could an arthritic patient derive from abdominal breathing? Aside from the many reports I have received from physicians who practice this method on patients or on themselves, I shall quote only the following: "It helps to relax, it quiets the heart, it lessens fatigue and increases endurance. It improves the portal circulation and thus prevents the distressing symptoms of gas accumulation in the abdomen." The method has also a distinct psychologic effect. The patient cannot practice diaphragmatic respiration without concentrating on it. In other words, he cannot think of anything else except his slow inhalations with the aid of the diaphragm and the equally slow exhalations. He forgets about his physical suffering and is even helped to fall asleep.

DR. JAMES PATTERSON, Scarsdale, N. Y.: In observing many clinics handling arthritis, I find that each one is inclined to ride a hobby, whether it is the use of serum, vaccine, postural rest or what not. The thing that is common to all of them is giving the patient rest, good physiologic hygiene, and encouragement. Dr. Irons said that the duration of this disease is fourteen years. That is quite conservative. How many practicing physicians can keep a patient who is continually uncomfortable, continually crippled, under observation and keep him encouraged for a period of two or three years? Few can. Dr. Cecil says that the patient must reduce his weight. That is good, but one must study the patient before one has him reduce too much. The loss of 25 pounds (11 Kg.) may give quite as much distress to the gastro-intestinal tract of some patients as it will give relief to others from the reduction of pressure on sore joints. In these cases a great many remissions and exacerbations occur, and sometimes the disease is self limiting. After the pain is gone, the patient still has the mental lameness and the inability to use the muscles, which has been engendered by the long continued distress, and one has to start muscle reeducation. If one does that, an astonishing increase in movement occurs. The things to keep in mind are that it is practically impossible to keep a patient with this very chronic disease under one's own hands long enough for practical benefit; physicians should arrange through the committee on arthritis for special hospitals for such cases and send them there as soon as the diagnosis is made, because prolonged rest is more needed than anything else.

DR. A. S. GORDON, Brooklyn: I would like to subscribe to the view expressed here that the so-called rheumatoid arthritis is of infectious origin and that the etiologic agent in the vast majority of cases is in all probability some form of streptococcus. Dr. Cecil has succeeded in isolating in most cases a hemolytic streptococcus. This is not my experience. I found in most cases a nonhemolytic streptococcus. It is almost an axiom in medicine that every one has or has had some form of tuberculosis and that all, or almost all, have become immunized to it. Those who have not succeeded in developing that immunity passed on long ago. Of those who remain, a certain number will develop sooner or later some active form of tuberculosis, usually some chronic form. By similar reasoning and analogy, almost all have, or have had, some form of streptococcal disease, and almost all have become immunized to it. A certain number will break down sooner or later in life with some form of chronic streptococcal disease, and I believe that chronic streptococcal disease is a definite clinical entity. Analogous to the tuberculin type of reaction, in most adults there is a common type of an intradermal reaction due to some primary streptococcal disease similar to the tuberculin test. For a few years I have been working on a large series of cases, which have included anywhere from the very first attack of arthritis following acute infection up to the type of case lasting for thirty-one years, and I have been working with toxins instead of vaccines, as Dr. Cecil has. I found in treatment that a modified toxin or a detoxified toxin was very encouraging in its results, and I have continued this treatment for quite a long time. Some patients have been under observation for as long as two years, and some of them have been discharged more than a year and they are still doing fairly well. The diet is just as important as it is in tuberculosis. The general mixed diet is important in any chronic type of infectious disease. As to the question of allergy in this infectious type of chronic arthritis, I believe there are two factors that stand out showing the importance of allergy in this disease. First, the joint manifestations in the real type of infectious arthritis usually occur one, two, three or four weeks following an acute infection, such as an acute tonsillitis. Homer Swift in his work on acute rheumatic fever refers to this fact as the secondary infection, calling the first disease the primary infection and the joint manifestations the secondary infection. The other fact that I consider very important is that the rheumatoid arthritis joint never suppurates. I think that these two facts, that it follows an acute infection and that the joint never suppurates, account for the allergic state of this disease.

MUSCULAR DYSTROPHY, MUSCULAR
ATROPHY, MYASTHENIA GRAVIS
AND STRABISMUSCLINICAL AND BIOCHEMICAL STUDIES OF THE
EFFECTS OF AMINO ACID THERAPYCARLO J. TRIPOLI, M.D.
WILLIAM M. McCORD, Ph.D.
AND
HOWARD H. BEARD, Ph.D.
NEW ORLEANS

Following the contributions of Aran,¹ Charcot,² Marie and others the essential pathologic lesions responsible for the various myopathies have been diligently studied. Still these attempts have resulted in few fruitful rewards. At present, with the usual standards of diagnosis, accurate determination of the etiologic factors in most of these cases taxes the diagnostic acumen of the best trained clinicians. It seems desirable, therefore, to study the various myopathies, from a metabolic as well as from a clinical point of view, with the aim of evolving observations that may have diagnostic and prognostic applications as well as distinct therapeutic value.

The advent of amino acid therapy in the treatment of myasthenia gravis, primary muscular dystrophy and secondary muscular atrophy has opened such vast and comparatively fertile fields of scientific endeavor that it appears that the biochemical investigation of these cases should result in many interesting and important contributions, particularly as to unbalanced creatine-creatinine metabolism, morbid physiologic processes, differential diagnosis and prognosis, and so has it been.

This newer concept has already resulted in distinct important contributions, especially as regards the clinical therapeutic results in cases of myasthenia gravis and pseudohypertrophic muscular dystrophy. However, differences of opinion have arisen concerning the various metabolic relationships and therapeutic effects following amino acid therapy. Especially is this so in certain types of muscular dystrophy and that large group of cases usually referred to as muscular atrophy secondary to pathologic lesions in the central nervous system, or abolition of function of the lower motor neurons—the so-called second trophic units.

In view of these conflicts, metabolic studies were made on thirty-four patients, representing eleven distinct types of myopathies and atrophies, grouped according to their clinical diagnosis. The creatine-creatinine metabolism of each patient was studied for a period of five days before the amino acids were administered. It was also studied through three similar periods of five days each after the therapy was begun. The metabolic determinations were reviewed in the light of the diagnosis and subsequent clinical results in each case in an attempt to elucidate correlative information.

For convenience, we have classified the cases more or less on a pathologic-clinical basis, as recommended by Wechsler,³ rather than as eponymic entities (table 1).

CREATINE-CREATININE METABOLISM

Women and children may eliminate a certain amount of creatine which is considered physiologic, but creatine is usually not excreted in the urine of normal adult men. The creatinuria observed in any condition is somewhat dependent on the protein intake. There was no attempt to make studies of nitrogen balance in our work because the nitrogen balance is not of particular importance as regards clinical results, as long as the patients obtain sufficient protein for normal metabolism. Creatinuria has also been observed by numerous investigators in many diseases affecting the muscular system, a review of which up to 1928 may be found in Hunter's monograph.⁴ It was also present in the following instances: in cases of progressive muscular dystrophy, reported by Milhorat, Techner and Thomas,⁵ Milhorat,⁶ Kostakow and Slauck,⁷ Harris and Brand,⁸ Tripoli and Beard,⁹ Reinhold, Clark, Kinsley, Custer

TABLE 1—Classification of Syndromes of Muscular Dystrophy, Muscular Atrophy, Myasthenia Gravis, and Strabismus

Group I—Primary Myopathies
1 Primary muscular dystrophy (usually of the lower limbs)
(a) Progressive muscular dystrophy
(b) Pseudohypertrophic (Duchenne)
(c) Facio-scapulo-humeral (Landouzy Dejerine)
(d) Bulbar (Hoffmann)
(e) Juvenile scapular (Erb Zimmerlin)
(f) Infantile hereditary (Leyden)
2 Amyotonia congenita (Oppenheim)
3 Myotonia congenita (Thomsen)
(a) Early life (hereditary)
(b) Myotonia acquisita
4 Myotonia atrophica
5 Muscle wasting from disease
Group II—Progressive Nuclear Muscular Atrophy
1 Mainly of small muscles of the hand (Aran Duchenne)
2 Hereditary, familial, of infancy and childhood (Werdnig Hoffmann)
3 Subacute and chronic poliomyelitis
4 Bulbo-facial of childhood (Fazio Londe)
5 Progressive bulbar palsy (glossolabiolaryngeal, of Bouchard)
6 Chronic progressive ophthalmoplegia (von Graefe)
7 Multiple sclerosis
8 Amyotrophic lateral sclerosis (Dejerine)
9 Progressive spinomuscular atrophy
10 Friedreich's ataxia
11 Paralysis from Jamaica ginger poisoning
12 Paralysis from peripheral nerve injury
13 Paresis with muscle atrophy
Group III—Myasthenia Gravis
Group IV—Strabismus

and Connell¹⁰ and Mettel and Slocum,¹¹ in cases of progressive pseudohypertrophic muscular dystrophy, reported by Brand, Harris, Sandberg and Ringer,¹² Milhorat, Techner and Thomas,⁵ Chanutin, Butt and Royster,¹³ and Tripoli and Beard;⁹ in cases of amyotrophic lateral sclerosis, reported by Milhorat, Techner

4 Hunter, Andrew. Creatine and Creatinine, New York and London, Longmans, Green & Co., 1928, pp. 218-220.

5 Milhorat, A. T., Techner, F. and Thomas, K. Significance of Creatine in Progressive Muscular Dystrophy and Treatment of This Disease with Glycine, *Proc. Soc. Exper. Biol. & Med.* 28: 609 (Feb.) 1932.

6 Milhorat, A. T. Ueber die Behandlung der progressiven Muskel dystrophie und ähnlicher Muskelerkrankungen mit Glykocoll, *Deutsches Arch. f. klin. Med.* 174: 487, 1933.

7 Kostakow, S. and Slauck, A. Glycine Treatment of Progressive Muscular Dystrophy, *Deutsche med. Wchnschr.* 59: 169 (Feb. 3) 1933.

8 Harris, M. M. and Brand, Erwin. Metabolic and Therapeutic Studies in the Myopathies, *J. A. M. A.* 101: 1047 (Sept. 30) 1933.

9 Tripoli, C. J. and Beard, H. H. Muscular Dystrophy and Atrophy, Clinical and Biochemical Results Following the Oral Administration of Amino Acids, *Arch. Int. Med.* 53: 435 (March) 1934.

10 Reinhold, J. G., Clark, J. H., Kinsley, G. R., Custer, R. P., and Connell, J. W. The Effects of Glycine (Glycocol) in Muscular Dystrophy with Especial Reference to Changes in Structure and Composition of Voluntary Muscle, *J. A. M. A.* 102: 261 (Jan. 27) 1934.

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Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

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and Thomas,⁵ and Tripoli and Beard;⁹ in acute anterior poliomyelitis, in a report by Gros,¹⁴ and in cases of myasthenia gravis, in reports by Boothby¹⁵ and Remen.¹⁶

Many of these investigators have also observed an increase of the initial creatinuria after glycine therapy

decreased creatinuria has been pointed out by Milhorat,⁹ Harris and Brand⁸ and others. We have recently completed a study of this question as regards the value of amino acid therapy in diagnosis and prognosis, and our detailed metabolic results in thirty cases of myopathies treated with amino acids will be published elsewhere.¹⁷

TABLE 2.—Creatine Excretion Before and After Amino Acid Therapy*

Case	Age	Average Creatine Excretion Before Therapy, Gm.	Average Creatine Excretion after Therapy						Type of Myopathy
			First period		Second Period		Third Period		
			Gm.	Per Cent Increase	Gm.	Per Cent Increase	Gm.	Per Cent Increase	
Group 1:									
1	37	0.44	0.73	66.0	0.52	18.2	0.42	None	Progressive muscular dystrophy; objective and subjective improvement
2	26	0.29	0.43	48.3	0.34	17.3	0.27	None	"Pay. Inf. complex"; objective and subjective improvement
3	8	0.29	0.91	213.8	0.51	75.8	0.51	75.8	Pseudohypertrophic muscular dystrophy; objective and subjective improvement
4	10	0.28	0.55	96.4	0.20	None	0.29	None	Pseudohypertrophic muscular dystrophy; objective and subjective improvement
5	34	0.92	1.48	60.9	2.11	129.3	1.14	23.9	Progressive muscular dystrophy; objective and subjective improvement
6	12	0.43	0.96	121.3	1.42	230.2	0.67	102.3	Pseudohypertrophic muscular dystrophy; objective and subjective improvement
7	12	0.31	1.02	229.0	1.00	226.0	1.02	229.0	Progressive muscular dystrophy; objective and subjective improvement
8	10	0.24	0.22	None	0.10	None	0.33	37.5	Pseudohypertrophic muscular dystrophy; objective and subjective improvement
9	11	0.23	0.42	82.7	0.19	None	0.30	30.4	Early spinomuscular atrophy; progress of disease arrested
10	28	1.63	0.96	None	0.51	None	0.63	None	Strabismus with ciliary muscular weakness; objective and subjective improvement
Group 2:									
11	27	0.73	1.67	128.7	1.09	49.3	0.38	None	Amyotrophic lateral sclerosis; subjective improvement
12	22	0.64	0.03	45.3	0.17	None	0.18	None	Amyotrophic lateral sclerosis; subjective improvement; progress of disease arrested
13	39	0.10	0.09	None	0.18	80.0	0.08	None	Amyotrophic lateral sclerosis; subjective improvement
14	54	0.07	0.07	None	0.07	None	0.10	42.9	Amyotrophic lateral sclerosis; subjective improvement
15	12	0.08	1.63	140.0	1.08	58.8	0.22	None	Hypothyroid and pituitary; subjective improvement
16	33	0.09	0.03	None	0.07	None	0.16	66.6	Multiple sclerosis; subjective improvement
17	28	0.37	1.49	302.7	0.96	159.4	None	None	Spinomuscular dystrophy; progress of disease arrested
Group 3:									
18	52	0.40	0.94	135.0	1.47	267.5	1.31	227.5	Progressive spinomuscular atrophy; no improvement
19	50	1.19	1.64	37.8	0.91	None	1.39	16.8	Pseudohypertrophic muscular dystrophy; no improvement
20	36	1.43	0.28	None	0.42	None	0.69	None	Friedreich's ataxia; no improvement
21	11	0.38	0.32	None	0.44	15.8	0.32	None	Progressive spinomuscular atrophy; no improvement
22	55	0.93	1.23	32.2	0.16	None	0.06	None	Tabes dorsalis, muscular dystrophy; no improvement
23	21	1.26	0.80	None	0.74	None	1.20	None	Muscular atrophy following radial nerve injury; no improvement
24	16	1.28	0.68	None	0.76	None	0.78	None	Progressive pseudohypertrophic muscular dystrophy; no improvement
25	21	0.33	0.48	45.5	0.53	60.6	0.40	21.2	Probable von Recklinghausen's disease; no improvement
26	38	0.36	0.36	None	0.25	None	0.25	None	"Jake paralysis"; no improvement
27	12	0.42	0.34	None	0.30	None	0.29	None	Pseudohypertrophic muscular dystrophy; no improvement for 1 month
28	25	0.00	0.12	None	0.00	None	0.00	None	Poliomyelitis (15 years' duration); no improvement
29	24	0.37	0.27	None	0.18	None	0.20	None	Paresis (muscle atrophy); no improvement
30	7	0.15	0.14	None	0.14	None	0.12	None	Poliomyelitis (4 years' duration); no improvement
31	7	0.17	0.37	117.6	0.27	60.0	0.71	317.6	Strabismus; no improvement during the first 2 months of therapy
32	6	0.74	0.68	None	0.53	None	0.31	None	Strabismus; no improvement during the first 2 months of therapy
33	3	0.56	0.46	None	0.28	None	0.23	None	Strabismus; no improvement during the first 2 months of therapy
34	8	0.37	0.23	None	0.36	None	0.91	146.0	Strabismus; no improvement during the first 2 months of therapy

* Glutamic acid was used in cases 1, 2, 3, 5, 6, 8, 9, 11, 12, 13, 15, 16, 18, 19, 20, 22, 23, 24, 25 and 27. Glycine was used in cases 4, 7, 10, 14, 17, 21, 26, 28, 29, 30, 31, 32, 33 and 34.

† The creatine excretion of this case after eleven months of therapy was 0.63 Gm., or 103.2 per cent above that of the control period.

in the various conditions studied. The increase in creatinuria was noted to disappear in a few weeks and in many cases clinical improvement was noted. The differential diagnostic significance of the increased and

Following the observations of Brand, Harris, Sandberg and Ringer¹² that glycine would increase the creatine excretion in muscular dystrophy patients, and of Beard and Barnes¹⁸ that several different amino acids

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15. Boothby, W. M.: Myasthenia Gravis: Fourth Report: The Onset and Course of the Disease, *J. A. M. A.* 102: 259 (Jan. 27) 1934.

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17. Beard, H. H., Tripoli, C. J., and Andes, J. E.: The Diagnostic and Prognostic Significance of the Creatine-Creatinine Metabolism in Various Myopathies After Amino Acid Therapy, *Am. J. M. Sc.*, to be published.

18. Beard, H. H., and Barnes, B. O.: The Influence of Feeding Proteins, Amino Acids and Related Substances upon Creatine-Creatinine Metabolism, *J. Biol. Chem.* 94: 49 (Nov.) 1931.

would increase the creatine content of young rat muscle, Milhorat, Techner and Thomas⁵ fed glycine to patients suffering from muscular dystrophies and were the first to observe its definite therapeutic effects. These important results have stimulated many clinicians to use glycine, with and without ephedrine, in the treatment of various types of myopathies. Cases of myasthenia gravis¹⁹ and pseudohypertrophic muscular dystrophy²⁰ have shown the most remarkable recovery. However, while some of the muscular dystrophies have been greatly benefited, no objective improvement has been observed in a few far advanced cases of this type and in the neuromuscular atrophies. In several of the two latter conditions, however, the progress of the disease was apparently arrested and only subjective improvement was noted as long as glycine therapy was continued. We have reviewed the literature on the clinical results and metabolic studies of amino acid therapy in several different types of myopathies elsewhere.⁹

of Folin.²² The daily excretion of total creatinine minus the excretion of the preformed creatinine multiplied by 1.16 is equivalent to the daily creatine output.

RESULTS

The clinical and biochemical results obtained in thirty-four cases are listed in table 2. For purposes of comparison, the cases may be classified into three groups.

Group 1 (cases 1 to 10). Cases in which the average creatine excretion rose from 50 to 200 per cent above that of the control period, provided this increased creatinuria soon disappeared in the third or subsequent period, showed both subjective and objective improvement.

Group 2 (cases 11 to 17). Certain neuromuscular cases that presented about the same degree of increase or decrease in creatinuria as those of group 1 showed only subjective improvement or merely an arrest of their symptoms.

TABLE 3.—Cases in Which Amino Acid Therapy was Given in Which Metabolic Studies Were Not Made

Case	Age, Years	Amino Acid Daily, Gm.	Duration of Therapy, Months	Myopathy	Progress Report
35	21	Glycine 10-15	7	Myasthenia gravis	"Masklike" expression disappearing; clinical condition very much improved
36	32	Glycine 10-15	6	Myasthenia gravis with extra-ocular paresis	Definite improvement demonstrable, and loss of vertical diplopia with return to apparent normal after three months
37	6	Glycine 10-15	8	Pseudohypertrophic muscular dystrophy	Early case with practical return to normal physique and function
38	26	Glycine 10-15	11	Pseudohypertrophic muscular dystrophy	Walks without crutches or cane with ability to perform all normal movements; physique improved; characteristic posture remains
39	44	Glycine 10-15	16	Pseudohypertrophic muscular dystrophy	Progress of disease arrested, but only slight improvement owing to the absolute atrophy of majority of involved muscles
40	61	Glutamic acid 10-15	15	Amyotrophic lateral sclerosis	Bedridden at beginning, now able to walk gradually with cane; can use hands to sew for short time; more subjective than objective improvement
41	18	Glutamic acid 10-15	15	Subacute anterior poliomyelitic paralysis (right anterior tibial and medial quadriceps)	Uninvolved muscles greatly improved; no longer uses brace or crutches when walking; no change in paralyzed muscles
42	13	Glutamic acid 10-15	8	Progressive spinal muscular atrophy	Only very slight subjective improvement
43	3	Glutamic acid 10-15	9	"Friedreich's ataxia"	General improvement noted but typical clinical picture persists unchanged

METHOD OF STUDY

The creatine-creatinine metabolism of each patient was studied over a period of twenty days. The daily excretion of total creatinine, preformed creatinine and creatine in the urine were determined over a control period of five days. At the end of this time, the oral administration of from 10 to 15 Gm. of glycine or glutamic acid in water, milk or fruit juice was begun. No change was made in the adult patient's average diet, which usually contained approximately from 300 to 400 Gm. of carbohydrate, from 100 to 125 Gm. of protein and from 90 to 100 Gm. of fat. In children, a proportionately lower caloric diet, relatively higher in protein, was advised.

The effect of the ingestion of the amino acid on the excretion of the creatine bodies was studied in twenty-four hour specimens of urine for three similar periods of five days each. The total creatinine was determined by the method of Benedict and Myers,²¹ and the preformed creatinine was determined by the method

Group 3 (cases 18 to 34). Cases in which no increased creatinuria occurred or in which the increase was less than 50 per cent above that of the control period showed no improvement. Cases 18, 25, 31 and 34 were the exceptions.

In addition to the thirty-four cases in table 2 we have made observations in nine cases in which it was not possible to make urine studies. The results are shown in table 3.

COMMENT

The criteria for improvement in the patients were based on (1) the ability of the patients to perform the usual coordinated daily routine tasks of normal individuals, (2) the strength or lifting power of certain muscles or groups of muscles, (3) the number of times the muscles were able to contract against a load before complete fatigue resulted, and (4) the length of time fatigue lasted before the recovery of the muscle was complete. Muscular contraction may be induced by electrical stimulation, but we believe that voluntary contraction of the muscle by the patient is more convenient and beneficial and the cooperation of the patient is more easily obtained.

19. Boothby,¹⁵ Remen,¹⁶ Schmitt, E. O. G.: Use of Glycine in the Treatment of Myasthenia Gravis, *Ann. Int. Med.* 7:948 (Feb.) 1934.
20. Milhorat;⁵ Mettel and Slocum;¹¹ Chanutin, Butt and Royster;²³ Boshes, B.: The Myopathies, *Physiotherapy Rev.* 14:3 (March-April) 1934.
21. Benedict, S. R., and Myers, V. C.: The Determination of Creatine and Creatinine, *Am. J. Physiol.* 18:397, 1907.

22. Folin, Otto: The Determination of Creatinine and Creatine in Urine, *J. Biol. Chem.* 17:469, 1914.

Throughout this work, practically all our patients noticed a remarkable improvement in their appetites, particularly a desire to eat protein in the form of meat. As a result of their increased food intake, practically all patients increased in weight. The stimulation of increased gastric secretion and possibly gastric contraction probably accounts for the increased appetite. Smith and Cowgill²³ recently confirmed the view held by others that increased dietary nitrogen, although not affecting the amount of pepsin, definitely increases the total amount of gastric juice secreted. Consequently, even in the cases in which no objective improvement

could be demonstrated, the patients noticed a distinct improvement in their general health. As a result of this feeling of improvement in general well being, the patients were easily induced to use their muscles. Of particular interest was the willingness of patients suffering from progressive muscular dystrophy to become very active, spending a greater part of the day "trying themselves out," so to speak, on various activities which were impossible before treatment was started.

As shown in table 2, nine out of the thirteen cases of progressive muscular dystrophy and pseudohypertrophic type of muscular dystrophy showed unmistakably marked improvement. A white boy, aged 6 years, under treatment at an early stage of this condition, apparently recovered complete physiologic function and anatomic normality, and gained about 15 to 18 pounds (6.8 to 8.2 Kg.)

over a period of ten months (fig. 1). His brother with a far-advanced stage of the disease has shown little or no improvement under treatment. In another instance, a Negro boy, aged 8 years, was bedridden at the time therapy was begun. After twelve months of therapy he was able to walk fourteen city blocks to school daily and to take part in all the games, not unlike any normal child (fig. 2).

However, four cases each of a far advanced type, although not showing any further progress of the disease, manifested no definite improvement of their condition. The probable reason for the negative results in these cases is that the majority of the important muscles were completely atrophied, and return to normal function was hardly possible. Milhorat⁹ and Tripoli and Beard⁹ have shown that the ability of the affected muscle to return to normal under this form of therapy depends on the state of the muscle fibers at the time the therapy is begun. Should pyknosis of the nuclei of the muscle fibers be present at this time the muscle fibers continue to complete degeneration and absorption. Therefore, after the therapeutic regimen has been com-

pleted either normal muscle tissue is present or completely degenerated muscle tissue is found. In a previous communication this phase of the problem together with a relatively recent theory of creatine formation is discussed in detail.⁹

We wish to make a note concerning the diet of these patients. Some workers reporting negative results in cases of pseudohypertrophic muscular dystrophy placed their patients on relatively protein-free diets while taking amino acids. All our patients took their normal amount of protein. In fact, the patients themselves desired and sometimes partook of high protein diets while taking amino acids. However, we endeavored to keep the protein intake as uniform as possible throughout the experiment. Reinhold and his co-workers¹⁰ also noted the beneficial effects of high protein diets with glycine.

The two cases of myasthenia gravis that have come under our observation have shown considerable improvement. Owing to the patients' residence many miles away from the city, urine studies were not possible. However, their improvement was easily demonstrable, the results confirming the observations of Boothby,¹⁶ Schmitt²⁰ and others. The use of ephedrine sulphate as an adjunct to amino acid therapy is of distinct value. Although these patients improved on glycine alone, we believe that the subsequent addition of ephedrine sulphate might enhance the beneficial effect of the amino acid.

The majority of cases in which the muscle atrophy was secondary to nuclear or peripheral nerve degenerations did not show the same improvement as in the cases previously mentioned. However, several of these cases had subjective and others some slight objective and subjective signs of improvement. Many of the beneficial effects noted by the patient can be accounted for by the increase in appetite, gain in weight and general feeling of well being. However, betterment in function of the unaffected muscles in the region of the completely paralyzed muscles increased the functional ability of the part, and, although the paralyzed muscles were not benefited, the functional capacity of the patient as a whole was improved.

A note concerning the use of amino acid therapy during the convalescent stage of poliomyelitis might be of interest. Gros²⁴ in a study of seven cases reported definite creatinuria which was increased with the admin-

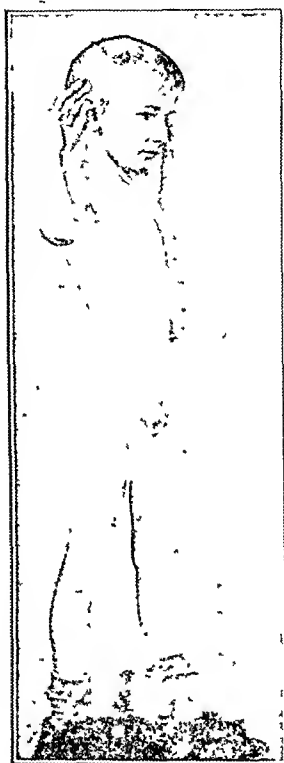


Fig. 1.—Pseudohypertrophic muscular dystrophy in a white boy.



Fig. 2.—Pseudohypertrophic muscular dystrophy in a Negro boy.

23. Smith, E. R. B., and Cowgill, G. R.: Proteins as Stimulants for Secretion of Pepsin, *Am. J. Physiol.* 105: 697 (Sept.) 1933.

istration of amino acids. His results led him to believe that the rate of atrophy of the paralyzed muscles was far less than that of control cases, and the muscle tone was comparatively well preserved. Also, those muscles in which only temporary loss of innervation occurred returned to normal more rapidly and more completely in the treated cases than in the untreated cases.

It seems that normal muscle metabolism depends in a great part on the proper function of the motor neurons comprising the so-called second trophic unit. When the latter is destroyed, normal creatine-creatinine metabolism of the corresponding muscle apparently becomes disturbed.

We have been unable to find any reference in the literature to studies on the creatine-creatinine metabolism in patients suffering from strabismus. One of the four generally accepted theories as to the etiology of this disease is "the muscular theory of strabismus," whose advocates maintain that the squint is due to an unbalanced activity of the rectus muscles, the eyeball being pulled to the side of the overactive muscle. In view of this theory, metabolic studies were carried out in patients affected by unilateral and bilateral strabismus. Their ages were 3, 6, 7 and 8 years, respectively. The duration of the disease varied from three months to six years. These patients were taking a relatively high protein diet, the principal constituent being meat. The average daily initial creatinuria in each case was 0.56, 0.74, 0.17 and 0.37 Gm., respectively. The slight increase above the physiologic average (0.087 Gm.) in creatine excretion in two of these children may be due to the dietary regimen. After amino acid therapy (from 10 to 15 Gm. daily), there was no increase in creatine excretion in cases 32 and 33 (table 2). However, in the other two (cases 31 and 34, table 2) the creatine excretion increased from 0.17 to 0.71 Gm. and from 0.37 to 0.91 Gm., respectively.

Careful ophthalmologic measurements two months after amino acid therapy was begun showed no significant changes from those observed before treatment. More cases are being studied in order to determine whether any uniformly consistent changes in their creatine-creatinine metabolism exists and in what manner, if any, amino acids would effect the metabolism.

SUMMARY AND CONCLUSIONS

1. A series of forty-three patients suffering from the following eleven different pathologic-clinical types of myopathies was studied as regards the effects of amino acid therapy: (a) myasthenia gravis, (b) progressive muscular dystrophy, (c) progressive pseudohypertrophic muscular dystrophy, (d) muscle wasting from disuse, (e) progressive spinal muscular atrophy, (f) subacute and chronic poliomyelitis, (g) multiple sclerosis, (h) amyotrophic lateral sclerosis, (i) muscular paralysis from jamaica ginger poisoning, (j) muscular paralysis from peripheral nerve section, and (k) Friedreich's ataxia.

2. Creatinuria was present in each of the ten different types of cases, except in one case of chronic poliomyelitis of fifteen years' duration.

3. The cases in which the average creatinuria increased from 50 to 200 per cent above that of the control period after amino acid therapy was begun, provided this increased creatinuria disappeared in a few weeks, showed both subjective and objective improvement.

4. Cases of the progressive nuclear type which showed about the same increase and decrease of creatinuria as those in the preceding classification showed only subjective improvement or merely an arrest of the symptoms.

5. Cases in which no increased creatinuria occurred or in which the increase was less than 50 per cent above that of the control period showed no improvement.

6. In general the cases classified as primary myopathies and myasthenia gravis showed distinct clinical improvement, except in a few cases of the former type in which the stage of the disease was advanced to the point of complete muscle degeneration.

7. Cases in which no metabolic studies were made conformed clinically in general to the foregoing statements.

8. The inclusion of amino acids in the diet serves to increase the appetite and body weight in the majority of patients with muscular dystrophy and muscular atrophy.

ABSTRACT OF DISCUSSION

DR. WALTER M. BOOTHBY, Rochester, Minn.: The authors have undertaken a big task in attempting to discuss in one paper the value of glycine and of glutamic acid in myasthenia gravis, in progressive muscular dystrophy and in progressive muscular atrophy. The three diseases are entirely different: the weakness of myasthenia gravis appears to be a characteristic fatigability of the muscles due apparently to an imperfect intermediary metabolism of the muscle protoplasm without much actual degeneration of the muscle fibers; progressive muscular dystrophy is associated with very definite and quite extensive muscle degeneration, while progressive muscular atrophy is primarily due to a change in certain nerve cells of the spinal cord. In a series of forty-six cases of myasthenia gravis treated with glycine and usually also with ephedrine, all but two responded favorably; thirteen patients are working, eight greatly benefited and doing light work; fifteen are moderately improved, and three have just started treatment. Only two failed to improve on treatment and gradually grew weaker and died; two improved on treatment but later abandoned it, grew worse and died; one died before treatment could be started; one improved greatly but contracted pneumonia and died, while one committed suicide after having definitely improved. In a series of twenty-seven cases of progressive muscular dystrophy there have been deaths but, on the other hand, no improvement has occurred that can be definitely assigned to the muscles involved. However, nearly all these patients feel better and can do more because the glycine apparently decreased the fatigability of the muscles not definitely involved in the disease; therefore it seems possible that the unfavorable progress of the disease may in some instances be slowed down or even stopped by the use of glycine and glutamic acid, but sufficient time has not yet elapsed to make such a result certain. This improvement in patients with progressive muscular dystrophy seems analogous to the decrease in fatigability that I have found to occur rather frequently following the administration of glycine to patients with a type of fatigability often seen in the tired business man or housewife and which is often an accompaniment of neurasthenia or so-called chronic nervous exhaustion. A series of progressive muscular atrophy treated with glycine is too small to permit evaluation of the results. The nature of the disease almost precludes any great benefit to the palsied muscles.

DR. K. K. CHEN, Indianapolis: The authors have demonstrated the importance of creatinuria for the diagnosis and prognosis of different types of myopathies. During the last few years I have watched the development of ephedrine and glycine therapy in the treatment of myasthenia gravis. Both drugs seem to be able to bring about improvement independently, but it is interesting to note that ephedrine, unlike glycine, will not produce creatinuria. This obviously shows that the two substances do not act in the same manner. For ephedrine the explanation seems to be simpler. The action of

ephedrine on the central nervous system has been well known. For example, in dogs or monkeys following cord transection, ephedrine increases the excitability of the reflexes. In myasthenia gravis, in which little is known of the etiology, the muscular atrophy probably takes place in this manner: The function of the muscle fibers is gradually impaired, which in turn accelerates further degeneration, and by such a process a vicious cycle is set up. The use of ephedrine seems to break up this vicious cycle and arrest the atrophic process by the increase of reflex excitability. With glycine, the explanation is relatively more complex. The conversion of amino acids to creatinine is well known. Whether or not glycine will stimulate the phosphagen formation is a question that requires further study. In the work of Dr. Tripoli and his associates, I notice that they also used glutamic acid, and I got the impression that they obtained equally good results. Monosodium glutamate has a meatlike taste and is widely used in China at ordinary meals as an appetizer. This salt can be easily manufactured from soy beans. If glutamic acid is confirmed to be as good as glycine, it may be a cheaper drug than glycine.

DR. HENRY A. MONAT, Dayton, Ohio: Two months ago I had a patient with very marked progressive muscular dystrophy. I read all the suggestions I could find in medical literature as to the treatment and decided to try the glycine. Then I reviewed some of the work done in Europe by Weiss on the physiology of heart muscle and the storage of glycogen and I decided to put my patient on a high carbohydrate diet and give him small doses of insulin. The man had all the symptoms elucidated in the paper. I took measurements of the muscles and found atrophy in the muscles of the thigh and the biceps. The patient could put his hands around his biceps when he came under my observation. His creatinine was very high. Under this high carbohydrate treatment with small stimulating doses of insulin (this is the seventh week of treatment) the increase in circumference around the deltoid was up to $1\frac{1}{2}$ inches. In conjunction with this high carbohydrate diet and no protein at all, I gave him physical therapy. I wonder whether this is not like one of those ideas in arthritis one gets enthusiastic about. My conclusion is that an individual should be studied as to his basal metabolism and blood chemistry and be individually treated, and one should not become overenthusiastic about one certain drug or one type of treatment.

DR. C. O. CHENEY, New York: Before this section last year, Drs. Harris and Brand reported the results of investigation that had been made by them for a number of years, including the treatment of some sixty cases of muscular dystrophy. This work has been continued, and I may say that our results do not agree with those that have been obtained by the present authors. With prolonged feeding of glycine we have not, in muscular dystrophy, been able to bring about any marked improvement in this rather large number of cases, which include both children and adults. It does seem that possibly the progress of the disease may have been arrested, but that is about all we have so far been able to bring about. The conditions in myasthenia gravis are different, and our results so far agree with those of Dr. Boothby.

DR. HENRY W. WOLTMAN, Rochester, Minn.: Myasthenia gravis tends to run a fluctuating course, and progressive muscular dystrophy is usually chronic and may come to a standstill for a number of years. However, I noticed that Dr. Tripoli and his co-workers mentioned another disease which usually ends fatally, with clocklike regularity, and that is amyotrophic lateral sclerosis. I should like to ask the authors how long these patients have been under treatment.

DR. HOWARD H. BEARD, New Orleans: I have nothing to add from the clinical point of view. I am interested mostly in the creatine metabolism. There are at least three different points of view here. First, it can be said that glycine and probably glutamic acid do increase creatine formation in muscle. That is a very important thing. Second, phosphocreatine gives energy for muscle contraction. Third, from the neurologic point of view, I think it is of interest that increased creatinuria is not usually obtained from the amino acids in neuromuscular conditions. That would seem to show the importance of the neuromuscular junction, the so-called second trophic unit in creatine formation from amino acids.

DR. CARLO J. TRIPOLI, New Orleans: The dosage we have used was from 10 to 20 Gm. a day. In children we administer 10 Gm., in adults 20 Gm. daily. Drs. Harris and Brand, who presented their work before this section last year, reported little or no benefit to their patients. In view of the conflicting results of their work, as compared with that of several others, it was our object to determine whether there was any relationship between the creatine studies and the clinical improvement, since some cases do improve and others do not. We have found that far advanced cases and many of the moderately advanced cases show no improvement whatever. The early cases, particularly children, have shown the most improvement. We have attempted to elucidate the good results obtained in some cases, and the bad or indifferent results observed in others, by metabolic studies as reported in this report. The two cases of amyotrophic lateral sclerosis which were mentioned by Dr. Woltman as improved are most interesting. A few of our patients with amyotrophic lateral sclerosis also improved. However, a great deal of their improvement we believed to be subjective, with slight definite objective benefit. A high carbohydrate diet, which has been used many times before in the treatment of such conditions, tends to increase muscle tissue. The increase in weight, however, is due principally to fat deposition and only in a slight degree to actual increase in muscle tissue. The use of amino acids in all our cases, with a few exceptions, has increased appetite. Previous work has shown that amino acids do also increase the amount of gastric secretion, although actual increase in pepsin secretion could not be demonstrated. The use of phosphates in conjunction with lactic acid in the treatment of these conditions has been tried, with some improvement noted after their administration. It would be interesting to use the three methods, high carbohydrate diet, administration of phosphates and lactic acid, and amino acids with three groups of patients in order to determine their relative efficacy. A group in which all three methods are used should incidentally be studied. Investigation of these phases of the problem is contemplated.

PROTEINS VERSUS THE CARBOHYDRATES

AN INQUIRY INTO THEIR GASTRIC DIGESTION

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Perhaps no time has been as propitious for the food faddist as this age of unrest. History records the fact that the food faddist has appeared in almost every recorded period of human history. Such methods die a natural death but sometimes not before accomplishing widespread injury and even death. The average faddist uses all the modern methods of illegitimate propaganda and modern high pressure salesmanship to sell his wares. He has not hesitated to select quotations from medical authorities, perverting them to his own end. The public, caught in cross currents of every sort of propaganda, has lent an ear, and the medical profession has generally been backward in approaching the problem, owing to the lack of information of a reliable nature which might controvert the evidence.

Not only have these reformers rehabilitated old doctrines but they have reached a position where some of them do not hesitate to prescribe for the invalid by mail regardless of the nature of the complaint. One searches in vain through the literature revealing several thousand contributions by research workers on diet and nutrition to find any real scientific work by these reformers. One of their dictums is the presumed

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

incompatibility of proteins and carbohydrates, the presumption being that proteins require an acid medium for their digestion while carbohydrates require an alkaline medium. Man is an omnivorous animal. He subsists equally well on the high protein dietary of the arctics, the high carbohydrate regimen of the tropics and the most extraordinary food combinations of the temperate zones.

There is only one way to settle this problem and that is by the direct investigation of the behavior of these substances in the human stomach. Some years ago Dr. Hawk and I, together with a group of research workers, made the first complete studies of human gastric digestion in the untraumatized normal human stomach. The results of these studies were published from 1914 to 1920 in the *American Journal of Physiology* and represent a complete survey of the behavior of the normal stomach to every variety of foodstuff. In those studies it is apparent that human gastric digestion is by no means a hit or miss proposition. In more than 1,000 studies on 200 normal men we were able to show the gastric response on all varieties of foods and to correlate these so as to present in a general way the actual digestion of these substances. This was made possible by means of fractional gastric analysis, although previous studies were largely concerned with the observations of Dr. Beaumont on Alexis St. Martin and Penzoldt's classic observations on human gastric digestion.

We found that the normal human stomach is of several types, one we found to be of a relatively slow type and another of a rapid type of gastric digestion. Furthermore, the secretory response among healthy subjects could likewise be divided into groups, some showing a tendency to a low secretory output, others to a presumed normal and still others to a hyper-secretory type of response.

The most significant feature in these studies is the constancy of the type of gastric function. An individual belongs to one of these groups and, barring all accidents or disease, he maintains his gastric type. In those studies which included seventy-five complete experiments in meat digestion alone in twenty-five different subjects, we found that 100 Gm. of beef required, on the average, an evacuation time of two hours and thirty-five minutes in subjects of the rapid emptying type and three hours and twenty-five minutes in subjects with slow stomachs. Furthermore, the acid figures with meat were the highest of those encountered with any of the varieties of foodstuffs.

There were 120 studies on vegetables with twenty-four studies on potatoes prepared in ten different ways. Every form of carbohydrate is to be found in that series of studies. Tables 1 and 2 illustrate the behavior of the normal human stomach to the various varieties of food in the dietary and in themselves constitute an answer to the question as to whether the human stomach is able to handle carbohydrates and proteins. A fact that has apparently escaped the proponents of the carbohydrate-alkaline theory is that no carbohydrates are ingested which are not followed by a direct acid response on the part of the stomach; in other words, the normal digestion of carbohydrates is attended by the maceration of the carbohydrate in an acid medium before it is available for further digestion in the bowel.

In our normal subjects we found that, if we increased the quantity of beef ingested from 100 to 250 Gm., the evacuation time might be increased to five hours or more. In other words, evacuation time is dependent on

the articles ingested and the quantity of food. In any event, the average, normal individual has a gastric digestive time somewhere near four hours and rarely exceeding five hours during which no reasonable amount of fermentation can ensue. In 1929 Dr. Marcil and I¹ presented a paper on the gastric digestion of meat in health and in disease. In the diseased patient, as exemplified by the chronic invalid with cardiac or renal disease, blood dyscrasias and other conditions commonly encountered in medical ward service, we found the gastric digestion of meat somewhat impaired. In other words, a falling off in secretion and a slight increase in the evacuation time was, to our minds, evidence of some functional inefficiency on the part of the chronic invalid.

Food faddists point out that while the normal individual can digest practically everything within reason, and this is literally true, the same rule does not apply to the chronic invalid. For that reason in the last year I have carried out an investigation of the digestion of

TABLE 1.—Highest Total Acidity for Various Articles of Diet *

Articles of Diet (100 Gm. Portions Unless Otherwise Stated)	Number of Observa- tions	Highest Total Acidity (Aver.) (Cc. N/10 Alkali to Neutralize 100 Cc. of Juice)
Beef and beef products.....	25	120.0
Lamb and lamb products.....	14	135.0
Veal: (A) Market.....	7	140.0
(B) "Bob".....	7	110.0
Pork and pork products.....	31	120.0
Chicken.....	20	125.0
Turkey.....	2	140.0
Guinea hen.....	2	110.0
Fish.....	75	130.0
Milk:		
Cows': 400 cc.....	50	100.0
75 cc.....	3	45.0
Mothers': 150 cc.....	5	60.0
25 cc.....	2	90.0
Gelatin (fruit juice preparations).....	5	70.0
Egg and egg combinations.....	90	80.0
Vegetables prepared in different ways.....	124	75.0
Fruits.....	68	90.0
Bread and cereals.....	75	80.0
Cakes.....	20	90.0
Pies.....	20	90.0
Puddings.....	23	90.0
Sugars and candies.....	28	70.0
Ice cream.....	7	105.0
Ices.....	4	65.0
Nuts (25 to 50 Gm.).....	22	100.0

* From THE JOURNAL, March 9, 1929, p. 761.

meat representing a protein and potatoes representing a carbohydrate in a cross section of medical invalids ordinarily encountered in medical ward service. This series of studies represents almost every variety of medical problem ordinarily encountered in a medical ward service. Gastric, cardiac, renal, hepatic, pulmonary and infectious diseases are to be found among the number. I believe that no variety of chronic illness was missed in this group. These observations were carried on at the same time on successive mornings, and the food was carefully prepared and weighed and the following technique employed. Owing to the fact that, in my experience, the chronic invalid usually reveals a digestion time for meat of about four hours, I gave my patients for the first meal 100 Gm. of hamburger steak. Aspirations were commenced two hours after the beginning of the feeding and carried on until the stomach was clearly emptying both from the appearance of the specimen and by test lavage.

On the second day a meal of 100 Gm. of hamburger steak and 100 Gm. of mashed potatoes was given to

1. Rehfuß, M. E., and Marcil, G. H.: *The Gastric Digestion of Meat in Health and in Disease*, J. A. M. A. 92: 763 (March 9) 1929.

fifty patients. The technic was identical and the specimens were examined grossly and from the standpoint of total and free acidity. On the third day a meal of 100 Gm. of hamburger steak, 100 Gm. of mashed potatoes and 40 Gm. of fat in the form of butter was given to forty-three patients. This was the largest amount of fat which was considered advisable to use, larger amounts being unsatisfactory.

In table 3 the following points are significant: In fifty individuals given 100 Gm. of hamburger steak the average evacuation time was three hours and fifty-one minutes. This figure was somewhat similar to our previous studies on meat digestion, although in that group only 60 Gm. of meat was used while in the studies on normal individuals, 100 Gm. was administered. In this same group of fifty persons, steak and potatoes gave an average evacuation time of three hours and fifty-four minutes. There was actually three minutes' difference in the entire groups, representing the

three members of this group in whom the action of 40 Gm. of fat was studied together with 100 Gm. of meat and 100 Gm. of potatoes, the average evacuation time for the entire group was found to be about four hours and two minutes.

The acid figures in these studies are, of course, based on the observations after the two hour point. In my studies on meat in the healthy individual the acid figures from the two hour point on were practically always characteristic of the individual. I purposely delayed my studies until the two hour point so as to lessen, if possible, any fatigue on the part of the patient. Nearly 1,500 tests were made on free and combined acidity. In each instance, the acid figures from the two hour point to the end of digestion were added together and the general average was obtained. From that point all the general averages were combined and divided so as to obtain a general average for the entire group.

The result of these studies was briefly as follows: In the meat group alone the average total acidity was 69.7 and the average free acidity 28. In the meat and carbohydrate group the average total acidity was 76.2 and the average free acidity 33, while in the meat, carbohydrate and fat group, forty-three subjects in all, the average total acidity was 79.1 and the average free acidity 32.4.

To workers who are accustomed to studying gastric function it must be apparent that these secretory results are strikingly similar. The figures for the meat are almost the same as those for meat and carbohydrate. One could almost explain the slight discrepancy in acidity in the slight prolongation of time that occurs. The same thing is true regarding the figures encountered in the meat, carbohydrate and fat group. It is apparent from these figures that our original conclusion of 1929 is sustained; namely that the chronic invalid usually shows lower acid figures and slight prolongation of meat digestion. There is certainly no evidence to assume that any real change in acidity has taken place in the stomach cavity.

These observations, representing a year's work in a medical service, demonstrate better than any mere words can express the absolute inaccuracy of the statement that proteins and carbohydrates are incompatible in the stomach. They show without question that the stomach, even in the diseased individual, proceeds in orderly fashion to break up the meat fibers and initiate the first stage of protein digestion in the stomach. Furthermore, a study of these specimens proves beyond any question that there is an orderly, mechanical subdivision of carbohydrates so as to facilitate intestinal digestion. With the exception of those cases in which there is an actual stenosis or marked delay in gastric evacuation due to some mechanical obstacle, I am not familiar with any group of cases that show consistently any disturbance of protein and carbohydrate digestion. Eight of my cases showed no free acidity after the ingestion of meat and six of these eight showed no free acid consistently throughout all studies, while in two there was some free acid in either the second or the third type of meal.

I prefer to restrict my remarks strictly to my investigation, which shows beyond any question that the stomach, even in most disease conditions, is able to do its work efficiently and well. One of the outstanding features of normal gastric digestion was the observation that any type of food under appropriate conditions could be satisfactorily handled by the human stomach.

TABLE 2—Evacuation Time for Various Articles of Diet*

Articles of Diet (100 Gm. Portions Unless Otherwise Stated)	Num- ber of Obser- vations	Evacuation Time (Hours and Minutes) Type of Stomach		
		Rapid Empty- ing	Slow Empty- ing	Aver- age
Beef and beef products	25	2 35	3 25	3 00
Lamb and lamb products	14	2 30	3 20	3 00
Veal (a) Market	7			2 50
(b) "Bob"	7			3 20
Pork and pork products	31	2 45	3 40	3 15
Chicken	20	2 45	3 45	3 15
Turkey	2	3 00	3 45	3 30
Guinea hen	2		4 00	4 00
Fish	75			2 50
Milk				
Cows', 400 cc	50			2 30
75 cc	3			1 15
Mothers', 150 cc	5			1 40
225 cc	2			2 25
Gelatin	5			2 00
Egg and egg combinations	90	2 15	3 15	2 40
Vegetables prepared in different ways	24	2 00	2 30	2 50
Fruits	68	1 35	2 20	2 00
Bread and cereals	75			2 40
Onkes	29			3 00
Pies	29			2 30
Puddings	23			2 20
Sugars and candies	28			2 05
Ice cream	7			3 15
Ices	4			2 35
Nuts (a) 25 Gm	18			3 00
(b) 50 Gm	4			4 00

* FROM THE JOURNAL, March 9, 1929, p. 764.

difference in the average evacuation time between proteins and proteins and carbohydrates, despite the fact that 100 Gm. of carbohydrate food had been added to the dietary. With the exception of two instances in which unusual observations occurred, the data were strikingly uniform. A glance at table 3 will emphasize the actual figures obtained.

When one realizes that among these patients studied were those with nephritis, myocarditis, cholecystitis, angina pectoris, asthma, bronchiectasis and acute illnesses such as rheumatic fever and even pneumonia, one recognizes what a remarkable organ the stomach is from the standpoint of efficiency. This evidence clearly proves that any presumed incompatibility between protein and carbohydrate food, of which beef and potatoes, to my mind, were the best examples, is certainly not sustained. With the exception of one single individual in which certain other factors were apparent, there was no evidence in any of this group that the patients were unable to handle satisfactorily and in almost normal time a reasonable amount of protein and carbohydrate. The addition of fat, as is well known, causes a slight delay in evacuation. In forty-

The observations on the diseased person, other than those with diseased stomachs, are by no means as numerous, but at least these contributions represent a study of gastric function in chronic organic disease.

CONCLUSIONS

1. There is evidence to show that even in the diseased individuals of markedly different types there is

was free hydrochloric acid 28, total acidity 69.7; for the meat group, free hydrochloric acid, 33, total acidity 76.2; for the meat and carbohydrate group, free acidity 32.4, and total acidity 79.1; for the meat, carbohydrate and fat group, figures that can be readily explained by the increased test load used in the stomach but which are strikingly similar when one considers the method of examination.

TABLE 3.—Average Free Acid and Total Average with Meat, Meat and Carbohydrates, and Meat, Carbohydrates and Fat

Diagnosis	Initials	Time	Meat		Meat and Carbohydrates		Meat, Carbohydrates and Fat			
			Free Acid Average	Total Acid Average	Time	Free Acid Average	Total Acid Average	Time	Free Acid Average	Total Acid Average
1 Bronchiectasis	L. B.	4	0	60	3½	13.7	57	4	20.6	80.3
2 Psychasthenia	L. P.	3¼	25.8	67	2½	20	46	3¼	0	24
3 Nephritis, hypertension	F. P.	3¼	41	60.6	3¼	79	109.5	4¾	4	23
4 Cholecystitis	R. K.	2¾	26	106	3¼	36	65.5	2¾	0	19
5 Myocarditis, nephritis	H. N.	2¾	0	29.3	2¾	0	27	4¾	15.1	53.7
6 Cholelithiasis	M. L.	3¼	41.1	121	3	40.5	107	3¾	34.8	120
7 Peptic ulcer	P. H.	3¼	32.6	105.4	4¼	26	70.4	3¼	21.4	80.1
8 Angina pectoris	S. S.	4	30.4	51.6	3½	47.3	89	3½	59.5	95.8
9 Hysteria	M. B.	5¾	20.6	83.6	4¼	28.7	116.4	3	16.7	65
10 Cholecystitis	S. M.	3½	53.2	94.1	3	10.6	95.3	3½	39.6	71
11 Duodenal ulcer	J. A.	3	22.2	45	3¼	46.2	71.8	4	65.3	111.9
12 Tuberculosis, peritonitis	C. S.	3¼	0	30.7	3	22	65			
13 Colitis	F. C.	3¼	45.9	88	4¾	43.7	91.8			
14 Gastric neurosis	J. K.	3½	64	97.6	3½	22.1	76.5	4¼	23.6	83
15 Carcinoma, sigmoid	F. N.	3 7	56.3	83.6	3½	65.5	121	4¾	1.3	91
16 Leukemia, lymphatic	W. G.	4¾	37.8	89.8	2½	61.1	174	4¼	25.2	115.5
17 Gastritis	J. S.	3½	13.1	57.5	3½	16	43.6	3¾	37	67.4
18 Raynaud's disease	J. McG.	3½	29.1	50.5	3¼	40.1	89.4	4¼	50.3	76.1
19 Asthma, bronchial	S. L.	2¾	40.6	62	2¾	48.3	73	3	57	86.2
20 Kidneys, polycystic	J. C.	4	31.5	101.5	4¾	45.9	103	4½	15.5	132
21 Cholecystitis	J. H.	4	24.8	125	3¾	20.3	102.8	4¼	33.3	57.7
22 Asthma, bronchial	M. K.	3	0	27.4	3¾	0	28			
23 Peptic ulcer	R. W.	4	52.6	112.1	5	68.6	125.8	4	76.3	123
24 Tonsillitis	J. L.	4¾	0	17	5	0	17			
25 Sinusitis, asthma	M. C.	4¼	73.5	143.1	5	53.5	103.6	4¾	56.5	104.1
26 Leukemia, chronic myelogenous	L. H.	4	48.8	74.3	4½	60.5	88.5	5½	69.7	121.8
27 Gastric ulcer	J. G.	4	77.5	117.2	3¾	78.7	126			
28 Cholecystitis	C.	3¼	0	16	4	0	31.6	3¼	0	33
29 Sciatica	M. Z.	3¾	5	64.5	3¼	0	46	3	2.7	65
30 Asthma, bronchial	J. B.	4	17	77.3	4¼	36	110			
31 Cholecystitis	S. B.	4	48.8	127.4	5¼	54.7	101.4	5	60	90.3
32 Enterocolitis, acute	J. S.	4¾	47	84.1	4¾	43.6	75.6	3¾	49.5	79
33 Tuberculosis, pulmonary	P. L.	4¼	20.7	54.3	4½	19.7	36.7	4¼	1.4	36.4
34 Sinusitis, tracheobronchitis	E. B.	7¼	25	59	7	10	30			
35 Asthma, anthracosis	A. S.	4¾	37	78	5	24	101	4¼	5.7	73.2
36 Cholecystitis	A. R.	4	....	....	4	73.1	108.6	4	62.7	142
37 Tracheobronchitis	I. K.	4½	0	22	4	1	28	3½	0	19.2
38 Jaundice, cholelithiasis	S. B.	4¾	33.9	85	4¾	24	112	6	33	78.4
39 Tonsillitis	M. F.	3¾	66.5	111.5	3½	82	122	4¾	95.2	137
40 Obesity	C. S.	3¼	0	22.5	3¾	12	75	5½	20	98
41 Emphysema	B.	3½	24.1	43	3¾	34.6	52.5	3¼	48.4	85.6
42 Amebic dysentery	H. G.	4	36.2	62.5	3¾	49.8	71	3¾	55.3	132.4
43 Anthracosis	J. L.	4¼	17.7	35.7	4¾	18	43.4	4¼	20	75.7
44 Arthritis	E. W.	3¼	35.5	62	4¼	16.5	88.1	4¼	30.5	123
45 Psychoneurosis	W.	4	6.7	23	4	16	32.2	3¾	17.3	37
46 Auricular fibrillation, mitral disease	J. H.	3	46.7	99.5	2¾	43	67	3¾	40	90.3
47 Rheumatic fever	J. Ho.	3¼	21.6	46.8	3¾	48.4	117.5	4¼	36.3	61
48 Anthracosis	M. M.	4½	1.4	19.2	3¼	0.6	14.6	4¼	2.4	34.5
49 Rheumatic fever	O. O. L.	3¼	37	78.4	3¾	35.6	92	3½	36	75.8
50 Pneumonia, toxic jaundice	T. B.	3½	0	24	3½	0	21.3	3¼	0	26
Pulmonary diseases.....	13	Tuberculosis.....	2	Averages for the Entire Series						
Cardiac diseases.....	3	Rheumatic fever.....	2	Evacuation time of meat alone, three hours fifty-one minutes						
Renal diseases.....	3	Pneumonia.....	1	Of meat and carbohydrates, three hours fifty-four minutes						
Nervous diseases.....	3	Arthritis.....	1	Of meat, carbohydrates and fat, four hours two minutes						
Blood.....	2	Obesity.....	1	General Acid Averages after Two Hours						
Gastric diseases.....	5	Raynaud's disease.....	1	Meat, free acid 28						
Gallbladder and liver.....	8	Sciatica.....	1	Total acid 69.7						
Intestinal diseases.....	5			Meat and carbohydrates, free acid 33						
				Total acid 76.2						
				Meat, carbohydrates and fat, free acid 32.4						
				Total acid 79.1						

no incompatibility between protein and carbohydrate digestion.

2. In fifty individuals suffering from various chronic diseases 100 Gm. of hamburger steak was digested in a little more than three hours and fifty-one minutes. On hundred grams of hamburger steak with 100 Gm. of mashed potatoes showed an average general evacuation time of three hours and fifty-four minutes; in forty-three of these persons a meal of 100 Gm. of hamburger steak, 100 Gm. of potatoes and 40 Gm. of butter showed a general evacuation time of four hours and two minutes.

3. The computed general acid figures from the two hour period onward in these three groups of studies

4. These studies emphasize the singular constancy of individual digestion, a point that we emphasized in our studies on normal gastric function.

5. There is no evidence either in the literature or in my investigation to lead me to believe that proteins and carbohydrates are incompatible in the stomach. The danger of such teaching based on a lack of scientific evidence is manifest, and while it may be true that many individuals overeat and are presumably better by a reduction of carbohydrates, the unqualified acceptance of such a teaching can lead to the occurrence of serious malnutrition as well as to a lighting of tuberculosis and old infections.

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ABSTRACT OF DISCUSSION

DR. J. EARL THOMAS, Philadelphia: I agree with Dr. Rehffuss as to the necessity for combating food faddists. The normal human stomach will handle almost anything and generally does best when it has an abundance and a variety of material to work on. However, I find it necessary to emphasize this point in teaching medical students, which indicates that the public is impressed with the claims of faddists and that some education is necessary. The observations of Dr. Rehffuss on the human stomach parallel in a way studies made years ago on animals by Cannon and by Pavlov. Pavlov noted that both carbohydrate and protein stimulate the secretion of gastric juice, protein more than carbohydrate, and fat least of all. In trying to reconcile these secretory studies with Pavlov's observations, I think that probably the meat acted as the chief stimulus in both the meat and the mixed diets. The increase in acid when carbohydrate was present was slight and probably accidental. The increase in acidity on addition of fat is surprising. In the observations on motility, the characteristic inhibitory effect of fat was noted. The amount of fat was small but was evidently sufficient to produce typical slight delay in emptying. Why should the well known inhibitory effect on secretion have failed to appear? Evidently the delayed emptying caused a retention of gastric secretagogues, and their prolonged action more than offset the inhibition of secretion due to the fat. The observations on the rate of emptying are particularly interesting, especially when it is noted that the stomach will empty 200 Gm. as rapidly as 100 Gm. of material. This suggests that the amount of material has less to do with the emptying time than the length of time it takes for the stomach to digest the food. From time to time I have emphasized the importance of the inhibiting effect on the stomach of fullness of the intestine. This study brings out another important factor, mentioned years ago by Cannon; namely, the condition of the food in the stomach. The extra carbohydrate apparently does not influence the emptying. It passes out when the protein is ready to pass out. How else is one to explain the fact that 200 Gm. of material is emptied as rapidly as 100?

DR. ERNEST H. GAITHER, Baltimore: Dr. Rehffuss proves by conclusive studies that definite types of gastric function are encountered in man and that in the majority of cases these types remain invariable throughout life. He strikes a withering blow at the chief claim of food faddists when he so clearly presents facts which he has definitely proved: "A fact which has apparently escaped the proponents of the carbohydrate, alkaline theory is that no carbohydrates are ingested which are not followed by a direct acid response on the part of the stomach; in other words, the normal digestion of carbohydrates is attended by the maceration of the carbohydrate in an acid medium before it is available for further digestion in the bowel." The important observation that during the normal period of digestion no reasonable amount of fermentation can occur will be of great assistance in dealing with aerophagic patients who insist that the distention and explosive eructations which they suffer are entirely dependent on fermentation, with the production of enormous quantities of gas. It is most difficult to convince these patients that they are laboring under a misapprehension; yet it has been my experience that such cases can be cured within twenty-four hours if sufficient time is devoted to emphasizing the facts proved by the author. The researches of Dr. Rehffuss are particularly dependable because of the manner in which they were conducted; that is, in the absence of operation and shock, thus revealing the condition without any manner of distortion. In proving that the acid figures after the ingestion of protein, carbohydrate and fat, separately and in combination, do not differ greatly, he furnishes facts of distinct value. Also when he conclusively proves, in researches on hospital invalids, that the stomach, even in the diseased individual, proceeds in orderly fashion to break up the meat fibers and initiate the first stage of protein digestion in the stomach that there is an orderly, mechanical subdivision in an acid medium of carbohydrates so as to facilitate intestinal digestion, he administers a crushing blow to the absurd theories of ignorant and dangerous food faddists and furnishes information of the highest therapeutic value.

DR. ANTHONY BASSLER, New York: It is interesting that there has been so much to do with this faddist idea in the last

three or four years. One just can't eat carbohydrates without taking proteins, and one can't eat any protein food without taking carbohydrates, and I have found that to be about the best answer to make to these patients. This idea was started years ago and it has been disqualified a number of times, yet now it is stalking around throughout the Eastern part of the country. It is quite a problem in practice. There seem to be a lot of people who prefer going along lines of least resistance, and, as Dr. Gaither has said, commonly very intelligent ones, and even in ill health, they prefer to go to disqualified men for those reasons, and especially those who have the advertising flair and who make immediate and unethical contacts with the public. Following Dr. Bloodgood's idea, however scientific physicians may be, they nevertheless have a responsibility to the public, whether the public appreciates it or not. The American Medical Association's coming out authoritatively by accepting such a paper as this for a prominent publication is not only a matter for the medical profession's scientific interest; it is a matter for the medical profession to take in a wholesale way and use in a propagandist sense to the public at large, because they, after all, are the sick people. They are the people that we are here to help, and while they may be stupid, we must remember that medicine is many years ahead of the public and should each one of us individually from this point on, as doctors and as representatives of this organization, take definitely the stand that there is nothing to this reanimated diet ghost of many years ago.

DR. FRANK SMITHIES, Chicago: I desire to support Dr. Bassler's remarks. New York is not the only place where there are people easily fooled. Food faddism is the sort of thing taken up usually by well bred women who have lost their incomes or by individuals of so-called high intelligence out of jobs who are backed by some high-sounding organization and who address women's clubs, Kiwanis, Lions and the like. They bring before such societies all sorts of queer feeding theories or "systems," establish courses and even sell books about their particular plans. Physicians should be, I think, militant against this sort of thing through hospitals, journals which reach the public and even through newspapers. Most of the "column writers" for newspapers are people who are type hungry, never had a practice and know nothing about medicine except from reading literature. Next in importance is Dr. Rehffuss's proof that, when a stomach is fed a meal which makes it do work, the acid figures are even higher than are those which it is customary to consider those of disease. The addition of fat, undoubtedly, as Munson and Cowie showed in the first issue of the *Archives of Internal Medicine*, delays the emptying time of the stomach, possibly because of its effect on stimulation of the liver and the gallbladder. The introduction of the fat factor changes the orderly progress of gastric digestion of proteins so that digestion of fat later can be taken care of adequately when the secondary products of protein and of carbohydrate digestion have become properly developed.

DR. MARTIN E. REHFUSS, Philadelphia: I was unable to read the complete paper or quote all the statistics and the figures. My experience has been like a great many of the experiences other physicians must have had. People have come to me with the ridiculous but apparently plausible theory that the proteins and carbohydrates don't agree in the stomach, and I knew well from studies covering almost eight years that this could not be true. They came back with the statement, "Well, that may not be true regarding a normal individual, but it is true regarding a sick person." I knew no place I could go for exact information regarding the subject, and I made up my mind that the only way to get the information was to get it myself. It took me a year to get the figures, and more than a week and a half to compile them, but these figures are the figures as they actually occurred in the ward patients at the Jefferson Hospital, and there is no evidence in that group which in any way suggests that that incompatibility may occur. Dr. Thomas had several interesting things to say. He said there was very little difference regarding the extra hundred grams of carbohydrate. That surprised me; but the truth is that the carbohydrates require generally a short evacuation time. Regardless of the fact that I added carbohydrate to the hundred grams of meat, it was the hundred grams of meat that dominated the so-called evacuation point. The question came up as to why

more acid. The difference was 0.03 per cent. That is practically negligible, but it is probable that the addition of carbohydrate causes the secretory power of the meat to continue longer than it would, although there may be also an intestinal factor. I quoted today the figures I have obtained. I have the tables and figures, which I think wouldn't be interesting simply because I can say that if any one comes to a physician with the statement that there is a gross incompatibility between carbohydrate and protein in the ordinary stomach, barring those cases in which there is allergy or other reason for the incompatibility, it is a falsehood and has no basis in scientific fact.

CARCINOMA OF THE CECUM: WHAT ARE THE CHANCES FOR CURE?

CLAUDE F. DIXON, M.D.

ROCHESTER, MINN.

The question to which I wished to find an answer was whether a patient who has remained well for at least five years following resection of a segment of the colon because of carcinoma may be classified as cured. Considerable doubt may rightly exist as to whether or not this question is answerable. Some persons apparently are inherently susceptible to the development of malignant processes. Examples are the multiple carcinomas, each of a distinctly different type, occurring simultaneously or consecutively in the same patient. Malignant lesions of the colon, for the most part, are single (except those which apparently arise from malignant degeneration accompanying multiple polyposis). Radical removal is the most effective means of relief, and while the ultimate outcome in many cases is disastrous, encouragement in the surgical treatment of carcinoma of the large intestine is spurred on by those persons who, once victims of the disease, have remained well for a number of years following resection.

After a patient has survived resection of a segment of bowel because of carcinoma, the remaining pertinent question of prognosis arises. Although it is impossible to foretell accurately the outcome in such a case, one may get some idea regarding prognosis in other similar cases by detailed study of those patients who are alive many years following removal of a carcinoma of the colon.

When one attempts to collect data on the curability of disease by determining the length of time a patient has lived—for example, following resection of the cecum for carcinoma—it is important to keep in mind that the patient who is apparently relieved of such a malady may succumb to another disease before sufficient time has elapsed to determine whether or not the original disease may recur. In other words, the normal death rate is to be kept in mind. In reviewing the patients who have been operated on at the Mayo Clinic from 1907 to 1928 inclusive, for carcinoma of the cecum, I have been able to collect 221 cases. In seventy-six cases, palliative measures only were possible; in 145 cases, resection was performed. Of these 145 patients, sixty have lived five years or longer following resection. This represents a 51 per cent survival, for five years or more, of patients who recovered from operation¹ (tables 1 to 4). All specimens removed have been

reexamined in the course of the present study and the grade of malignancy has been determined.

The three outstanding features with regard to the observations in these sixty cases are that practically all the patients had lost weight markedly, secondary anemia of varying degree was present, and a mass could be palpated in the right lower abdominal quadrant. Loss of weight and the finding of a palpable mass need no comment. Why the majority of patients suffering from carcinoma of the cecum become anemic may be a matter of conjecture. Alvarez and his co-workers² studied the varying degrees of anemia produced by carcinoma in different segments of the colon. They gave the opinion that absorption of products of bacteria, such as *Bacillus welchii* and organisms of the colon bacillus group, together with gradual loss of blood from the ulcerated lesion, account for the anemia. They further pointed out that in most instances apparently the mere presence of malignant cells does not in itself tend to produce anemia, for example, in cases of extensive carcinoma of the breast and fundus of the uterus the blood picture is usually normal, and it is not unusual following a short-circuiting operation in a case of carcinoma of the cecum for the blood picture at least to approach normal. The latter procedure, Adami has pointed out, relieves the pressure on the ulcerated portion and tends to prevent passage of bacteria into the lymphatic structures. These patients whose erythrocytes are markedly diminished in number, and the concentration of whose hemoglobin is decreased, may be thought to have a macrocytic type of anemia.

Obstruction is an additional phenomenon, a variable one, in cases of carcinoma of the cecum. When it is recalled that the content of the right half of the colon is of a liquid nature, it is easily understood why growths that occur in this segment of bowel may reach considerable size without the appearance of phenomena of obstruction, in contrast with those lesions which occur in the left half of the colon, where the content is semisolid and symptoms of obstruction are common.

Bargen³ has observed that, in general, carcinomas of the cecum, and to some extent those which occur elsewhere in the right half of the colon, may be divided into three groups from the standpoint of symptoms: (1) those in which anemia occurs, (2) those in which dyspepsia occurs and (3) those in which a mass is discovered by the patient or by the physician although there are no symptoms referable to the right lower abdominal quadrant. The vast majority of cases fall into the first group, which has been discussed. Patients often make complaint of symptoms which may at first lead one to suspect appendicitis or disease of the upper part of the abdomen, such as cholecystitis or even peptic ulcer. Those growths which occur in, or involve, the ileocecal valve usually produce sufficient dyspeptic symptoms, from obstruction, to make the diagnosis relatively easy. The lesion in cases of the third group can be said usually to be discovered by accident.

In this series of sixty cases, the duration of symptoms varied from a few weeks to many years. Undoubtedly many of the patients antedate by wide margins the onset of the condition for which they sought relief. It is an established fact, however, that malignant growths may be present in the colon for a considerable length of time, remaining operable and not metastasizing.

From the Division of Surgery, the Mayo Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Pemberton, J. deJ., and Dixon, C. F.: Summary of the End-Results of Treatment of Malignancy of the Thyroid Gland and the Colon, Including the Rectum and Anus, Surg., Gynec. & Obst. 58: 462-464 (Feb. 15) 1934.

2. Alvarez, W. C.; Judd, E. S.; MacCarty, W. C., and Zimmermann, A. R.: The Varying Degrees of Anemia Produced by Carcinoma in Different Parts of the Colon, Arch. Surg. 15: 402-417 (Sept.) 1927.

3. Bargen, J. A.: Personal communication to the author.

When the lesion has as its site the pouch of the cecum, localization by roentgenographic studies is sometimes extremely difficult.

Prognosis varies with metastasis and grade of malignancy. Involvement of lymph nodes was found in fifteen of the sixty cases. The finding of involved lymph nodes justifies a guarded prognosis; however, absence of this finding does not necessarily rule out regional extension or metastasis. Obviously a lesion of low

TABLE 1.—Carcinoma of the Cecum: Patients Living Fifteen Years or Longer Following Resection

Case	Age, Years	Sex	Loss of Weight, Pounds	Duration of Symptoms	Palpable Tumor	Hemoglobin, per Cent	Anemia	Malignancy, Grade	Results	
									Lived, Years	Living, Years
1	47	♂	10	6 weeks	+	33	Moderate	4	...	22.2
2	48	♂	5	4 months	+	80	.....	1	...	22.5
3	49	♂	?	5 years	+	68	Slight	3	...	22.8
4	40	♀	?	8 months	+	50	Marked	3	...	21.5
5	49	♂	20	2 months	+	39	Marked	3	...	20.2
6	55	♀	?	9 months	+	43	Marked	3	...	18.8
7	49	♂	17	8 years	+	40	Marked	3	18.6	...
8	47	♂	0	5 years	+	68	Slight	3	...	19.3
9	48	♂	8	6 months	+	35	Marked	3	19.5	...
10	53	♂	24	9 months	+	69	Slight	2	...	15.2

grade of malignancy justifies a better prognosis than one in which malignancy is of higher grade. The growths in the majority of the cases on which this report is based were of grade 2. Only three growths were of malignancy graded 4. It is interesting to note that one of the patients whose lesion was graded 4 was alive 22.2 years following resection, even though lymph nodes were involved.

The fact that all malignant growths of the cecum occur in relatively the same position has led to consider-

TABLE 2.—Carcinoma of Cecum: Patients Living Ten to Fifteen Years Following Resection

Case	Age, Years	Sex	Loss of Weight, Pounds	Duration of Symptoms	Palpable Tumor	Hemoglobin, per Cent	Anemia	Malignancy, Grade	Results	
									Lived, Years	Living, Years
11	68	♂	36	2 months	+	45	Moderate	2	13.1	...
12	82	♂	26	9 months	+	30	Marked	2	...	14.3
13	55	♂	20	1 year	+	40	Marked	3	...	13.0
14	54	♂	12	5 months	+	46	.....	1	...	13.6
15	54	♂	30	8 months	+	39	Marked	2	...	14.0
16	63	♂	29	6 weeks	+	34	Marked	3	...	14.1
17	56	♂	32	9 months	+	37	Marked	2	...	14.2
18	73	♂	28	5 months	+	63	Moderate	2	...	12.0
19	59	♂	20	1 year	+	36	Marked	2	...	13.7
20	60	♂	28	7 months	+	48	Moderate	2	...	11.0
21	53	♂	8	2 years	+	72	.....	3	...	13.8
22	43	♀	?	7 years	+	75	.....	2	...	11.0
23	58	♂	41	2 years	+	53	Moderate	1	...	10.3
24	53	♂	33	2 years	+	21	Marked	2	...	10.5
25	66	♂	31	2 years	+	45	Moderate	2	...	19.6
26	53	♂	34	6 months	+	63	Moderate	2	...	9.3
27	44	♂	17	6 months	+	65	Slight	2	...	10.1

able speculation as to possible etiology. Wakeley and Rutherford⁴ offered the suggestion that carcinoma occurring in the cecum almost invariably begins opposite the ileocecal valve, and that biochemical trauma, produced by the alkaline fluids from the ileum, may be considered to be the cause. Consideration of etiology rather unexpectedly leads the investigator once more to the question of involvement of lymphatic structures. Craig and MacCarty⁵ in 1923 made a careful study of

involvement of lymph nodes in many cases of carcinoma of the cecum in which resection had been performed at the Mayo Clinic. They, too, emphasized that the posterior wall of the cecum was the most common site of malignant growths. They concluded that the situation of the growth explained why, in those cases in which involvement of lymph nodes had occurred, the posterior ileocecal group of nodes was the first involved. Metastasis of a generalizing nature apparently does not occur as frequently or as rapidly from carcinoma of the cecum as it does from carcinoma occurring in the more distal segments of the large intestine. Explanation of this is wanting.

Robertson⁶ and his co-workers found that if india ink was injected into the thoracic duct it passed first to the receptaculum chyli, thence downward to the lymph nodes along the left of the aorta. The signifi-

TABLE 3.—Carcinoma of Cecum: Patients Living Five to Ten Years Following Resection

Case	Age, Years	Sex	Loss of Weight, Pounds	Duration of Symptoms	Palpable Tumor	Hemoglobin, per Cent	Anemia	Malignancy, Grade	Results	
									Lived, Years	Living, Years
28	50	♂	?	2 years	+	30	Marked	1	5.2	...
29	40	♂	?	6 months	+	28	Marked	2	6.2	...
30	43	♂	?	6 weeks	+	58	Moderate	2	6.6	...
31	42	♂	?	2 months	+	48	Moderate	2	6.6	...
32	58	♂	32	3 years	+	40	Moderate	2	9.5	...
33	27	♂	41	8 weeks	+	67	Moderate	2	...	9.4
34	62	♂	22	1 year	+	64	Moderate	2	...	9.5
35	55	♂	15	2 years	+	73	.....	2	...	9.7
36	62	♂	11	5 months	+	61	Moderate	2	...	9.0
37	59	♂	5	3 months	+	43	Moderate	3	...	7.0
38	43	♂	16	1 year	+	60	Moderate	4	...	7.3
39	16	♀	?	15 months	+	74	.....	3	...	8.0
40	51	♂	10	12 months	+	69	Marked	2	...	6.2
41	57	♂	25	5 months	+	33	Marked	2	...	6.3
42	37	♂	26	Indefinite	+	70	Slight	1	...	7.1
43	59	♂	?	12 months	+	80	Slight	1	...	7.0
44	42	♂	11	7 years	+	73	Moderate	1	...	6.5
45	75	♂	?	18 months	+	70	Moderate	1	...	6.2
46	47	♂	18	Indefinite	+	70	Slight	1	...	5.7
47	51	♂	16	6 months	+	48	Marked	1	...	5.3
48	50	♂	21	12 months	+	73	Moderate	1	...	5.0
49	36	♂	?	6 weeks	+	81	Slight	1	...	5.7
50	62	♂	24	12 months	+	28	Marked	2	...	6.0
51	65	♂	58	2 years	+	60	Moderate	2	...	6.5
52	64	♂	5	10 months	+	53	Moderate	2	...	5.0
53	50	♂	39	12 months	+	36	Marked	4	...	5.5
54	42	♂	8	3 months	+	72	Slight	3	...	5.8
55	47	♂	78	1 year	+	18	Marked	3	...	5.3
56	65	♂	?	4 years	+	71	Slight	2	...	8.0
57	40	♂	11	2 years	+	73	Slight	2	...	7.1
58	39	♂	22	1.6 years	+	76	.....	2	...	6.5
59	54	♂	12	2 years	+	78	.....	2	...	7.2
60	70	♂	2	9 months	+	79	.....	2	...	8.0

cance of this cannot as yet be interpreted. One possible explanation for the better results obtained in resection of the right half of the colon because of carcinoma may be that the lymphatic structures of the right half of the colon are not so widely distributed as are those of the left half. Therefore, when the cecum is resected, and necessarily the right half of the colon with it, the lymphatic structures are in closer proximity to the bowel than they are when the left half of the colon is resected. Hence they are more thoroughly removed in the former instance.

Judging from this series of sixty cases, the discrepancy in the duration of symptoms and the variability of symptoms account to a considerable degree for the inability to make an early diagnosis in a high percentage of cases of carcinoma of the cecum. Patients of middle age with unexplained, severe, secondary anemia should bring to mind, however, the possibility of a malignant condition of the right half of the colon. These features, and a history of intestinal disorder,

4. Wakeley, C. P. G., and Rutherford, R.: Carcinoma of the Cecum: A Discussion of Its Incidence, Diagnosis and Treatment, with a Report of Twenty-Five Personal Cases, *Brit. J. Surg.* 20: 91-112 (July) 1932.

5. Craig, W. McK., and MacCarty, W. C.: Involvement of the Lymph Glands in Cancer of the Cecum, *Ann. Surg.* 77: 698-710 (June) 1923.

6. Robertson, H. E.: Personal communication to the author.

justify investigation of the large intestine as a possible source of trouble.

The surgical treatment of carcinoma of the cecum consists, obviously, of radical removal. The type of resection of the right half of the colon to be selected is largely a matter of individual opinion. Some surgeons of wide experience in colonic surgery prefer to perform the operation in one stage. Others are of the opinion that resection should be anticipated by ileocolostomy, allowing an interim of from two to four weeks. In some cases, particularly if patients are of advanced years and are markedly emaciated, the operation in two stages seems clearly justified. As previously pointed out, sidetracking of the intestinal current frequently is instrumental in bringing about marked general improvement and in decreasing the anemia.

The patient with a malignant lesion of the cecum, whose general condition is good, may well be a fit subject for resection in one stage. Recently it has been our practice at the clinic to employ the operation in one stage in treatment of those patients of middle age whose loss of weight has not been marked. The accompanying anemia, unless extremely severe, usually can be remedied by blood transfusion twenty-four hours before operation.

TABLE 4.—*Carcinoma of Cecum: Involvement of Lymph Nodes*

Case	Age, Years	Sex	Malignancy, Grade	Results	
				Lived, Yrs.	Living, Yrs.
61	47	♂	4	...	22.2
62	54	♂	2	...	14.0
63	63	♂	3	...	14.1
64	60	♂	2	...	11.0
65	73	♂	3	...	12.0
66	58	♂	2	9.5	
67	53	♂	2	...	9.7
68	62	♂	2	...	9.0
69	50	♂	3	...	7.0
70	51	♂	3	...	6.2
71	57	♂	2	...	6.3
72	56	♂	2	...	7.0
73	50	♂	2	...	5.0
74	70	♂	2	...	8.0
75	65	♀	2	...	8.0

The choice of the type of anastomosis to be made between the ileum and the transverse colon, following resection of the right half of the large intestine, depends again on the individual surgeon and on his experience with the methods he advocates. Moynihan, in resections of the right half of the colon, employed for a time end-to-end anastomosis between the ileum and the transverse portion of the colon. He later chose to close both the ends of the ileum and colon and to make side-to-side anastomosis. The use of the button in anastomosis following resection of the right half of the colon has been proved to be an effective method. From the standpoint of safety, lateral anastomosis seems best because there is less danger of impairment to the vessels that supply the site of anastomosis. The end-to-side anastomosis has, however, gained favor with some. Lahey has advocated a modified Mikulicz procedure for removal of growths of the right half of the colon. His results from the use of this method are excellent.

Temporary ileostomy of the Witzel type serves as a worth while safeguard against distention from intestinal gases in any type of intraperitoneal resection of the right half of the colon.

The preparation of patients who are to undergo surgical procedures on the large intestine has lessened appreciably the mortality rate and also has made for a more uneventful convalescence. In brief, such patients

are hospitalized four or five days before operation. During this period, their diet consists of 2,800 calories a day, of foods of lowest residue, principally carbohydrates, such as candy, fruit juices, custards, gelatin, rice, eggs, thin soups and broths. Seventy-two hours before operation, an intraperitoneal injection of vaccine, prepared from streptococci and organisms of the type of colon bacilli, is carried out. Although this procedure does not prohibit entirely the occurrence of peritonitis, it has lessened markedly the incidence of peritonitis.

SUMMARY

Sixty cases of carcinoma of the cecum, in which the patients have survived from five to twenty-two and two-tenths years after operation, form the basis of this report. In three cases the grade of malignancy was 4, in ten cases the grade was 3, in six cases it was 1, and in the remaining forty-one cases it was 2. In fifteen of the sixty cases, lymph nodes were involved.

ABSTRACT OF DISCUSSION

DR. JEROME M. LYNCH, New York: Dr. Dixon's paper is of particular value, since he calls attention to a little known phase of the carcinoma problem; namely, the high percentage of long term survivals or five, ten and fifteen year cures. I commend the note of optimism in his presentation, for it is essential to convince the profession that carcinoma of the cecum and, indeed, of the rest of the large bowel yields a high percentage of cures if handled with surgical boldness. I am impressed in my daily work with the attitude of hopelessness so prevalent among internists and general practitioners faced with carcinoma of the colon and intestine. They must be informed of such results as Dr. Dixon has presented and must be shown that the prognosis of cancer of the colon is very different from that of carcinoma of the esophagus. In these days of what might almost be called radiotherapeutic propaganda, it is refreshing to see what can be accomplished by plain surgery. I am not opposed to radiotherapy, but I remain unconvinced of its value in neoplasms of the colon and rectum. It is striking that little if any advance has been made in making early diagnoses in this field. There is too great a tendency to think of colon cancer in terms of pain, obstruction, constipation and diarrhea. It must be emphasized and taught that an indefinite dyspepsia, a loss of appetite and strength or an obscure anemia are much more common as the early symptoms. I feel that progress would be made if the middle aged patient with dyspepsia was first subjected to a fluoroscopic examination of the colon.

DR. J. W. THOMPSON, St. Louis: In the face of recurrence of carcinoma of the right half of the colon, the situation is not entirely hopeless. To prove this contention I want to summarize the histories of two patients in whom recurrence took place some years after the resection of the primary growth. Whether these were true recurrences or were additional, new primary lesions is debatable. Both of these patients were elderly men. One of them lived eight years before demonstrable recurrence or secondary growth was demonstrated. The other developed an additional carcinoma at some distance from the primary lesion fourteen years after resection of the first growth and in this patient there was metastatic involvement of the regional lymph nodes at the time of the primary operation. It has now been eight years since the resection of the second carcinoma of the right half of the colon in one patient and four years since the resection of the carcinoma in the second patient, which occurred slightly farther down the bowel. I want to emphasize this point because it brings out the necessity of detailed clinical follow up of these patients. They must be reexamined from time to time and this reexamination must include careful checking by guaiac test of the occult blood reaction in the stools as well as proctosigmoidoscopy and the barium enema examination including fluoroscopy and roentgenography. Recexploration of the abdomen is warranted, in selected cases, despite recurrence of malignant growths.

NEURITIS

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AND

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Neuritis is common; it is easily recognized, yet few conditions are so often inadequately diagnosed. The trouble is not that the physician does not name the pathologic condition correctly but that he is too willing to be satisfied with the mere naming and thereat cease his investigations. It seems important, therefore, to summarize at this time the status of knowledge concerning the etiology of neuritis so that the cause in each case may be more correctly understood and the treatment more appropriate. During the last fifteen years epidemics of encephalomyelitis, the advancing knowledge of dietary deficiency, and new industrial poisons have all added valuable facts to aid in the understanding of neuritis.

Many textbooks give excellent descriptions of the different types of neuritis, but the material is widely scattered under various headings. Of the monographic studies the best are probably by Ross and Bury¹ in 1893, by Harris² in 1926 and by Collier³ in 1932. A thorough discussion of the literature would be interminable, and even a complete bibliography would be too long to print in this connection; so, for each category of neuritis discussed, we have given one or two selected references, often the earliest one, as the first description is usually the best.

The term "neuritis" as used in this paper is to be understood as meaning a painful, degenerative (often inflammatory) process in any part of the peripheral neuron. It seems unnecessary to introduce the word "neuronitis," as other authors⁴ have unsuccessfully tried to do, because the syllable "neur" sufficiently indicates that it is the neuron that is involved. Rarely, if ever, are pathologic changes found in one part of a neuron alone; if the axon is primarily affected there is soon a change in the nerve cell, and vice versa. When the primary pathologic condition is localized at one part of the course of a nerve fiber, its position is often indicated by the symptomatology; eventually, however, the whole neuron suffers.

For example, in figure 1 an acute inflammation of the ventral horn cells at *A* gives the picture of anterior poliomyelitis with paralysis and later atrophy of the muscle (*M*); at the onset there is evanescent tenderness along the whole axon while the process is acute. Inflammation of the dorsal root ganglion (*D*) gives the contrasting picture of herpes zoster with a skin eruption and localized pain at *S*.

Chronic syphilitic inflammation, however, at *D* and *R*₁, causes locomotor ataxia, with intermittent pain, great loss of muscle sensibility and of skin sensibility to a less degree. Root lesions at *R*₁ and *R*₂ could be predominantly sensory or motor, but usually inflammation of the roots ("radiculitis") involves both elements to a greater or less degree (*R*). The fact that the location of the main lesion is in the root is ascertained

by the segmental distribution of the peripheral symptoms. Similarly, inflammation, degeneration, tumor or trauma of a peripheral nerve (*N*) is recognized by the well known anatomic distribution of the nerve fibers making up each nerve trunk. Local injuries to terminal filaments in skin (*S*) and muscle (*M*) occur, of course, but either they are so local as to be insignificant or else they spread upward and involve the rest of the neuron, as in rabies, tetanus and rarely in local diphtheritic infection.

Thus our definition of neuritis (briefly stated) should be modified to read: "A painful,⁵ degenerative process in any part of the peripheral neuron causing a functional loss, which, according to the anatomy involved, may be sensory, motor or mixed."

From the etiologic point of view the causes of pathologic changes in a peripheral neuron are so multifarious that a discussion of each would be tedious and confusing. The principal causes of neuritis have, therefore, been arranged in table 1 (the bibliography being given in table 2). This is indeed somewhat arbitrary, but the table presents the relationship as it is known at the present time. Obviously this is imperfect, because the etiologic agents in several of the categories are as yet entirely unknown.

The principal division into "general" and "local" is fundamental in that it separates out the less important group of unilateral disorders that attack one nerve locally, from the great group of systemic disorders that cause severe symptoms in several nerves, usually bilaterally and often symmetrically.

The "local" group is called relatively unimportant for two reasons. In the first place, the etiology is obvious, as in the mechanical cases in which surgical or medical therapy can be instituted by the appropriate physician; secondly, the symptoms are often trivial and transitory. Of course some cases of local paralysis may be severe and long lasting, and local infection of a nerve may be painful and dangerous. By and large, however, the groups under "general" are clinically more important and endanger life more than the "local" types, which are mainly seen in "outpatients," and in military and tropical practice.

REPORT OF CASES OF GENERALIZED POLYNEURITIS

To show how this table may be of use in diagnosis, some illustrative cases are here reported and discussed.

CASE 1.—*Acute infectious (febrile) polyneuritis.* An Italian girl, aged 17 years, single, admitted to the Neurological Service of the Boston City Hospital, Dec. 24, 1932, complained of weakness of the legs for two weeks. One month before admission she had an acute infection of the upper respiratory tract, accompanied by sore throat, epistaxis, fever, headache and nausea. The acute symptoms improved after a week, except for occasional headaches, anorexia and generalized weakness. December 14 her legs suddenly became weak and she collapsed. She was unable to walk and was carried to bed. There was a tingling sensation in the feet. Two days later she noticed stiffness of the left side of the face, inability to close the left eye, and "pins and needles" sensation in the finger tips. About this time she suffered from severe headaches and vomited; she had pain between the shoulders, tenderness of the calf and thigh muscles, insomnia and urgency of urination.

In childhood she had measles, chickenpox, scarlatina, pneumonia and diphtheria. She never had poliomyelitis, rheumatic fever, chorea, pertussis or a venereal disease. The family history was not significant.

On physical examination, December 25, the patient was well developed and nourished; she weighed 110 pounds (50 Kg.)

5. The element of pain may be extremely mild and evanescent, as in lead poisoning and infantile paralysis.

From the Department of Neuropathology, Harvard Medical School, and the Neurological Unit, Boston City Hospital.

1. Ross, J., and Bury, J. S.: *On Peripheral Neuritis—A Treatise*, London, C. Griffin & Co., Ltd., 1893.

2. Harris, Wilfred: *Neuritis and Neuralgia*, New York, Oxford University Press, 1926.

3. Collier, J.: *Morrison Lectures*, Edinburgh M. J. 39: 601 (Oct.), 672 (Nov.), 697 (Dec.) 1932.

4. Barker, L. F.; Cross, E. S., and Irwin, S. V.: *Am. J. M. Sc.* 159: 157 (Feb.) 1920.

and was 5 feet 6 inches (170 cm.) tall. She was resting comfortably in bed, complaining of inability to close the left eyelid, burning of the eyes, lacrimation, pain between the shoulders, numbness of the fingers and toes, urgency of urination, tenderness of the biceps, hamstring and gastrocnemius muscles, and extreme weakness of the legs. There was complete paralysis of the left side of the face and slight weakness of the right side of the face; the face and neck were flushed. The pupils were equal and reacted to light and in accommodation. Other cranial nerves were normal. The tonsils were red and swollen and the palate and tongue were normal. The lungs were clear and resonant throughout. The heart was not enlarged; there were no cardiac murmurs; the pulse was 120 and the blood pressure 120 systolic, 82 diastolic. The abdomen was normal, except for weak musculature of the wall and absence of abdominal reflexes. Reflexes of the biceps, triceps, patellar and achilles tendons were absent bilaterally. The plantar reflexes were normal. Any manipulation of the legs that tended to stretch the sciatic nerves caused intense pain. The legs were weak, especially the left. The grip of the hands was weak. No sensory changes were present except hyperesthesia of the feet, and paresthesia of the fingers and toes.

Examination, Jan. 7, 1933, showed that the patient was well oriented, mentally clear and cooperative. There was a com-

muscle tenderness in the left biceps brachii and thigh muscles. Earlier in the day she had slight epistaxis, which required a nose pack.

January 28, the left facial muscles were still weak but she was able to close the left eye. She did not blink the left eye as often as the right. The legs were much stronger, and there was no drop foot.

January 30 there was slight epistaxis. February 2, paresthesia of the fingers had disappeared; she was able to walk. February 5, neurologic examination showed a slight left facial weakness, the left palpebral fissure wider than the right; all muscles of facial expression were active. The face had more expression and had lost the "ironed out" look. The biceps, triceps, patellar, achilles, and abdominal reflexes were present, equal and active; plantar reflexes were normal. There was marked muscle tenderness over the right calf and thigh and the left biceps brachii muscles. Walking brought out a slight weakness of the right leg. February 7 an accurate perimetric test confirmed the finding by rough test of a slight peripheral concentric constriction of the visual fields noted earlier. February 8, left facial weakness was still present, especially on volitional expression. There was pain with anterior flexion of the neck. The calf, thigh and left arm muscles were still painful. Knee jerks were hyperactive and equal; ankle jerks

TABLE 1.—Principal Causes of Neuritis

Neuritis					
Generalized Polyneuritis			Localized Neuritis		
Virus	Bacteriotoxic	Deficiency or Metabolism	Chemical	Mechanical	Infectious
Measles Smallpox Chickenpox Parotitis Herpes "Acute febrile" "Acute infective" "Landry's" Poliomyelitis Encephalomyelitis Epidemic (lethargic) encephalitis Erythro-edema Acute rabic myelitis	Foetal infections "Rheumatism" Erysipelas Scarlet fever Rheumatic fever Chorea Septicemia Puerperal fever Gonorrhea Meningitis Diphtheria Typhoid fever Paratyphoid fever Typhus fever Influenza Pneumonia Malaria Relapsing fever Serum sickness Acute enteric fever	Pellagra Pernicious anemia Sprue Beriberi "Alcoholic neuritis" "Korsakow's psychosis" Pernicious vomiting Hunger edema Pregnancy Chronic colitis Cancer with cachexia Tuberculosis with cachexia Scarlity with cachexia Diabetes Myxedema Hematoporphyria "Recurrent polyneuritis" "Chronic progressive polyneuritis" Chronic bacillary dysentery	Mercury Lead Silver Arsenic Phosphorus Methyl alcohol Ethyl alcohol Ethyl iodide Trichlorethylene Carbon tetrachloride Trinitrotoluene Dinitrobenzene Triorthocresyl phosphate Aniline Sulphonethylmethane, barbitals, etc. Chloral, Chlorbutanol Carbon monoxide Carbon bisulphide	Pressure tumor edema arthritis fibrosis Trauma Saturday night paralysis Volkmann contracture Meralgia paresthetica	Diphtheria Tetanus Streptococci Leprosy

plete left facial paralysis and a slight flattening of the right side of the face. The neck was not stiff on anterior flexion, but this caused a sharp pain between the shoulders. The arms were weak and showed a fine tremor when held in extension. Marked weakness and impaired voluntary movements were noted in the legs, especially the right; subjectively the left leg was weaker. There was tenderness in the calf, thigh and biceps brachii muscles. Sensory examination showed tenderness of the sciatic and brachial nerves; areas of diminished sensation to touch and pain were found on the flexor surface of the arms. There was diminished vibratory sense below the knees. All tendon and abdominal reflexes were absent. Plantar responses were diminished. The pupils were regular and reacted well in accommodation and sluggishly to light. January 14 the patient was presented at a conference before Drs. Brouwer, Ayer, Crothers, Fremont-Smith, Putnam and Merritt. Dr. Cobb's examination showed a complete left facial paralysis, weakness of the right side of the face, fine tremor, incoordination and weakness of the arms, weakness of the legs, and painful sciatic nerves; there were absent reflexes of the upper extremities, abdomen and lower extremities; the Babinski sign was absent; the heel-to-shin test was poorly performed. There was no demonstrable sensory loss except loss of vibratory sense in the lower legs. In his discussion he linked up the neurotropic and dermatotropic diseases, showing a definite relationship between dermatitis, myositis, neuritis, neuronitis and myelitis. It was agreed that the case was one of infectious polyneuritis, probably due to an unknown filtrable virus.

January 25, the left facial muscles showed weak movements. She still complained of headache, slight vertigo and slight

were present but decreased. She weighed 106 pounds (48 Kg.), a loss of 14 pounds (6.4 Kg.) since the onset of her illness.

Laboratory Data: Urinalysis showed occasional faint traces of albumin and a few white blood cells on numerous examinations. There were no casts or red blood cells. White blood counts were: Dec. 24, 1932, 11,400; Jan. 14, 1933, 13,000; January 28, 12,700, and February 7, 8,500. The red blood counts were normal. Hemoglobin, December 24, was 85 per cent. The differential count was 77 per cent polymorphonuclears, 21 per cent small lymphocytes, and 2 per cent monocytes. Nonprotein nitrogen determinations on December 24 and 25 and on January 31 were 33, 33 and 17 mg. per hundred cubic centimeters, respectively. Fasting blood smear, January 31, was 76 mg. per hundred cubic centimeters. Blood culture showed no growth. The Kahn and Wassermann tests of the blood were negative. The spinal fluid readings are given in table 3. Roentgenograms of the skull were negative. Electrical reactions on February 4 showed a partial reaction of degeneration of the left facial nerve. An electrocardiogram on February 10 showed sinus arrhythmia and a pulse rate of 90.

At the time of discharge, February 13, the patient had only a slight weakness of the right leg. An examination two months later, in the outpatient department, revealed that she had made a complete recovery.

The diagnosis was infectious polyneuritis.

This type of case, although described by Osler⁶ as early as 1892 and by Ross and Bury¹ in 1893, was

⁶ Osler, William: *The Principles and Practice of Medicine*, ed. 1, New York, D. Appleton & Co., 1892, p. 777.

not well recognized as a clinical entity until the World War. Then Patrick,⁷ Kennedy⁸ and Bradford⁹ all observed cases of acute infectious neuritis that were severe and often fatal. Many of these cases occurred during the period when "lethargic encephalitis" was epidemic. Moreover, the more severe cases showed

TABLE 2—References to Articles on Principal Causes of Neuritis

GENERALIZED POLYNEURITIS

VIRUS

- Measles (Fox, T C Lancet 1:771, 1887. Box, C R, ibid 1:22, 1931)
Smallpox (Henderson, G C Lancet 2:1098, 1881).
Chickenpox (Ross, J, and Bury, J S On Peripheral Neuritis—A Treatise, London, C Griffin & Co, Ltd 1893)
Parotitis (Feiling, A, and Viher, G J Neurol & Psychopath 2:353, 1922)
Herpes (Levaditi, C, and Harvier, P Ann Inst Pasteur 34:911, 1920).
"Acute febrile" (Osler, William The Principles and Practice of Medicine, ed 1, New York, D Appleton & Co, 1892, p 777).
"Acute infective" (Kennedy, Foster Arch Neurol & Psychiat 2:621, 1919. Bradford, J R, Bashford, E F, and Wilson, J A Quart J Med 12:88, 1919).
"Landry's" (Taylor, E W and Clarke, J E J Nerv & Ment Dis 27:177, 1900. Taylor, E W, and McDonald, C A Arch Neurol & Psychiat 27:79, 1932. Landry, J B O Gaz hebdomed de med, Paris, 1859, p 472).
Polymyelitis (Rivers, T M Filtrable Viruses, Baltimore, Williams & Wilkins 1928. Peabody, F W, Draper, George, and Dochez, A R Monograph of Rockefeller Institute for Medical Research, No 4, June 1, 1912).
Encephalomyelitis (Barker, L F, Cross, E S, and Irwin, S V Am J M Sc 159:157, 1920. Bassoe, Peter J A M A 74:1009, 1920).
Epidemic (lethargic) encephalitis (Bassoe, Peter J A M A 74:1009, 1920).
Erythro-edema (Selter, O Arch f Kinderh 37:468, 1903. Blackfan, K D, and McKhann, C F J Pediat 3:45, 1933. Bury, J S M Chron, Manchester 17:19, 1892 1893).
Acute rabic myelitis (Hurst, E W, and Pawan, J L J Path & Bact 35:301, 1931).

BACTERIOTOXIC

- Focal infections (Mitchell S W, and Keen, W W Circular No 6, Surgeon General's Office, March 10 1864).
"Rheumatism" (Copeman, W S C The Treatment of Rheumatism in General Practice, London, 1933. Bury, J S M Chron, Manchester 17:19, 1892 1893).
Erysipelas (Browning, W Brooklyn M & S J 1:11, 1888).
Scarlet fever (Shepard M Times & Gaz 1:144, 1882).
Rheumatic fever (Harris, Wilfred Neuritis and Neuralgia, New York, Oxford University Press 1926).
Chorea (Gowers, W R Brit M J 1:636, 1881).
Septicemia (Gowers, W R and Taylor, J A Manual of the Nervous System, Philadelphia P Blakiston's Son & Co, 1899).
Puerperal fever (Vinay, C N Arch obst et de gynec, Paris, 10:463, 1895).
Gonorrhea (Kunos, S Deutsche Ztschr f Nerven 121:213, 1931).
Meningitis (Mills, C K M News Philadelphia 52:357, 1888).
Diphtheria (Walshe, F M R Lancet 2:232, 1918).
Typhoid (Vincent, H, and Muratet W Typhoid Fever and Paratyphoid Fevers, University of London Press, 1917, p 59).
Paratyphoid fever (Vincent H, and Muratet W Typhoid Fever and Paratyphoid Fevers, University of London Press, 1917, p 59).
Typhus fever (Fischer, J H K Ein Fall von Polyneuritis peripherica als Folgezustand von Typhus abdominalis, ed 8, Berlin, 1901).
Influenza (Greenfield, J G J Path & Bact 33:453, 1930).
Pneumonia (Leech, D J M Chron, Manchester 13:265 1890).
Malaria (Romberg, M H A Manual of the Nervous Diseases of Man, New Sydenham Society, 2:368 and 450, 1853. Mendelson, R W, J Trop Med 25:139, 1922).
Relapsing fever (Carmack, J R Clinical Studies 1876, p 215).
Serum sickness (Wilson, George, and Hadden, S B J A M A 98:123, 1932).
Acute enteric fever (Farnell, F J and Harrington A H Am J M Sc 170:52, 1920, abstr. from J Neurol & Psychopath 2:61, 1922. Handford, H Brain 11:237, 1888 1889).

DEFICIENCY OR METABOLISM

- Pellagra (Rhoads, C P Personal communication, 1932. Spies, T D, and DeWolf, H F Am J M Sc 186:521, 1933).
Orton, S T, and Bender, L Bull Neurol Inst, New York 1:507, 1931. Eusterman, G B, and O'Leary, P A Arch Int Med 47:633, 1931. Carmichael, N, and Stern, R Brain 54:189 1931).
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Sprue (Castle, W B, and Rhoads, C P Lancet 1:1198, 1932. Miller, D E, and Rhoads, C P Proc Soc Exper Biol & Med 30:540, 1933).
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"Alcoholic neuritis" (Minot G R, Straus M B, and Cobb, Stanley New England J Med 208:1244, 1933).
"Korsakow's psychosis" (Korsakow and Serbski Arch f Psychiat 23:112, 1892).

7. Patrick, H T J Nerv & Ment Dis 44:322 (Oct) 1916.
8. Kennedy, Foster Infective Neuritis, Arch Neurol & Psychiat 2:621 (Dec) 1919.
9. Bradford, J R, Bashford, E F, and Wilson, J A Quart J Med 12:88 (Oct) 1919.

- Pernicious vomiting (Korsakow and Serbski Arch f Psychiat 23:112, 1892. Berkwitz, N J, and Wutkin, N H Surg, Gynec & Obst 54:743, 1932).
Hunger edema (Youmans, J B, Bell, A, Donley, D, and Frank H Arch Int Med 50:843, 1932).
Pregnancy (Straus, M B, and McDonald, W J J A M A 100:1320, 1933).
Chronic colitis (Burnett, F L, and Howe, P R J A M A 88:1705, 1927).
Cancer with cachexia (Harris Wilfred Neuritis and Neuralgia, New York, Oxford University Press, 1926).
Tuberculosis with cachexia (Joffroy, A Arch de physiol 1879, p 186).
Scurvy with cachexia (Oppenheim, H Berl klin Wchnschr 30:589, 1893).
Diabetes (Woltman, H W, and Wilder, R M Arch Int Med 44:576, 1929).
Myxedema (Means, J H, and Richardson E P Diagnosis and Treatment of Diseases of the Thyroid Gland, Oxford Monographs on Diagnosis and Treatment 55:289, 1929).
Hematuria (Harris Wilfred Neuritis and Neuralgia, New York, Oxford University Press, 1926).
"Recurrent polyneuritis" (Ungley, C C J Neurol & Psychopath 14:15, 1933).
"Chronic progressive polyneuritis" (Hyland, H H, and Russell W R Brain 52:278, 1930).
Chronic bacillary dysentery (Whitmore, E R, and Graham, D Nelson's Looseleaf Medicine, Vol 2, November, 1923).

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Silver (Gowers, W R, and Taylor, J A Manual of Diseases of the Nervous System, Philadelphia, P Blakiston's Son & Co, 1899).
Arsenic (Osler, William The Principles and Practice of Medicine Philadelphia, Lea & Febiger G, 1928. Reynolds, E S Lancet 1:166, 1901. Sheldon, W D, Doyle, J B, and Osterberg, A E Arch Neurol & Psychiat 27:322, 1932. Meisowitz, P Post Grad Clin, New York 15:674, 1900. Mella, H Arch Neurol & Psychiat 7:137, 1922).
Phosphorus (Gallavardin Gaz med de Paris, 1864, p 6).
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Trichlorethylene (Glaser, M A J A M A 96:916, 1931. Oppenheim H Berl klin Wchnschr 53:25, 1916).
Carbon tetrachloride (Tomb, J W, and Helmy, H M J Trop Med & Hyg, London 36:334, 1933).
Trinitrotoluene (Stewart G Brit M J 2:461, 1925).
Dinitrobenzene (Sykes, W, and Twigg, F G Lancet 2:127, 1889).
Triorthocresyl phosphate (Vonderahe, A R Arch Neurol & Psychiat 25:29, 1931. Smith, M I, and Elvove, E Pub Health Rep 45:1703, 1930. Harmsma, A, and Van Esvelde L W Arch f exper Path u Pharmacol 165:84, 1932. Merritt, H H, and Moore, M New England J Med 203:4, 1930).
Aniline (Reynolds, E S M Chron, Manchester 10:140, 1889).
Sulphonethyldimethane, barbitol, etc (Stewart, G Brit M J 2:461, 1925).
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Carbon monoxide (Bourdon, H Paris thesis, 1843).
Carbon bisulphide (Edge, A M Lancet 2:1167, 1889).

LOCALIZED NEURITIS

MECHANICAL

- Pressure tumor (Lewis, D, and Hart, D Ann. Surg 92:961, 1930. Mackay, W Lancet 1:777, 1932).
edema (Mackay, W Lancet 1:777, 1932).
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fibrosis (Harris Wilfred Neuritis and Neuralgia, New York, Oxford University Press, 1926).
Trauma (Tinel, J Nerve Wounds, New York, William Wood & Co, 1917. Pollock, L J, and Davis, L Peripheral Nerve Injuries, New York, Paul B Hoeber 1933).
Saturday night paralysis.
Volkman contracture.
Meralgia paraesthetica (Stooley, Byron J A M A 90:1705, 1928).

INFECTIOUS

- Diphtheria (Walshe, F M R Lancet 2:232, 1918).
Tetanus (Wilson, George, and Hadden, S B J A M A 98:123, 1932).
Streptococci (Orr, D, and Rows, R G Brain 36:271, 1914).
Leprosy (Monrad Krohn, G H Neurological Aspect of Leprosy Christiania, D Dybwad, 1925).

evidence of myelitis, such as exaggeration of the deep reflexes during convalescence and Babinski's sign. Some showed cranial nerve paralyses difficult to differentiate from those of encephalitis. The principal reason for segregating these cases into a neuritis group is that the disease begins with tenderness of the muscles and nerves, flaccid paralysis and paresthesia. If it were not that the tenderness persisted for weeks, the patients might well be thought to have infantile paralysis. In fact they do have, pathologically speaking, a certain amount of acute anterior polymyelitis, but the axon appears to be more severely involved than the nerve

cell, which obviously does not die but is able to survive and produce a new axon in those cases in which recovery occurs. Bradford and his co-workers even isolated a virus by using the Flexner-Noguchi method and transmitted this to monkeys. Since this work has not been adequately confirmed, one cannot say that the etiology of this disease is known. Nevertheless, the clinical picture, the epidemiology, the fact that patients with encephalitis sometimes have a similar neuritis, and the few autopsies which show acute changes in the white and gray matter of the central nervous system, are pieces of evidence which, taken together, point to the tentative classification of this disease with the known "virus diseases." Infantile poliomyelitis and epidemic (lethargic) encephalitis have already been mentioned. "Landry's paralysis" is a name frequently and loosely used; the original description probably referred to cases of this acute infectious type; most cases now diagnosed as "Landry's" are fulminating examples of ordinary infantile paralysis. On the whole, as Taylor¹⁰ urged on many occasions, it is best to discard the term entirely.

Other known virus diseases that may painfully paralyze the peripheral neuron and hence can be said to produce neuritis are measles, smallpox, herpes zoster and parotitis. The last is rare, but occasional cases occur in which inflammation of the parotid gland, not unlike "mumps" in onset, is accompanied by a widespread polynucleuritis and often iritis.

In summary, one may characterize acute infectious polynucleuritis by the acute or subacute onset with fever, anorexia, fatigue and weakness. Then flaccid paralysis of the extremities appears, usually following numbness and tingling of the digits; usually there is facial weakness and occasionally complete bilateral facial paralysis and slight sphincter disturbances. There are no mental changes. Examination of the patient reveals a widespread muscle weakness, or even complete flaccid paralysis, with absence of tendon reflexes; the neck may be slightly stiff and painful on anterior flexion.

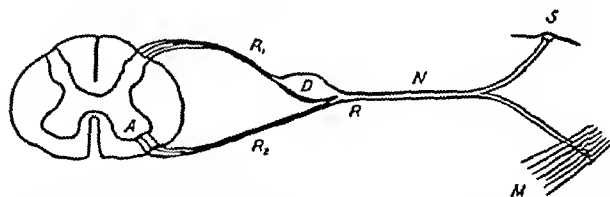


Fig. 1.—Diagram of a spinal cord segment and peripheral nerve with the sensory end-organ (S) and the motor endings in the muscle (M). The various parts of the nerve infected in neuritis are described in the text.

There is marked nerve and muscle tenderness. Sensory examination shows diminished vibratory and position sense and, occasionally, diminished cutaneous sensibility of the hands and feet. There is a slight leukocytosis, and a low fever in the beginning of the disease. The spinal fluid shows no constant changes; it may be normal and may show an excess of protein and a few leukocytes.

CASE 2.—Bacteriotoxic polyneuritis from pansinusitis. A white man, aged 34, a laborer, admitted to the Neurological Service of the Boston City Hospital, Dec. 15, 1931, complained of weakness and dizziness of four weeks' duration. His illness started six weeks before entry to the neurologic ward, with an acute attack of swelling and tenderness of the right cheek.

He had had slight fever throughout the course of the disease. He was admitted to the aural service, Nov. 24, 1931, and the right antrum was opened and drained. He was discharged November 26. Twelve days later he noticed thickness and indistinctness of speech. This was soon followed by aching pains behind both eyes, and "pins and needles" sensation in the hands and feet. The fingers and toes became numb and cold. The legs became weak and clumsy. By December 10 the numbness of the feet had gradually ascended to the hips. He also complained of loss of weight, anorexia, constipation, gas on the stomach, difficulty in swallowing, and occasional regurgitation of food through the nostrils. The weakness of the arms and legs gradually progressed until he was confined to bed, unable to walk or care for himself. He was readmitted, December 15.



Fig. 2 (case 1).—Bilateral facial weakness more marked on the left. In A she was asked to raise her eyebrows and look up. In B she was asked to close her eyes and smile, and in trying to do this she smiled spontaneously.

The past history and family history are not remarkable.

On physical examination the patient was well developed and poorly nourished, lying in bed acutely ill. There was nasal discharge and tenderness over the right frontal sinus and antrum. The viscera and heart were normal.

On neurologic examination the cranial nerves were normal except for the fifth, eighth and ninth. The fifth showed loss of sense of pain, temperature, and touch on the right cheek. Hearing was reduced to one third on the right; the Weber test was referred to the right. The soft palate was weak, and the gag reflex was absent. The voice was thick and indistinct. In the visual fields the fundi and pupils were normal. Motor system: There was a generalized weakness in all extremities; he was unable to stand; he raised his arms feebly. There was no complete paralysis of any muscle group. The muscles of the legs showed conspicuous atrophy. Sensory system: Examination showed a hypesthesia for pain, temperature, and light touch over "glove and stocking" areas of both hands and feet. Vibratory sense was diminished in the lower extremities. Position sense was lost in the fingers and toes. There was tenderness of the muscles and nerves in the lower extremities. Reflexes: The triceps, biceps, radial, patellar and achilles tendon reflexes were absent. Abdominal and cremasteric reflexes were absent. The plantar responses were normal.

Urinalysis showed no albumin, sugar, blood cells or casts. Examination of the blood showed: hemoglobin, 85 per cent; red blood cells, 4,870,000; white blood cells, 10,700; differential count and smear, normal; blood nonprotein nitrogen, 35 mg.; the blood Kahn test, negative.

Lumbar puncture, Dec. 10, showed no abnormality. Nasal culture, Jan. 20, 1932, was positive for *Streptococcus haemolyticus* and *Staphylococcus aureus*. Blood cultures were all negative. Tests on the urine for arsenic and lead were negative. Roentgenograms showed cloudiness of the right antrum.

January 22, the patient was transferred to the aural service, where a radical sinus operation was performed on the right side. There was a normal convalescence.

February 12, the patient showed rapid improvement in the strength of the hands and arms. March 2, the patient was able to get out of bed and sit up in a chair. March 8, he was discharged home; he was able to walk with the aid of crutches. There was no weakness except that of the legs.

The social service in the follow up reported that on April 1 he began work carrying ice and has been apparently perfectly well up to July 1, 1933.

10. Taylor, E. W., and Clarke, J. E.: *J. Nerv. & Ment. Dis.* 27: 177, 1900. Taylor, E. W., and McDonald, C. A.: *The Syndrome of Polyneuritis with Facial Diplegia*, *Arch. Neurol. & Psychiat.* 27: 79 (Jan.) 1932.

In this case, at first glance, it seems obvious that the polyneuritis was caused by a chronic focal infection. The time relations seem right: five and a half weeks of severe sinusitis before the neuritis. Moreover, the fact that relief followed radical drainage seems to clinch the argument. As in all complex situations, however, one must look for all the possibilities, and here it could be argued that dietary deficiency was a factor. This patient had a long illness, with anorexia, occasional vomiting, constipation and marked loss of weight; these data cannot be overlooked, and it must be admitted that lack of proper vitamin ingestion may have been important in the etiology. Perhaps more than one factor is needed to produce polyneuritis, for, if prolonged infection alone could easily produce it, the syndrome ought to be much more common than it is. In fact, the few cases we could find in the records of the neurologic service that seemed obviously related to focal infection all showed a remarkable loss in weight.

Probably local abscess formation, due to pyogenic organisms, with a subacute course is the commonest cause of the entity we are calling "bacteriotoxic polyneuritis." One subgroup would be dental abscesses, especially the apical infections with streptococci. Many cases have been seen in which dental caries was the

a rôle. For example, in the days when typhoid was common and was treated by virtual starvation, a condition not unlike beriberi was a common result. Indeed, the moral to this tale is that in all chronic illness, especially when subacute and chronic focal infection plays a rôle, it is imperative not only to keep up a reasonably high caloric content in the diet but to see to it that plenty of each vitamin is being ingested.

CASE 3.—Neuritis with alcoholic pellagra. A man, aged 40, single, a World War veteran, admitted to the Neurological Service of the Boston City Hospital, June 20, 1933, complained of weakness, inability to walk, numbness of the feet and hands, and painful soles of the feet for one month. This illness was an acute exacerbation of a condition that he had had for the past six years. During this time he had lived a haphazard existence without doing work for self support or accepting aid from charity organizations. His food consisted of what he could get by begging or by imposing on friends. His dietary habits had been irregular. Many times he had periods of two days' starvation. A chunk of meat, bread and coffee would make up his usual noonday meal. He disliked vegetables and made no effort to get them. He occasionally ate potatoes. In spite of his difficulty to obtain proper food, he was able to get plenty of alcohol and "moonshine," and he consumed from 2 pints to 2 quarts daily with occasional respites.

A year and a half before he was in a good state of health and weighed approximately 230 pounds (104 Kg.); on admission he weighed 160 pounds (73 Kg.). He said that lack of food and appetite was responsible for the loss in weight. For the past six weeks he had had frequency of urination, numbness of the hands and feet, stiffness of the muscles and anorexia. There was an indefinite history of vomiting and diarrhea. One month before his legs were so weak that he was confined to bed.

The past history showed that he had had three admissions to the Chelsea Marine Hospital for treatment of the same syndrome. On each admission he had been discharged as cured after a stay of from four to five months. There was no history of syphilis. There had been no other significant illness.

On physical examination, June 20, the patient was well developed and emaciated; he was lying in bed, unable to walk. His face was rough and covered with a heavy growth of beard. The skin was rough and dry. There was a scaling dermatitis of the hands and feet with a line of demarcation at the wrists and ankles. There was marked dental caries, a foul breath, a large tongue without atrophy or beefy color, and an injected throat. The apex beat of the heart and the left border of dullness measured 9.5 cm. from the midsternal line. There were no thrills or murmurs. The pulse was regular; the blood pressure was 120 systolic, 76 diastolic; the pulse was 80. The peripheral vessels showed no evidence of arteriosclerosis. The chest wall showed wasting. The lungs were resonant and clear. The abdominal wall was held rigid, but no abnormality was made out. The genitalia were normal. The extremities showed a pellagroid dermatitis, emaciation, weakness and soreness of the muscles, voluntary rigidity, and bilateral drop foot.

Neurologic examination showed mental confusion, fair orientation and poor memory. There was a fine unsustained horizontal nystagmus. The cranial nerves showed no other abnormalities. Motor system: There was a generalized muscular weakness and wasting; this was most marked in the small muscles of the hands, forearms and legs. There was bilateral drop foot. He was unable to walk because of weakness of the legs and soreness of the feet. There was a fine tremor of the arms. Coordinated movements of the arms and legs were poorly performed. Sensory system: There was a "glove and stocking" loss of perception of pin prick, temperature and light touch. Gentle pressure to the soles of the feet, calf muscles and thighs caused shooting pains. Pressure on or stretching of the sciatic nerve caused severe pain. Vibratory and position sense of the arms and legs were greatly diminished. Reflexes: The biceps, triceps and radials were present, active and equal. Knee jerks were present, but diminished. The achilles reflexes were absent. The abdominal, cremasteric and plantar reflexes were absent; there was no Babinski reflex. Sympathetic: The pupils reacted sluggishly

TABLE 3.—Cerebrospinal Fluid Readings

Date	Initial Pressure	Lymphocytes	Red Blood Cells, per C. mm.	Protein, Mg. per 100 Cc.	Sugar, Mg. per 100 Cc.	Chloride, Mg. NaCl per 100 Cc.	Colloidal Gold	Wassermann
12/24/32	130	5	42	80	91	702	0000000000	Negative
12/25/32	200	5	5	87	67	726	1120000000	Negative
1/10/33	130	3	10	80	...	...	0001111100	Negative
1/24/33	105	13	176	55	...	...	0000000000	Negative
2/ 2/33	120	3	0	28	74	732	0000000000	Negative

only infection discovered, and some of these patients have improved conspicuously after tooth extraction and pus drainage. Such evidence, however, must be regarded skeptically; infected teeth are too common and polyneuritis cases are too rare to be lightly linked as cause and effect. Other factors must be sought.

It is important here to mention the analogy to the clinical syndrome called "polyarthritis"; there probably is a significant relationship. A great many cases of mild polyneuritis associated with arthritis¹¹ are never seen by the neurologist because the internist treats the main symptoms and knows that, if he cures the joints, the nerves will probably follow suit. Involvement of the muscles frequently occurs with arthritis, but myositis is rarely diagnosed, although lame, stiff and tender muscles are one of the chief complaints. All too frequently neuritis is overlooked, even when marked muscular atrophy is present. In fact, it should be emphasized that the old fashioned term "rheumatism" (including as it should myositis, arthritis and neuritis) is a much better term than "arthritis," just because it is inclusive. Moreover, "rheumatism" is a disease treated by general practitioners, and "arthritis" tends to drift to orthopedic specialists.

The list of infections that may be associated with polyneuritis is long. In several of those listed (table 1) subacute abscess formation is probably a factor. In a number of them dietary deficiency undoubtedly plays

11. Copeman, W. S. C.: The Treatment of Rheumatism in General Practice, Baltimore, William Wood & Co., 1933.

to light and well in accommodation. The hands and feet were cold, dry and desquamating.

Laboratory Data: The urine was normal. Examination of the blood showed hemoglobin, 50 per cent; red blood cells, 3,850,000; white blood cells, 5,400; differential: 60 per cent polymorphonuclears, 28 per cent lymphocytes, 4 per cent monocytes, 2 per cent eosinophils and 6 per cent basophils. The smear showed achromic red cells with normal size and shape. The Kalin test was negative. Lumbar puncture showed an initial pressure of 130 mg. of water, good dynamics; it was clear with no cells; the protein was 47 mg. per hundred cubic centimeters; colloidal gold test, 0012110000; the Kahn test negative. Gastric analysis: There was no free hydrochloric acid fasting, thirty minutes following 40 cc. of 7 per cent alcohol or thirty minutes following 1 mg. of histamine subcutaneously. Combined acid was 0.3, 0.5 and 0.6 per cent, respectively.

If this patient had fabricated lies to compensate for his memory defect—in other words, if he had shown typical “confabulations”—the case would have been labeled “Korsakow’s psychosis” and the pellagrous aspect of the disease might have been largely overlooked. Since this special sort of memory defect was not found (probably because he was too dull and confused to make an effort to fill in the memory gaps), the case was diagnosed “pellagrous psychosis.” On such tenuous threads do differential diagnoses hang! An understanding of the pathologic process causing these two supposedly separate syndromes makes it obvious that no differential diagnosis is necessary, for they are merely slight variations of one and the same disease process. In a recent paper on alcoholic polyneuritis¹² one of us emphasizes how unsatisfactorily the pathology has been studied but shows that, when viewed from the new standpoint of deficiency disease, some order seems to rise out of the chaos. The patho-

spicuous lesion. A third, less observed or rarer, has spinal cord lesions resembling those found in pernicious anemia. Scurvy, too, may result from chronic alcoholism and an analogy might be drawn between the vascular lesions of scurvy and those found in “polio-encephalitis superior” due to chronic alcoholism.

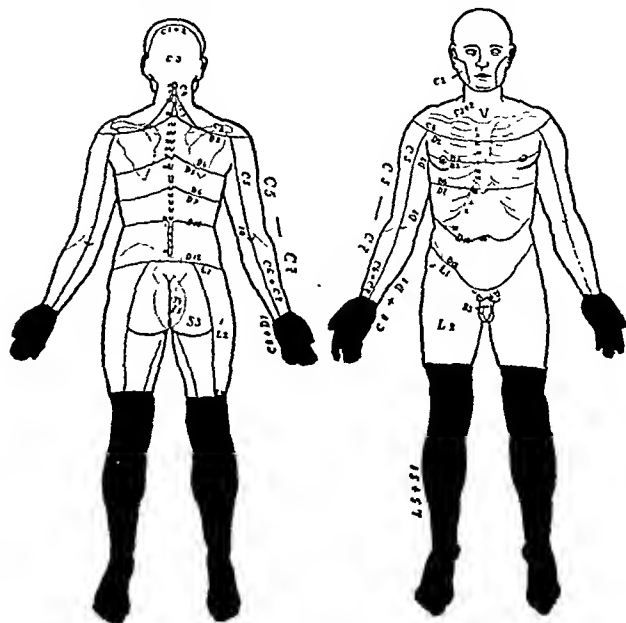


Fig. 4.—The black areas show the location of hypesthesia for pin prick, temperature and light touch on June 27, 1933. Pressure on the soles and muscles of the legs and thighs, however, causes sharp shooting pain. Vibration and position sense are absent at ankles and wrists.

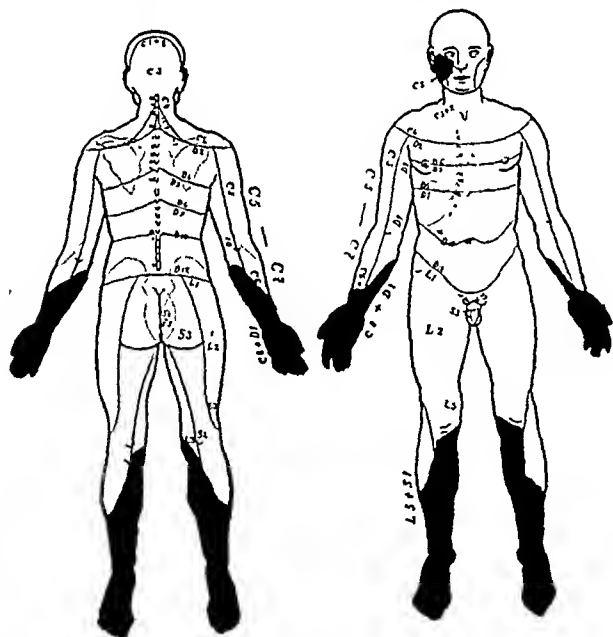


Fig. 3.—Black areas on hands and feet show location of hypesthesia for pain, temperature and light touch on Dec. 16, 1932.

logic changes of one group of alcoholic patients closely resemble those of beriberi, in which the lesions are essentially a degenerative neuritis of the long peripheral nerves. Another group, the Korsakow syndrome, has pathologic changes much like pellagra, in which nerve cell degeneration in the cerebral cortex is the con-

Thus it is evident that the old narrow classifications must be broken down; many cases will not exactly fit the diagnosis of “pellagra,” “beriberi” or “alcoholic neuritis,” and cases of dietary deficiency are known to show all these lesions—cerebral, spinal and neural. Even clinically the classification is less dogmatic. For instance, “alcoholic pellagra” and “alcoholic beriberi” are becoming accepted diagnoses. It is not a question of fine differentiation of syndromes but a problem of broad understanding of the pathologic process, which is alike in all but variously localized. This localization of the process in different parts of the nervous system determines quite different symptoms. In other words, the imbibing of alcohol may, by its effect on the digestive tract and the diet, precipitate neuronal degeneration (and perhaps vascular lesions) in the brain, cord or peripheral nerves. If the process is largely in the brain and peripheral nerves, Korsakow’s syndrome results. If the brain is affected severely, with less degeneration of the cord and least in the peripheral nerves, the syndrome is that of pellagra. The converse of this picture is “alcoholic” polyneuritis, while Nonne’s “myelitis intrafunicularis” is intermediate between these two.

Such a classification may be too schematic, but it gives a point of departure to the clinical investigator and a chance to rearrange the facts of this group of diseases. If the cases observed in the next few years fit fairly well into this classification, the value of having had the temerity to make such a speculation on inadequate data will have been proved.

The importance of recognizing that these lesions are due to definite dietary restriction and not to alcohol per se or any vague “toxin” is of great practical importance. In the first place, patients should be immediately

12. Minot, G. R.; Strauss, M. B., and Cobb, Stanley: New England M. J. 208:1244 (June 15) 1933.

and actively treated with concentrated vitamins, by mouth and parenterally. Secondly, state aid to the needy must be scientifically given; soup kitchens and bread lines can induce severe nervous and mental diseases if unbalanced diets are given out. The expense of giving adequate vitamins is small; the cost of feeding many people on an inadequate diet is great in future suffering and institutional care. Pellagra is not a rare disease. In large city hospitals many cases are found, especially among the aged and destitute. These old folk frequently live in rooms or attics, cook a little for themselves over a gas burner and go out occasionally for a meal. Their diet is inadequate at best. If alcohol is used to drown boredom or despair, appetite is reduced and even less is eaten. Neuritis, pellagra or subacute degeneration of the spinal cord eventually results; sometimes two or even all three of these conditions occur. Anemia and dermatitis are concomitants. Just how the blood changes, the skin lesions and the neuropathologic changes are related is not yet known; it used to be thought that "pernicious anemia" caused "combined system disease." This is now known to be untrue. Some common cause is working to start the two abnormal processes. The paresthesias of early pernicious anemia are probably due to slight neuritis; in the later stages of the disease, polyneuropathy with excruciating tenderness may dominate the symptom picture. Some types of beriberi and of alcoholic neuritis are indistinguishable; in fact, one might call the latter "white man's beriberi," a disease due to the substitution of alcoholic calories for food.

CASE 4.—Neuritis due to lead poisoning. A white man, aged 50, admitted to the Neurological Service of the Boston City Hospital, Aug. 20, 1931, complained of weakness of the arms and legs of ten days' duration. His illness dated to four or five months before, when there was considerable gastric distress without vomiting. One month before entry he noticed that his arms and legs were weak and became easily tired. The arms became increasingly weaker until he was unable to lift ordinary objects. Finally he could not lift his knife and fork to eat, or even button his clothes and care for himself. He noticed that his hands were cold and his right shoulder was "sore." During the five months of illness he had lost 20 pounds (9 Kg.) in spite of the fact that he was on a fairly good diet.

For the past seven years he had used a moderate amount of whisky; careful questioning showed that recently it had been "home brew" distilled in an improvised apparatus, the "worm" of which was a long coil of lead pipe. On test a sample of this brew showed 2 mg. of lead per liter.

On physical examination the patient was poorly nourished and extremely emaciated; he was lying in bed and was unable to raise his arms. The abnormalities noted included peripheral arteriosclerosis, beginning bilateral opacities of the lenses, carious teeth, pyorrhea, typical lead line on the gums, emphysematous chest, palpable liver, and varicosities of the legs. The blood pressure was 130 systolic, 75 diastolic.

On neurologic examination the patient was euphoric but well oriented, with good memory and normal sensorium. The cranial nerves showed no involvement. There was a very marked generalized wasting of the muscles of the trunk and extremities. This was more noticeable in the forearms than in the arms, and more noticeable in the legs than in the thighs. It was most conspicuous in the small muscles of the hands. The muscles were very irritable and contracted in localized spasms when stimulated by tapping. The shoulder girdle and abdomen showed weakness and atrophy. Fibrillary twitches were seen in the leg and arm muscles after exercise. There was bilateral complete wrist drop and partial foot drop. The patient walked with difficulty. He could not raise his arms to the level of the clavicles because of weakness at the shoulder and elbow. The hand grip was weak, flexion of the wrist was weak and extension of the wrist was absent. All types of

sensation were normal except for diminution of vibratory sense of the right leg. The knee jerks were weak; the ankle jerks were absent; the tendon reflexes at the wrists and in the biceps of both arms were absent; the triceps jerks were weak. The abdominal reflexes were easily fatigued; the cremasteric reflexes were absent. The sympathetic system was normal except for slightly irregular pupils, which reacted sluggishly to light and in accommodation. The hands were cold and sweaty.

Urinalysis was normal except for an occasional white blood cell. Examination of the blood, September 8, showed hemoglobin, 55 per cent (Sahli); red blood cells, 3,090,000; white blood cells, 5,000; differential: 69 per cent polymorphonuclears, 26 per cent lymphocytes, 2 per cent eosinophils and 2 per cent monocytes. There were anisocytosis, poikilocytosis, achromia, and twelve stippled cells per high power field. The platelets were normal. The blood Wassermann and Hinton tests were negative.

Gastric analysis showed absence of free hydrochloric acid in the fasting sample; acid was also absent thirty minutes after 50 cc. of 7 per cent alcohol, and after 1 mg. of histamine intramuscularly. Lumbar puncture, August 21, showed an initial pressure of 75 mm. of water; 2,360 red blood cells; 52 mg. of protein per hundred cubic centimeters; colloidal gold test, 0011000000, and a negative Wassermann reaction. Roentgenograms showed a lead line in the epiphyses of both femurs. A recent sample of the whisky that he had been using for seven years showed 2 mm. of lead per liter. Biopsy of the gum showed microscopic deposits of lead sulphide.

The patient was given a diet rich in vitamins and calcium. At intervals, acidosis was induced with ammonium chloride. Iron ammonium citrate was given for the secondary anemia. The blood gradually approached normal over a period of five months, there being less variation in the size and shape, and less stippling of the red cells. During four months of this gradual deleating process he showed slow muscular improvement. By Jan. 2, 1932, he was able to raise his arms above his head. The shoulders, arms and grip of the hands were much stronger. The extensor muscles of the hands were still weak, especially the right. Ammonium chloride was prescribed and he was sent to the outpatient department. His condition continued to improve. In September he could make all movements normally, but his grip was still weak and he could not extend his wrists or raise his arms against strong pressure. Atrophy of the muscles of the hands, arms and shoulder girdle was still obvious. In January 1933 the muscles were apparently normal, although the patient stated that they were much smaller than before his illness. The only obvious abnormality was the loss of deep reflexes, the biceps, radial and ankle jerks being still entirely absent; the knee jerks were present but weak.

Lead as a poison to the nervous system has been known for centuries, but its effect on muscles, its storage in bones, and the deleating treatment by acidosis are modern advances of importance.¹³ Like all substances injurious to the nervous system (viruses, bacterial toxins, metabolic toxins, and drugs), different forms of lead seem to attack different parts of the nervous system. Metallic lead and the oxides have a predilection in adults for the more distal muscles and nerves of the extremities, whereas tetra-ethyl lead (used in gasoline) attacks the cerebral cortex. In children the lead in paint almost invariably causes an encephalitis rather than a neuritis. What causes these specific vulnerabilities of certain tissues to certain poisons is unknown. Much has been written on the subject, especially by Oskar Vogt,¹⁴ who calls the local susceptibility of certain parts of the nervous system to certain poisons "pathoklisis" and believes that it is due to "chemical affinity." Whatever the cause, it is a most remarkable phenomenon, and conspicuous examples are common: methyl alcohol especially affects the optic

13. Aub, J. C.; Fairhall, L. T.; Minot, A. S., and Reznikoff, Paul: *Medicine* 4: 280 (Feb.-May) 1925.

14. Vogt, Oskar: *J. f. Psychol. u. Neurol.* 31: 245 (June) 1925; *abstr. Arch. Neurol. & Psychiat.* 15: 262 (Feb.) 1926.

nerve; the triorthocresol phosphate of "jake" paralysis¹⁵ and the "patent medicine" named "Apiol"¹⁶ affect almost exclusively the peripheral motor nerves; carbon bisulphide¹⁷ chooses the sensory nerves of the hands and feet, while trichlorethylene¹⁸ picks out the sensory part of the trigeminal nerve.

The list of metals, chemicals and chemical compounds that cause neuritis is long. In table 1 the best known are listed, but the list grows longer as industry advances and exposes its victims to new hazards. It was the airplane industry (stimulated by war) which in 1915 led to the discovery that trichlorethylene caused a sensory paralysis of the trigeminal nerve. Oppenheim¹⁹ was called to see these workers, who were putting a liquid "dope" on airplane wings indoors. His interest was aroused not so much because of the strange new disease but because he instantly saw that the discovery could be turned to good by numbing the agonies in trigeminal neuralgia; it has since been amply proved that he was correct in his theory.

Medicines (patented and otherwise) cause their share of neuritis. Arsenic in the form of sodium cacodylate was formerly given in huge doses to relieve the muscular rigidity in Parkinson's disease;²⁰ it worked, but by the obviously undesirable means of causing a peripheral neuritis and thus cutting off the impulses from the central nervous system to the muscle. Mercury and silver rarely cause neuritic symptoms, perhaps because other obvious symptoms appear earlier. More insidious may be the effects of chloral, chlorbutanol, barbitol, sulphonmethane and sulphonethylmethane. Worst of all was the devastation produced among the tipplers of the eastern and southern parts of the United States in 1930 by contaminating "jamaica ginger" with triorthocresyl phosphate.²¹ Literally hundreds of men and women were given an incapacitating drop foot, many of them permanently. Just as bad, if less extensive, is the poisoning recently caused in Europe by the same substance in a popular "patent medicine" called "Apiol," used to bring on menstruation and abort early pregnancy. This poison (like certain viruses) affects the peripheral axon most, but with sufficient dosage the ventral horn cell is also injured and sometimes destroyed; this causes a permanent paralysis—a chemical "anterior poliomyelopathy."

It has long been held that ethyl alcohol caused polyneuritis. The usual conception was that the alcohol itself acted as a direct toxin on the axon and cell body of the nerve. The evidence for this is scanty; little experimental work²² has been done which is not open to the criticism that the alcohol given not only acted as a toxin but also as a food, thus restricting the animal's intake of necessary vitamins. In human cases of alcoholic neuritis it is obvious that the imbibing of alcoholic beverages restricts the patient's diet and that neuritis apparently supervenes only after a prolonged dietary deficiency. This point of view has recently been put forward by Minot, Strauss and Cobb,¹² who have studied, during the last five years, a large group

of cases with the dietary etiology in mind. They conclude that a lack of vitamin B is the probable cause of the neuritis. Moreover, two investigators²³ have tried the crucial experiment of treating cases of alcoholic neuritis and pellagra with large amounts of vitamin B during periods when the patient was still drinking large quantities of alcohol; marked improvement took place in spite of the ingestion of alcohol. It is obvious that alcohol is a toxin, but it may not be a neuritic poison to a man in good health. The situation is not a simple one. If ethyl alcohol per se caused neuritis, the disease ought to be even more common than it is. It may be that alcohol causes neuritis only in people already debilitated by inadequate diet and infection. To us it seems more probable that the alcohol acts only by restricting diet and that this restriction causes beriberi.

Another factor worthy of investigation in all cases of alcoholic neuritis is the possibility of impurities in the liquor imbibed. The great English epidemic of arsenic poisoning from beer²⁴ was at first looked on as alcoholic. More recently arsenic has been found in the urine of many patients with neuritis attributed to alcohol.²⁵ Lead also is a common contaminant of alcohol, as in the case just reported. Some investigators hold that it is not the alcohol but the contaminants that cause neuritis.

LOCAL NEURITIS

We have said that the polyneuritides with their systemic toxins and generalized symptoms were medically more important than the localized neuritides. This is certainly true as far as risk to life is concerned, but when one considers the great number of patients complaining of local neuritis seen in outpatient departments and private practice, one must admit that local neuritis is an important problem. Surgically it is of great interest because many cases of trauma to nerves need operation, tumors that press on nerves have to be removed, and orthopedic cases presenting abnormalities such as cervical ribs pressing on nerves, arthritic exostosis and fibrosis form a large group. Some of these are severe and painful; others cause only an incidental annoyance.

Edema in a nerve trunk may interrupt passage of the nerve impulses along the axons, especially if the edema happens to be at a point at which the nerve is passing through a bony canal. A common case in point is that of a facial nerve which leaves the skull through the stylomastoid foramen. Exposure of the face to severe cold, a strong wind or local cooling (as in driving a closed automobile with only one window open, so that the wind blows directly on the cheek) often brings on edema that blocks the foramen, presses on the facial nerve and causes paralysis, so-called Bell's palsy. Local infection may have the same result.

Fibrosis about nerves may cause pain, paresthesia or paralysis. One of the common localities where this may take place is along the external cutaneous nerve of the leg as it passes through a fibrous tunnel in the fascia lata. This local fibrosis causes the syndrome known as "meralgia paraesthetica."²⁶ Infection in wounds, as in military surgery, often leads to fibrosis

15. Vonderahe, A. R.: Pathologic Changes in Paralysis Caused by Drinking Jamaica Ginger, *Arch. Neurol. & Psychiat.* 25: 25 (Jan.) 1931.
Smith, M. I., and Elvove, E.: *Pub. Health Rep.* 45: 1703 (July 25) 1930.

16. Harmsma, A., and Van Ssvel, L. W.: *Arch. f. exper. path. u. Pharmacol.* 165: 84, 1932.

17. Edge, A. M.: *Lancet* 2: 1167, 1889.

18. Glaser, M. A.: Treatment of Trigeminal Neuralgia with Trichlorethylene, *J. A. M. A.* 96: 916 (March 21) 1931.

19. Oppenheim, H.: *Wechschr.* 53: 25, 1916.

20. *Principles and Practice of Medicine*, revised by Lea & Febiger, vol. 6, 1928.

21. Jellum, H., and Moore, M.: *New England J. Med.* 203: 4 (July) 1930. Mella, Hugo: A Preliminary Report on the Treatment of Paralysis Agitans, *Arch. Neurol. & Psychiat.* 7: 137 (Jan.) 1922.

22. Braun, H.: Inaugural Dissertation, Tübingen, 1899.

23. Rhoads, C. P.: Personal communication to the authors, 1932.

24. Spies, T. D., and DeWolf, H. F.: *Am. J. M. Sc.* 186: 521 (Oct.) 1933.

25. Reynolds, E. S.: *Lancet* 1: 166, 1901.

26. Sheldon, W. D.; Doyle, J. B., and Osterberg, A. E.: The Significance of Chemical Studies in Diagnosis, *Arch. Neurol. & Psychiat.* 27: 322 (Feb.) 1932.

27. Stoekey, Byron: Meralgia Paraesthetica, *J. A. M. A.* 90: 1705 (May 26) 1928.

about nerves with varying symptoms;²⁷ when the sympathetic nerves are involved in this way, a painful syndrome may result with vasomotor and trophic disturbances in the affected limb. This was described by Weir Mitchell in the Civil War and given the name "causalgia."²⁸ Fibrosis about joints may explain the striking but rare picture of neuritic pain with marked muscular atrophy sometimes seen in the distal portion of a limb when the proximal joints are rheumatic. The arthritis may not be especially conspicuous, and the muscular atrophy may be striking and rapid.

Local neuritis due to infection or bacterial toxin is uncommon except in diphtheria. In this disease the nerves near the seat of infection are frequently affected locally, causing palatal paralysis when the infection is faucial; other cranial nerves may be paralyzed and, of course, general polyneuritis is not rare. The most striking cases are those described by Walshe,²⁹ who saw wounds of the limbs infected with the diphtheria bacillus and local ascending neuritis in the contiguous nerves. Tetanus may act in much the same way, and even tetanus antitoxin when given repeatedly into one limb occasionally causes a local motor paralysis.³⁰

We have seen one case in which repeated intravenous injections of gas bacillus antitoxin into one arm caused local motor paralysis of the biceps, triceps and shoulder muscles of that side. Reports of local neuritis following vaccination with cowpox are occasionally heard; these lesions, however, may be due to pyogenic organisms and not to the virus.

A rare but virulent form of neuritis may arise from streptococcal infection in wounds.³¹ More chronic forms arise from infected bed sores in debilitated patients. Leprosy is the disease that gives the most obvious pathologic picture of a true local ascending neuritis; here the process is slow and the organisms may be easily identified under the microscope in the thickened nerve trunks.

Tuberculosis is usually mentioned as a cause of neuritis. Of course, tuberculous exudate or tubercle may act as a tumor and cause local pressure on nerves or even local invasion of nerve sheaths, but "tuberculous neuritis" is more a pathologic curiosity than it is a disease entity. Likewise, syphilis is always discussed in textbooks as a cause of neuritis. Myelitis affecting ventral horn cells and meningitis affecting nerve roots as they leave the cord are common in syphilis. Naturally they result in paralysis, muscular atrophy and other symptoms seen also in neuritis. True peripheral neuritis, however, due to syphilis we have never seen. The neuritis seen in terminal states of tuberculosis and syphilis is probably due to the cachexia and not to the infectious organisms.

SUMMARY

1. *The Polyneuritides That May be Caused by Virus Infection.*—The group of diseases caused by viruses is becoming rapidly larger as the problem is better understood, but our knowledge is still rudimentary in this field. Many of these diseases may be accompanied by peripheral neuritis, usually as a late complication; but when the virus attacks the spinal cord and nerves primarily the opposite is true. For example, the tenderness of the muscles in the early stages of acute anterior

poliomyelitis is probably due to the beginning of degeneration of the neuron including the axon; thus, pathologically speaking, there is a neuritis. The acute infectious or acute febrile type of polyneuritis, illustrated by case 1, is becoming a well recognized entity. There is evidence that this is due to a virus, probably specific, but as yet unknown.

2. *The Polyneuritides That May be Caused by Absorption of Bacterial Toxins.*—A long list may be made of infectious diseases known to be complicated by polyneuritis. The obvious inference is that absorption of the toxins formed by the invading organism causes the neuritis. The reasoning, however, does not hold, for neuritis is usually a rare complication of these diseases, and other factors must be evoked in order to explain the occurrence. Of course the neuritis following "serum sickness" is the best evidence available that bacterial toxins cause neuritis. In typhoid and other prolonged fevers, vitamin deficiency must be considered as a possible etiology. In diseases that may be due to pyogenic organisms (e. g., the first ten on the list under bacteriotoxic, table 1), the neuritis rarely develops early in the course of the illness. Generally it is late, when the infection has become chronic, and then abscess formation with absorption from a chronic focus must be looked for and treated. The second case reported here is in point. A chronic neuritis, especially if accompanied by arthritis and myositis, may well be due to focal infection of this sort; infections of tonsils, teeth or gallbladder may be implicated. The term "rheumatism" is used to include all these, and it is emphasized that a mild neuritis is often overlooked when it occurs with a conspicuous arthritis. Not infrequently acute infection acts as a precipitating factor in neuritis owing to deficiency of vitamins; especially in children the acidosis resulting from fever may determine the onset of lead paralysis.

3. *The Polyneuritides That May be Caused by Vitamin Deficiency or Metabolic Disorder.*—Good evidence is fast accumulating to indicate that the many polyneuritic syndromes listed in table 1 under "deficiency in metabolism" are merely clinical variations of one etiologic group. The first thirteen on the list, at least, seem to be caused by deficiency in one or more vitamins. The neuritis of diabetes may perhaps be caused or precipitated by the dietary restrictions imposed on the patient. Little is known of the syndromes known as "recurrent" and "chronic progressive neuritis," but the descriptions suggest an etiology based on vitamin deficiency. The neuritides associated with myxedema and hematuria apparently have a metabolic origin, but using that term thus vaguely really explains little. All one can say is that knowledge is now advancing rapidly in this field; the isolated discoveries at first seem to complicate the picture; soon etiologic relationships will be clearer, and then the long list of clinical syndromes here set down may be reduced to a few recognizable diseases.

4. *The Polyneuritides That May be Caused by Chemical Substances Ingested.*—The neuritis caused by lead and by arsenic is well known. Modern industry has increased the hazards to which workers are exposed, and a list of eighteen substances is given in table 1 that are said to cause polyneuritis. The extraordinary specificity of some of these substances is emphasized; certain of them always appear to attack one special pair or group of nerves. It is argued that ethyl alcohol is not a neuritic poison but, when taken as a beverage,

27. Tinel, J.: Nerve Wounds, New York, William Wood & Co., 1917.

28. Pollock, L. J., and Davis, L.: Peripheral Nerve Injuries, New York, Paul B. Hoeber, 1933. Mitchell, S. W., and Keen, W. W.: Circular 6, Surgeon-General's Office, March 10, 1864.

29. Walshe, F. M. R.: Lancet 2: 232 (Aug. 24) 1918.

30. Wilson, George, and Hadden, S. B.: Neuritis and Multiple Neuritis Following Serum Therapy, J. A. M. A. 98: 123 (Jan. 9) 1932.

31. Orr, D., and Rows, R. G.: Brain 36: 271, 1914.

either causes dietary deficiency and hence beriberi or causes neuritis because of impurities. A case is given of lead poisoning due to impure alcohol.

5. *The Local Neuritides Caused by Pressure and Trauma.*—These are largely surgical problems. Local edema and fibrosis are common etiologic factors often overlooked.

6. *The Local Neuritides Caused by Infectious Organisms and Their Toxins.*—These are rare except in the case of diphtheria.

Clinical Notes, Suggestions and New Instruments

SUCCESSFUL SUTURE OF A WOUND OF THE ASCENDING AORTA

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There has appeared in the literature only one report of the successful suture of a wound of the thoracic aorta. This operation was performed by Dshanelidze¹ of Russia. The reasons for the scarcity of successful cases are several. For purposes of this discussion, the aorta is divided into two portions; namely, that part which is within the pericardium and that which is without. Piercing injuries of the extrapericardial portion of the thoracic aorta usually result in early death

of the intrapericardial part of the aorta is due to its position behind the sternum and to the fact that it is quite short.

I have noted in studies on animals that relatively small wounds of the intrapericardial portion of the aorta are usually fatal unless treatment is instituted. A wound of the aorta 3 mm. in length usually causes death, while a similar opening in the intrapericardial part of the pulmonary artery does not. Wounds of twice this length of the left or right ventricular walls rarely cause death in the experimental animal.

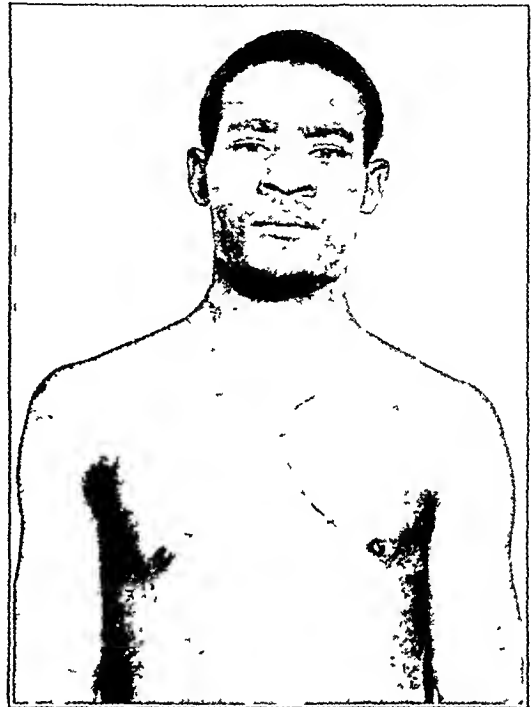


Fig. 2—Appearance of the patient following the healing of the incision.

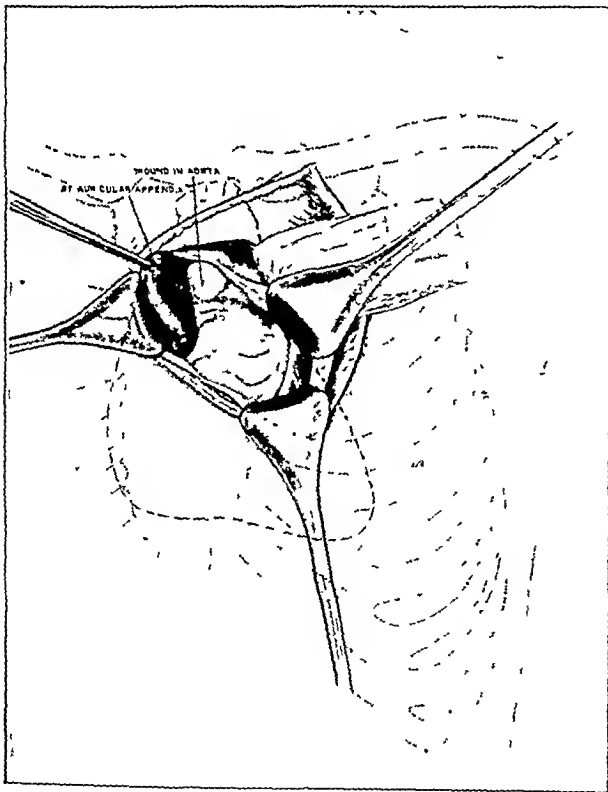


Fig. 1—Incision used for the exposure of the heart and the wound of the aorta. A clamp was used for pulling the right auricular appendix to the right.

because there is no surrounding structure such as the pericardium to limit the loss of blood. The infrequency of wounds

of the intrapericardial portion of the ascending aorta of a Negro youth

A Negro, aged 18, entered the Vanderbilt University Hospital, Sept. 17, 1932, approximately forty-five minutes after having been stabbed in the chest and neck with an ice pick. He was extremely restless, the respirations were labored, the skin was cold and clammy, the radial pulse could not be counted with accuracy, and the blood pressure was 50 mm. of mercury systolic and 40 mm. diastolic. There was a small wound immediately to the left of the sternum between the first and second ribs. There was no bleeding from this wound. The heart sounds were heard over the base with difficulty. The veins of the neck were quite distended. There was a small wound of the lower part of the neck on the left side.

A 7 foot plate of the chest was made shortly after the patient entered the hospital. This showed a partial pneumothorax of the right pleural cavity and a small amount of fluid in the left costophrenic angle. The shadow of the heart and pericardium was thought to be a little larger than normal.

The patient was then taken to the operating room and 500 cc. of physiologic solution of sodium chloride was introduced intravenously while preparation for the operation was being made. A reading of the blood pressure could not be obtained before or immediately after the injection of the salt solution.

Nitrous oxide and oxygen was used as the anesthetic. A left parasternal incision with its center over the third costal margin was used for the approach. The attachment of a large part of the pectoralis major muscle was divided. The second and third costal cartilages together with parts of their ribs were removed. The internal mammary artery and vein were doubly ligated and divided. By the use of a pair of rongeurs, a part of the sternum was removed. The pleura was reflected laterally on each side and the pericardium was exposed. Several

From the Department of Surgery of Vanderbilt University School of Medicine.

¹ Dshanelidze, I. I. Manuscript, Petrograd, 1922, quoted by Lilienthal, Howard Thoracic Surgery, Philadelphia, W. B. Saunders Company 1: 489, 1926, and in Zentral Organ für die gesamte Chirurgie und ihre Grenzgebiete, 1923, p. 139

attempts were made to grasp the pericardium with forceps, but these were unsuccessful, as it was quite tense. An incision was made into the pericardium and blood under pressure escaped. The quantity that was lost was estimated as 300 cc. As soon as the pericardium was opened, the blood pressure rose to 100 mm. of mercury systolic and 60 mm. diastolic. After the blood was sponged out from the pericardium it was observed that blood continued to accumulate in the region of the base of the heart. While this area was being sponged, a clot that was partially occluding an opening in the aorta was dislodged and a large stream of bright red blood shot over the screen at the head of the table on the anesthetist. The bleeding was controlled temporarily by digital compression. The right auricular appendage prevented a satisfactory view of the bleeding point, and a clamp was placed on the tip of the appendage in order that it might be held out of the way (fig. 1). The wound in the aorta was then closed with interrupted silk sutures. The first two sutures did not stop the bleeding. Traction was then made on these two sutures and a third one was placed between them. The wound was observed for several minutes and no further bleeding was seen. It was estimated that approximately 700 cc. of blood was lost during the procedure of suturing the opening in the aorta. The incision in the pericardium was closed with interrupted sutures. A small opening in the pleura, which had been made most likely by the ice pick, was closed, and the incision was then sutured tightly without drainage. The patient seemed to be in good condition at the completion of the operation. The pulse rate was 120 per minute, the systolic blood pressure 95 mm. of mercury and the diastolic 50 mm. A transfusion of blood was given shortly afterward.

There was an elevation of the temperature, pulse and respiration rate for several days following the operation. The patient complained of rather severe pain in the right side of the chest on several occasions. The incision healed by first intention without drainage and without having to be aspirated (fig. 2). He was discharged from the hospital, Oct. 25, 1932, and has remained well since that time.

A RAPID METHOD FOR THE DETERMINATION OF BLOOD EOSINOPHILIA

TOWNSEND B. FRIEDMAN, M.D., CHICAGO

In the diagnosis and study of the various allergic states it is frequently desirable to know the blood picture, especially the eosinophil count. The ordinary smear method, in which 200 or more cells are counted, is a time-consuming process and the chance for an error in the eosinophil count is great. Moreover, the result gives only the percentage of eosinophils in the number of cells counted. The method described here gives the number of eosinophils per unit volume of blood, is rapid and at the same time gives the leukocyte count.

Blood is collected in the usual manner for the blood count, accurately calibrated white cell pipets being used. In place of the usual acetic acid diluting fluid the following fluid, which is the modification of Camara and Alvarez¹ of that described by von Domarus,² is employed:

Aqueous eosin 1 per cent.....	5 cc.
Acetone	5 cc.
Distilled water	100 cc.

The count is made in the usual manner in the ordinary counting chamber. This diluting fluid stains only the eosinophilic cells and they are easily distinguishable with the high dry power of the microscope. The unstained leukocytes appear as gray bodies in this diluting fluid.

It is advisable to fill also a pipet with the ordinary acetic acid diluting fluid and use this count as a check until one has had some experience with the fluid described.

With this method I have found it very simple to follow the blood eosinophilia in asthmatic patients in their free period and during the acute attack.

From the Clinic of George Pines, M.D., Los Angeles.

1. Camara, P. de la, and Alvarez, J. Goy. *La sangre "in vitro," Arch. cardiol. y hemat.* 1: 111, 1932.
2. von Domarus, A.: Die Bedeutung der Eosinophilie für die Klinik, *Deutsches Arch. f. klin. Med.* 171: 1, 1932.

PORCELAIN FAUCET HANDLE INJURIES

HAROLD P. MALONEY, M.D., OAKLAND, CALIF.

The porcelain faucet handle as a common household hazard has received too scanty attention. Not only are the injuries incurred painful and dangerous, but the resulting disabilities are often prolonged because of the frequency of nerve and tendon damage. The matter has not been entirely neglected, but, probably owing to the manner in which papers have been titled, search of the recent literature has not yielded any information of like character.

Over a period of four years about twenty cases have been seen in the office, in the emergency service of a private hospital and at the public health center. Five office cases are presented here in brief to illustrate the variety of injuries.

All the injuries were produced by one of the two types of china or porcelain handles illustrated (fig. 1). The porcelain is cemented with plaster of paris over a metal core or about a central metal hub. A certain variety of faucet has a metal core, continuous through the entire length of the porcelain. This type is relatively much less dangerous. A sharp blow of the hand against one of the first two handles mentioned can readily shatter the porcelain. The neglected, leaking faucet calls forth most of these sharp blows.

The bare hand driven with force against these glasslike broken edges rarely escapes injury. All the injuries listed have

been palmar or on the fingers. They have been of the puncture wound type, the surface injury being minimal compared with the damage done to deeper structures (fig. 2).

REPORT OF CASES

CASE 1.—E. M., a white man, aged 31, doing general repair work, was disabled for two weeks when, while he was testing a newly installed faucet, the handle broke off in his hand as he closed the faucet. Examination revealed a slicing laceration, three-fourths inch long and one-half inch deep, in the palm of the left



Fig. 1.—Two types of china or porcelain handles.

hand. Porcelain particles were picked out and the wound was cleansed, iodized and closed with dermol sutures.

CASE 2.—E. G., a white woman, aged 24, a housewife, while washing dishes, reached for the water faucet. As she turned it off, the handle cracked. Examination revealed a laceration one-half inch long, running transversely just distal to the proximal interphalangeal joint on the palmar surface of the right fifth finger. She was unable to flex the distal phalanx. Exploration revealed the tendon of the flexor digitorum profundus severed, with its proximal end retracted into the tunnel formed by the sublimis. The wound was cleansed and iodized and the tendon repaired with black silk. The end result was poor flexion of the distal phalanx, probably because of adhesions. The period of disability was three weeks.

CASE 3.—L. L., a white woman, aged 22, a housemaid, while working about the house, cut her hand when a faucet handle cracked off as she turned off the water. Examination revealed a one-half inch transverse laceration in the palm of the left hand. She could not flex either interphalangeal joint of the index finger. Exploration under general anesthesia, with a tourniquet in place, showed severing of the tendons of the flexors digitorum profundus and sublimis to the index finger. The tendons were repaired separately with black silk. Active

motion was allowed in three weeks. There was 75 per cent normal motion in seven weeks. In eighteen weeks recovery was complete.

CASE 4.—G. A. M., a white woman, aged 48, a housewife, while working about the house broke off a porcelain faucet handle in her left hand. Examination revealed a $1\frac{1}{2}$ inch

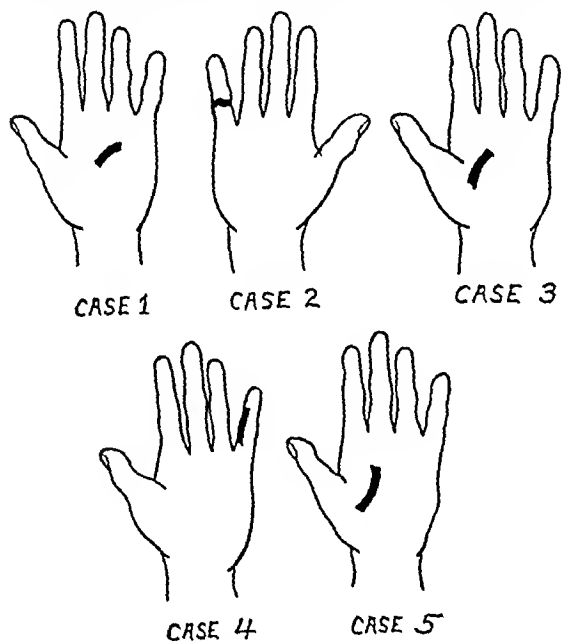


Fig. 2.—Location of injuries.

ragged laceration, roughly paralleling the medial palmar border of the fifth finger. The medial phalangeal artery was severed. The wound was cleansed, iodized and loosely closed. The period of disability was ten days. When last seen the medial half of the finger tip was still numb, although the severed nerve was not identified at the time of the injury.

CASE 5.—E. R., a white man, aged about 35, a garageman, received his injury when impatiently trying to close a dripping faucet by giving one additional twist. A 1 inch laceration was incurred, which bled freely. The laceration was in the central lateral half of the palm and extended proximally into the thenar eminence. Exploration revealed that the superficial volar artery was severed, as well as the branches of the median nerve to the short muscles of the thumb and the cutaneous supply to the lateral border of the index finger. Repair was tedious. Partial disability existed in the hand for six months. Disturbances in sensation still persisted after eighteen months, although muscular function was excellent.

COMMENT

These cases are illustrative of the lacerations that may occur. A slight variation is that of a male patient (not under my personal care) who, while seated in the bath tub, attempted to close the faucet with his foot. He suffered a large, jagged laceration of the sole.

These accidents are rather frequent. The opportunities for them are present in almost every household. They are preventable by substituting brass or chrome plated handles for the common porcelain type. Plumbers are aware that the handles very frequently break, but they have not been impressed by seeing the gravity of some of the injuries that occur. A chrome plated replacement handle of standard type is available at the same price as the ordinary porcelain handle. Other varieties with more style are to be had at slightly greater prices. Plumbing supply men feel that they must give the public what it wants and that is most often the porcelain handle; yet each household in which an accident has occurred feels "that there ought to be a law against such handles."

SUMMARY

1. The common porcelain faucet handle is a frequent source of injury and prolonged disability.

2. The injuries are characterized by minimal skin wounds with the frequent involvement of nerves, tendons and other deep structures.

3. Such accidents are largely preventable by early repair of leaking faucets to eliminate unnecessary force in closing, or fully preventable by substituting equivalent priced chrome plated handles for the porcelain ones.

4. Plumbers and plumbing supply men are aware of the hazard but answer that they must give the buyer what he wants.

5. Elimination of the hazard can be hastened by better informing the purchasing public.

411 Thirtieth Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
H. A. CARTER, Secretary.

BURDICK ELECTROSURGICAL UNIT ACCEPTABLE

The Burdick Corporation, Milton, Wis., manufactures an electrosurgical diathermy unit, Model No. SU-2, which differs from other electrosurgical units, since it makes use of two currents—one from a spark gap high frequency generator and the other from a tube oscillating unit. The two currents may be blended or used separately, depending on the will of the operator.

The spark circuit is of the standard type with a well built mica condenser across the transformer secondary. The three spark gaps are satisfactorily designed and readily removed for adjustment or repair.

The tube circuit is of the well known and efficient Hartley, parallel feed plate, using "raw" alternating current for its anode voltage. It is isolated from the spark circuit by means of two condensers, one of which is a rotary variable air condenser.

Two taps (high and low "dissection intensity") are provided on the primary of the plate transformer to give different plate voltages and hence different power output from the tube. The filament of the FP 1 tube is connected directly across the 110 volt terminals when the main switch is on and continues to operate at all times whether the foot switches are used or not.

The blending circuit contains a coil, common to both spark and tube oscillators, from which leads for coagulation or dissection are brought out. A third foot switch, not shown in the diagram, turns on both sparks and tube oscillator simultaneously. The two units operate without influence on each other to any marked extent and hence the output blended current is the sum of their individual outputs.

All parts are rigidly mounted and the vulnerable tube and spark gap are readily accessible for replacement or repair. There appears to be sufficient ventilation to prevent overheating. A small and hence portable unit has been achieved by crowding the parts together. The electrical insulation is considered satisfactory. Sufficient and convenient control of the outputs has been provided. The table for carrying the instrument has reasonably large wheels, so that it rolls smoothly and easily.

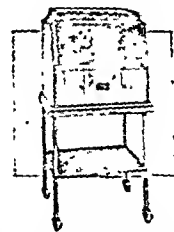


Fig. 1 — Burdick electrosurgical diathermy unit, Model No. SU-2.

Temperature runs have been made by the usual resistance method on the plate transformer (a rise of 14 degrees C in two hours) and the spark transformer (a rise of 25 degrees C in one hour and twenty minutes) with a heavy load in use. These temperature rises appear to be within the limits.

The tube oscillator operates at 95 meters wavelength.

The spark coagulator operates around 725 meters wavelength and contains a third harmonic whose amplitude is approximately one-fourth that of the fundamental. In one instance (only) the wavelength was altered to 900 meters. The condition was that of a heavy load when the maximum voltage (tap switch No. 6) was in use.

Except for size, length of tube or shape, the burners for these lamps are essentially the same. The burners consist of a quartz-tubing about 7 mm. in diameter, which is highly evacuated of air and supplanted with an atmosphere of rare gases, xenon, krypton and argon, and a few drops of mercury. An electrical charge, taking place between the sealed-in electrodes, causes the lamp to glow, thus producing a light characteristic of a low pressure mercury vapor lamp.

In a physical laboratory acceptable to the Council, radiation tests indicated that more than 95 per cent of the total erythrogenic rays (of wavelengths 3,130 angstrom units, short waves) are emitted by the 2,537 Å line. By means of the filter method, it was found that 97.8 per cent of the erythrogenic rays are contained in the strong emission line 2,537 angstrom units.

The Fischerquartz Ultraviolet Lamps are included in the Council's list of accepted devices for one year.

COLD QUARTZ ULTRAVIOLET GENERATORS REACCEPTED

The Electro Therapy Products Corporation, Los Angeles, manufactures the Cold Quartz Ultraviolet Generator. The following models have been considered:

Junior, Mobile, Body Lamp (B-8)
Junior, Mobile, Combination Lamp (C-8)
Junior, Mobile Stand Official (S-8)
Junior, Portable Combination (PC-8)
Senior, Mobile, Body Lamp (B-7B)
Senior, Mobile, Combination Lamp (C-7B)
Senior, Mobile, Stand Official (S-7B)
Senior, Portable, Official (P-7B)
Standard, Mobile, Combination (C-7)
Standard, Mobile, Body Lamp (B-7)
Standard, Mobile, Stand Official (S-7)
Standard, Portable Official (P-7)
DeLuxe, Combination (C-710)

The Council on Physical Therapy declares these lamps reaccepted for a period of three years.

STRETCH-A-WAY REDUCER AND HEALTH EXERCISER NOT ACCEPTABLE

The Stretch-A-Way Company, 4500 Magnolia Avenue, Chicago, manufactures a device known as the Stretch-A-Way Reducer and Health Exerciser. This product may be described as a pair of leather stirrups supported on a wooden cross-bar, and a handle, jointed by a heavy cord of live rubber, which furnishes the tension for the exercises. A strap is provided to fasten the device into the floor or under a door. The method used in exercising consists of pulling against the tension of the rubber.

The firm asserts that the outfit is used for reducing excess flesh and bases the claims on the improvement in blood circulation and the toning and strengthening of the body muscles, especially those of the abdomen. Advantage is taken of the massage effect through rolling on the stretched muscles. Strengthening of sagging muscles, reducing hips and thighs, and improvement of posture are further claimed. The company advises the patient moderation in eating. The company goes on to say that the device makes regular exercise interesting, convenient and practical.

An advertising pamphlet used in the marketing program was examined and the Council declared the following statements misleading, since no conclusive evidence was submitted to substantiate these claims:

"Reducer and Health Exerciser—The modern way to health, beauty, and slenderness through rhythmic stretching exercises."

"Treating the metatarsal arches: Place feet in stirrups and pull up against the middle of the soles of the feet, with handle up to the waist. Curl the toes downward alternately, as far as possible. A beneficial deep massage is obtained."

"Endorsed by medical authorities." The firm failed to give the names of the medical authorities who have endorsed the method.

In view of the unwarranted claims appearing in the advertising matter, the Council did not include the Stretch-A-Way Reducer and Health Exerciser in its list of accepted devices for physical therapy.

The Chemical Laboratory

THE FOLLOWING IS A REPORT OF THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION. PAUL NICHOLAS LEECH, Director.

THE STERILOMETER AND THE ASEPTIC-THERMO INDICATOR

Sterilometers, manufactured by the Sterilometer Laboratories, of Los Angeles, and Aseptic-Thermo Indicators, manufactured by the Aseptic-Thermo-Indicator Co., also of Los Angeles, are products designed for determining effective sterilization of certain types of materials. The products are designed for inclusion in or near the center of packages of goods for pressure-steam sterilization to determine whether or not adequate sterilizing conditions have been met throughout the depth of the material. The A. M. A. Chemical Laboratory has received several inquiries as to whether or not the products meet the claims made for them.¹

The Sterilometer consists of a thermometer-like drawing on a piece of cardboard, the bulb and stem of which are of a light tan color. It is claimed that after a sufficient period of subjection to steam under pressure the column will match the bulb in a uniformly black color, and that this change takes place only after a period sufficient to insure complete sterilization (including destruction of spore-formers). The bulb is so constituted as to turn to black soon after exposure to heat, while the stem is the true indicator of sterilizing conditions. The Aseptic-Thermo Indicator is identical in principle and consists of a lavender arrow pointing to the figure 250° on a green dial.² Under conditions as outlined for the Sterilometer, the arrow matches the dial in color.

The two devices were called to the attention of the A. M. A. Chemical Laboratory by Dr. T. B. Magath of the Mayo Clinic, who had conducted a study of the Aseptic-Thermo Indicator. A small autoclave, susceptible of being heated to the desired temperature within thirty seconds and of being exhausted of steam and water in ten seconds, was constructed. The time and temperature recordings for this instrument were of established accuracy within limits, respectively, of ± 5 seconds and ± 0.5 C. With this apparatus, Indicators being selected at random, Dr. Magath obtained the results shown in table 1.

Twenty-five Indicators were used. After nineteen minutes the lavender color deepened to purple, yet Dr. Magath reported that the change to green did not occur until twenty minutes had elapsed, at which time all Indicator arrows matched their green dials. When the test was repeated at 126 C., the same condition obtained, except that the change occurred at sixteen and one-half minutes, again with all Indicators. In ascertaining the part played by moisture, twenty-five Indicators were submitted to dry, hot air at 170 C. for five hours. No change in color occurred. Because of a forty-second lag in the apparatus, the time recorded for color change to occur was considered as correct only within a possible error of ± 40 seconds (or a

TABLE 1.—Results Obtained with Aseptic-Thermo Indicators

Minutes	Steam at 15 pounds pressure	
	Temperature	Results
10	121 C.	No change in color
12	121 C.	No change in color
14	121 C.	No change in color
16	121 C.	No change in color
19	121 C.	No change in color
19.5	121 C.	No change in color
20	121 C.	Color change to green (matched)

maximum error of eighty seconds). Except for that relatively inconsequential source of error, the work appears to be critical,

1. In this consideration of the Sterilometer, and of the Aseptic Thermo-Indicator, the Dyack was not included because it belongs to that class of device whose reaction is largely dependent on temperature alone.

2. The reaction of these devices, according to their respective manufacturers are due (a) in the case of the Sterilometer to the formation of lead sulphide occurring at the melting point of a mixture of lead oxide, lead subcarbonate and sulphur; and (b) in the case of the Aseptic-Thermo-Indicator to an isomeric change of purple chromium sesquichloride to the green form.

precise and conclusive. The conclusion drawn is very broad and seemingly justifiably so:

These Indicators are satisfactory for testing sterilization with steam under pressure for all uses in bacteriologic laboratories and hospitals.

Under the auspices of the A. M. A. Chemical Laboratory, a further investigation of the products was undertaken. This was performed in the laboratory of, and in collaboration with, the department of bacteriology of a well known medical school.

TABLE 2.—*Destruction of Micro-Organisms*

Duration of Autoclaving	Culture		Appearance of Indicator	
	B. Welchii	B. Subtilis	Sterilometer	Aseptic-Thermo Indicator
A. 5 minutes.....	+	+	No change	No change
B. 10 minutes.....	+	+	Partial change (brown stem)	No change
C. 20 minutes.....	—	—	Matched	Arrow still slightly reddish
D. 30 minutes.....	—	—	Matched	Matched

TABLE 3.—*Change of Color of Sterilometer*

Sample	Time, Minutes	Oven Temperature	Culture	Appearance of Indicator	
				Aseptic-Thermo Indicator	Sterilometer
1	5	168	+	No change	No change
2	10	168	+	No change	No change
3	15	171	+	No change	No change
4	20	171	+	No change	No change
5	25	176	+	No change	No change
6	30	177	No growth	No change	No change
7	35	182	No growth	No change	Complete change
8	40	186	No growth	No change	Complete change
9	45	184	No growth	No change	Complete change
10	50	185	No growth	No change	Complete change

The work was directed, roughly, toward investigating the various claims of the manufacturers as well as establishing a fair estimate of the reliability of the products.

The first experiment consisted in an investigation of the two products in autoclaves of two types (i. e., direct steam supply and gas-heated individual generators) and of various sizes. Conditions of temperature, pressure and duration of exposure were varied, as well, but constant for a given experiment. Twenty-three determinations were made, with the finding that no change in color of either the Indicators or the Sterilometers took place unless standard sterilizing conditions were met (20 pounds pressure of live, saturated steam for ten minutes of actual contact with the products). The variable, of course, is the time required for the penetration of steam into the packages being sterilized. In some instances, complete color change did not occur even though the so-called standard sterilizing conditions had obtained. This might be looked on as an additional margin of safety over and above the usual factor of safety in efficient sterilization.

The second experiment had to do with establishing whether or not complete color change indicated absolute destruction of all micro-organisms, including spore-formers. For this purpose one-centimeter squares of absorbent paper (Kleenex) were saturated with old broth cultures of *B. subtilis* or *B. welchii* and placed, one or the other, in sterile Petri dishes with a Sterilometer and an Indicator. At the conclusion of known periods of exposure to 15 pounds of pressure, the bacterial papers were removed with sterile forceps and deposited in favorable culture mediums. Control bacterial papers which were allowed to remain in sterile dishes at room temperature for as long as the duration of the longest autoclaving period were found to produce a good growth of both types of spore-former. The results are given in table 2. The conclusion, of course, is that a complete color change or "matching" of the indicators is evidence of complete sterilization.

Because of a statement that the "Sterilometer is so constructed that it changes color to black only in the presence of live steam," the next test was performed. Bacterial "squares" were again prepared, this time with *B. anthracis*, and employed as in the previous experiment except that, in this case, the dishes were placed in an oven for periods of from five to fifty minutes and with temperature varying from 168 C. to 185 C. The results are given in table 3. It is apparent that dry

heat has no effect on the Aseptic-Thermo Indicator but that the Sterilometer exhibits complete matching throughout, after thirty-five minutes. Apparently, therefore, the Sterilometer is an efficient indicator of sterilization by dry heat as well as by steam-pressure. The experiment does, of course, refute the claim that the Sterilometer assures the presence of live steam, although such is actually the case with the Indicators. Baking the two types in an oven at 180 C. for ninety minutes produced no change in the Indicators but an almost complete change in one of the three Sterilometers so tested. Immersion in boiling water for periods of ten, fifteen and twenty minutes produced partial color changes of the Sterilometers but not of the Indicators, while exposure to the open Bunsen flame for thirty seconds produced complete matching in the case of the Sterilometers and, again, no change of the Indicators.

Information concerning effects of light, age, and so on, was then sought by placing sets of four each of the two types in (a) an incubator at 37 C. and (b) a paraffin oven at 56 C. At weekly intervals one of each was removed and checked against an unused control for stability of color and retention of indicator efficiency. With the same technic used with anthrax cultures as before, the results shown in table 4 were obtained.

The test products were all submitted to three weeks of incubator or paraffin oven conditions before being used. Such treatment caused the Sterilometers to undergo incomplete color changes when subjected to efficient steam-pressure sterilizing conditions, as compared to controls. The Aseptic-Thermo Indicators were not affected. Sunlight produced bleaching of the Sterilometer.

SUMMARY

The foregoing indicates that either type of indicator, whether Sterilometer or Aseptic-Thermo Indicator, is efficient in determining sterilization by the autoclave. The Sterilometer appears to be equally efficient in determining sterilization by dry heat but it has the disadvantage, as compared with the Indicator, that it is rendered irregular in its action by artificial methods of aging and is subject to complete color change in the open Bunsen flame and partial color change in boiling water. Apparently, neither product could cause a false feeling of security since, whenever the reaction or change was irregular, matching did not occur. The error in every instance was on the side of safety and failure of matching. Whenever color change had proceeded to the point of matching, sterilizing conditions had been met sufficiently to result in the destruction of all micro-organisms, including spore-formers. Naturally it is

TABLE 4.—*Effects of Light and Age*

Pressure and Time	Temperature, C.	Culture	Effect on Indicators	
			Sterilometer	Aseptic-Thermo Indicator
Control	37	+		
Control	22	+		
20 lbs. 2 min.	127	—	Control, brown Incubator, brown Paraffin oven, brown bulb; too steep	Control, no change Paraffin oven, no change
20 lbs. 10 min.	127.5	—	Control, matched Incubator, matched Paraffin oven, brown bulb; not quite matched	Control not quite matched Paraffin oven, not quite matched
15 lbs. 5 min.	122	—	Remainder cannot be charted intelligently, since only one specimen of each was used and it is not stated whether such specimen is a control or one of the incubator or paraffin oven products; in no instance did the Indicators match; the Sterilometers matched in two, as noted by the asterisks	
10 lbs. 8 min.	118	—		
5 lbs. 25 min.	112	—		
15 lbs. 20 min.*	122.5	—		
10 lbs. 30 min.	116.75	—		
5 lbs. 90 min.*	112.75	—		

understood that the water vapor in the autoclave does not contain appreciable amounts of hydrogen sulphide, the presence of which theoretically might vitiate the results, in the case of the sterilometer.

CONCLUSION

The Sterilometer and Aseptic-Thermo Indicator, if further studies are equally confirmatory, may be found of distinct value in hospitals and bacteriologic and pathologic laboratories.³

3. As with any automatic recording device, the human element plays an important part. For that reason it should be emphasized that these devices should be used with due regard for their location in surgical bundles, and for proper functioning of the autoclave itself.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

VITAMIN D FORTIFIED PASTEURIZED MILK

Distributors.—

Bellevue Dairy, Syracuse, N. Y.
Baumann Dairy Company, Milwaukee.
Borgeson Bros. Dairy Company, Waterbury, Conn.
Brandes Creamery, Inc., Portland, Ore.
Brown Dairy Products, Inc., Argo, Ill.
Cherry Hill Dairy, Provo City, Utah.
City Dairy Company, Portland, Ore.
Cline Ice Cream Company, Charleston, W. Va.
Corning Milk and Cream Company, Inc., Corning, N. Y.
Downing Bros. Dairy, Rock Island, Ill.
E. H. Elton Dairy, Bristol, Conn.
Fairbank Farms, Dewitt, N. Y.
The Freeman Company, Flint, Mich.
Garden State Dairies, Millville, N. J.
Golden Rule Bakery and Dairy, Snoqualmie, Wash.
Hamilton Dairy Company, Chicago.
Jersey Milk Company, Portland, Ore.
Kraml Dairy, Chicago.
Lakeview Dairy, Cudahy, Wis.
Layton Park Dairy Company, Milwaukee.
Levengood Dairies, Inc., Pottstown, Pa.
Maplewood Cream Company, Portland, Ore.
Ogden Dairy Company, Chicago.
Peerless Dairy Company, Rock Island, Ill.
Pendell Dairy, Syracuse, N. Y.
Pioneer United Dairies, Everett, Wash.
Plymouth Dairy Company, Chicago.
Reiter's Dairy Company, Chicago.
Ruster Dairy Company, Grand Rapids, Mich.
Salt Lake Milk Producer's Assn., Salt Lake City, Utah (Farmilk).
Sanford's Overlook Farms Dairy Company, Waterbury, Conn.
Sanitary Farms Dairy, Inc., Erie, Pa.
Schiller Park Dairy, Syracuse, N. Y.
Sheffield Farms Company, Inc., New York.
Southern Dairies, Rocky Mount and Wilson, N. C.
South Side Dairy Corp., Syracuse, N. Y. (Blue Ribbon).
Sunset Dairy Company, Chicago.
Sunshine Dairies, Utica, N. Y.
Twin Pines Farm Dairy, Inc., Detroit.
United Dairies, Inc., Highland Park, Mich.
Utah Wasatch Dairy, Inc., Provo, Utah (Challenge).
Vitex Laboratories, Elgin, Ill.
Vitex Laboratories, Waukegan, Ill.
Vitex Vitamin D Milk Laboratories, Inc., Buffalo.
Weber Central Dairy Association, Inc., Ogden, Utah.
Wendt's Dairy, La Salle, N. Y.
White Eagle Dairy Company, Chicago.
Wilke Dairy Company, Milwaukee.
Willow Farm Products, La Grange, Ill.
Woodlawn Farm Dairy Company, Wilkes-Barre and Scranton, Pa.

Description.—Bottled pasteurized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 400 U. S. P. X (Revised, 1934) vitamin D units per quart.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D.

Vitamins.—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used.

Claims of Distributors.—A vitamin D fortified, antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

BORCHERDT'S MALT SOUP EXTRACT WITH ADDED POTASSIUM CARBONATE

Manufacturer.—Borchardt Malt Extract Company, Chicago.

Description.—Concentrated nondiastatic malt extract with added potassium carbonate.

Manufacture.—Crushed barley malt is admixed with warm water and stirred for a definite period; a given quantity of hot water is added and steam is introduced until the temperature of the mix rises to the desired point, at which it is held for a definite period, after which the water solution is removed from the grain, filtered, and partially evaporated. Potassium carbonate is added to this malt extract (1.1 Gm. of potassium carbonate to 100 Gm. of extract) and the mixture is further concentrated in "vacuum" to the desired density, and packed in bottles.

Analysis (submitted by manufacturer).—	per cent
Moisture	21.8
Ash	2.5
Potassium carbonate.....	1.1
Fat (ether extract).....	0.0
Protein (N X 6.25).....	6.4
Reducing sugars as maltose.....	57.6
Dextrins (by difference).....	11.7
Calcium (Ca).....	0.02
Chlorine (Cl).....	0.01
Iron (Fe).....	0.0006
Magnesium (Mg).....	0.09
Phosphorus (P).....	0.29
Potassium (K).....	1.10
Silicon (Si).....	0.04
Sodium (Na).....	0.08
Sulphur (S).....	0.05

Not diastically active.

Calories.—3.0 per gram; 85 per ounce.

Vitamins.—Sixty units of vitamin B complex (Sherman and Spohn method) per ounce.

Claims of Manufacturer.—A laxative modifier in the diet of obstinate cases of constipation in bottle fed babies. Is mixed with water, whole milk and wheat flour in certain proportions to make Keller's Malt Soup for special diets of infants.

SANKA COFFEE (97% OF THE CAFFEINE REMOVED)

Manufacturer.—Sanka Coffee Corporation, New York, subsidiary of General Foods Corporation, New York.

Description.—Decaffeinated Santos, Bogotas and Mocha coffees, retaining approximately 3 per cent of the natural caffeine.

Manufacture.—Green coffee is cleaned, steamed and the caffeine extracted with trichloroethylene, which is removed by steam distillation. The different coffees are blended to produce a standard coffee beverage, roasted and automatically packed under vacuum in tins. Every batch is tested to insure at least 97 per cent removal of caffeine.

Analysis (submitted by manufacturer).—	per cent
Moisture	3.1
Water soluble solids.....	24.5
Ash	3.9
Fat (petroleum ether extract).....	15.1
Protein (N X 6.25).....	6.9
Caffeine	0.03
Caffeitanic acid.....	1.1
Crude fiber.....	22.4
Carbohydrates other than crude fiber (by difference).....	48.6

Claims of Manufacturer.—Retains normal coffee flavor. Recommended to those suffering from nerves, sleeplessness and other conditions which may be aggravated by caffeine.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - Seven dollars per annum in advance

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SATURDAY, NOVEMBER 24, 1934

THE CONFERENCE ON ECONOMIC SECURITY

In his address to the National Conference on Economic Security, November 14, President Franklin D. Roosevelt made the following statement on the subject of old age pensions and sickness insurance:

I do not know whether this is the time for any federal legislation on old age security. Organizations promoting fantastic schemes have aroused hopes which cannot possibly be fulfilled. Through their activities they have increased the difficulties of getting sound legislation; but I hope that in time we may be able to provide security for the aged—a sound and uniform system which will provide true security.

There is also the problem of economic loss due to sickness—a very serious matter for many families with and without incomes and therefore an unfair burden upon the medical profession. Whether we come to this form of insurance soon or later on I am confident that we can devise a system which will enhance and not hinder the remarkable progress which has been made and is being made in the practice of the professions of medicine and surgery in the United States.

These words are to the medical profession, among the most encouraging to come from the conference. They recognize the fantastic character of many of the schemes that have been proposed for these types of economic security. They indicate also a realization of the necessity for developing changes in the nature of medical practice that will neither break down the quality of medical care nor impede medical progress.

The report of the deliberations of the Medical Advisory Board would seem to indicate a tendency on the part of the advisers to follow the lead of the President in prefacing action and recommendation by study and investigation.

In her statement to the National Conference on Economic Security, Miss Frances Perkins, Secretary of Labor, said:

Ill health is a hazard which may strike at any age and is rendered particularly distressing by the economic considerations that are involved. Through its Public Health Service the government has for a long time accepted a certain measure of responsibility for the health of the people. That service, by its preventive and educational work, has played an increasingly valuable part in improving the national standards of health. But we cannot shut our eyes to the fact that vast numbers of our people in time of sickness are unable to pay the cost of necessary medical attention.

From time immemorial the members of the medical profession have cared for the needy without thought of reward. They have consistently rendered this noble and unselfish service, but we cannot in fairness ask them to carry indefinitely a burden which under the stress of modern conditions becomes daily heavier. Our problem is to bring adequate medical care within the reach of those who cannot at present afford it, and at the same time to safeguard the highest interests of that profession which has always given without stint of its services to the care of suffering and needy humanity. To this end the cooperation of the medical profession is vital and I have every confidence that such cooperation will be accorded by the profession, which has always had such fine traditions of public service.

Miss Perkins in concluding her remarks emphasized the statement by the President that "we must not lose sight of the fact that economic recovery must come before everything else and that unemployment insurance, as well as the other parts of the economic security program, will have to be developed as a cooperative federal-state undertaking."

The Medical Advisory Board to the Committee on Economic Security held its meetings on November 15 and 16. A brief statement appears under Association News in this issue (p. 1627). There is apparent a desire to enlist the cooperation of the entire medical profession in the development of recommendations that will answer the desire of the social leaders for better provision of medical care to the lower income groups in our population and at the same time protect the advancement of scientific medicine, the quality of medical care and the private practice of medicine. It is no secret that all of the plans thus far brought forward involve tremendous expenditures of money, running into billions of dollars annually, and this too at a time when budget balancing is a problem to tax the most astute minds that the administration is able to command. An evidence of the tendency to proceed with due caution is the recommendation by the Medical Advisory Board¹ of the addition to the technical staff that is studying this problem of Dr. R. G. Leland and Mr. A. M. Simons of the Bureau of Medical Economics of the American Medical Association. The technical staff previously included Dr. Edward Sydenstricker and Messrs. I. S. Falk, Michael Davis and Nathan Sinai. It is understood that this technical staff will make the basic studies and fact-finding investigations that are necessary before the committee can proceed intelligently to formulate its final recommendations.

The headquarters office of the American Medical Association has been besieged with telephone calls, telegrams and letters on this subject ever since the plans for this conference were first made public. Some physicians are apparently opposed to all change and feel that the American Medical Association should officially make itself felt in opposition to the entire program of

1. The members of this board include: Dr. Harvey Cushing, New Haven, Conn.; Dr. Walter L. Bierring, Des Moines, Iowa; Dr. James Alexander Miller, New York; Dr. Robert B. Greenough, Boston; Dr. James D. Bruce, Ann Arbor, Mich.; Dr. Rexwald Brown, Santa Barbara, Calif.; Dr. Thomas Parran, Albany, N. Y.; Dr. George W. Crile, Cleveland; Dr. Stewart R. Roberts, Atlanta, Ga.; Dr. George M. Piersol, Philadelphia, and Dr. J. Shelton Horsley, Richmond, Va.

the government. While the House of Delegates of the American Medical Association has repeatedly voiced its opposition to the socialization of medical practice, it indicated, in its sessions at Cleveland last June, its belief in properly controlled experimentation with new forms of medical practice, subject to the retention of certain basic principles recommended by its own special committee. This is the policy which *THE JOURNAL* and the *Bulletin* of the Association have supported to their utmost.

It now remains for the medical profession, individually and collectively, to impress itself and its views on the members of the Medical Advisory Board of the Committee on Economic Security. Bear in mind that the physicians on this board were selected largely not as representatives of the medical profession but as physicians who have expressed in various ways definite points of view in relationship to the social changes that seem to be in progress.

PROGRESS IN THE STUDY OF EVOLUTION

In the Penrose Memorial Lecture before the American Philosophical Society, the Princeton biologist Edwin G. Conklin traces the progress of a generation in the study of evolution. A recapitulation of this instructive lecture¹ may be of interest. At the beginning of this century the study of evolution entered a new era. This study before had been based largely on observation and deduction. While the fact of evolution was accepted generally by scientists, the factors concerned were largely matters of personal opinion and speculation. As Conklin says, what seemed probable to one seemed very improbable to another. But in 1900 Mendel's principles of heredity were rediscovered and genetics, a new experimental science of heredity, was born. The actual laws of heredity begin at last to be established. In the following year De Vries published his great work on the mutation of the evening primrose, which was living evidence of evolution under experimental conditions. The mutation theory of evolution is now well established. Mutations are inherited and represent changes in the germ cells, while changes in developed organisms, fluctuations, are not inherited. Herein, Conklin points out, lies the chief distinction between the older and the newer views of evolution, which hold that the changes are wrought first in the germ cells. Almost at the same time as Mendel's principles of heredity and as the mutation theory were recognized came the discovery of the relation of the phenomena in question to the germ cells.

On the average the offspring inherits as many traits from one parent as from the other. Since it receives an equal number of chromosomes from each parent, there seemed good reason to conclude that the chromo-

somes carry the factors of inheritance. Now certain differences were found in the chromosomes of males and of females, the male lacking certain hereditary materials found in the female, on which sex depends. "Thus the initial cause of sex, which had been a subject of speculation for thousands of years, was found in a difference in certain chromosomes in the two sexes." The next step was the discovery that the parental chromosomes unite into synaptic pairs and that the subsequent separation in the reduction division exactly parallels the mendelian segregation of characters, thus explaining mendelian inheritance. In this establishment of the cytologic basis of inheritance, American investigators have taken a leading part.

Within the first five years of this century the mendelian law of heredity, the mutation theory of evolution, the failure of selection to build new species, and the chromosomal mechanisms of sex determination and inheritance were established. Today the problems of evolution center largely in the germ cells. "The germ cells are the only living bonds not only between generations but also between species, and contain the physical basis, not only of heredity but also of evolution." Remember that the older naturalists thought of evolution only as changes in mature organisms under environmental influences. Among the significant advances of the most recent study of evolution Conklin mentions especially analysis of the causes of mutations. These may be caused by changes in the numbers and association of whole chromosomes, changes in the composition of individual chromosomes, and changes in the ultimate inheritance units or genes themselves. Numerous examples are cited of new mutant species by changes in the whole chromosomes. Mutations caused by changes in the genes (which lie in the chromosomes) have been found in almost all animals and plants bred in large numbers under experimental conditions. The animal most used is the vinegar fly, "the most famous animal in the world" in the field of evolution or heredity. This fly can be bred easily, so that a new generation is obtained every twelve days; it has a large number of readily recognizable hereditary characters, and it has only four pairs of chromosomes, readily distinguishable. More than 500 mutations, affecting various parts, have been found in this fly during the past twenty-five years. By ingenious methods, particular mutant genes have been located in particular chromosomes and even in particular regions of these. The leader in this study has been Thomas Hunt Morgan, who received the 1933 Nobel prize in medicine in recognition of the fundamental importance of his work. The nature of the changes in the genes that result in mutations is not known. "The fact that it may affect one gene and not another similar one that is not more than one thousandth of a millimeter away would seem to indicate that it is not some general environmental influence." X-rays and radium may cause gene mutations. Heating the eggs sufficiently to kill most of

1. Conklin, E. G.: A Generation's Progress in the Study of Evolution, *Science* 80: 147 (Aug. 17) 1934.

them may result in survivors of new types. We are now at the very beginning of any understanding of the nature and full significance of gene activity in embryology and in evolution. Conklin points out that mutations generally are regressive and seem to lead nowhere. This weakness in the mutation theory is met by the possibility that natural selection eliminates useless mutations and slowly builds up "the marvelous combinations of useful adaptations that all organisms possess." Adaptations, says Conklin, are still the greatest problem of biology.

Is Darwin's principle of the elimination of the unfit and the survival of the fit the only explanation? Darwin relied on inheritance of the effects of use and disuse as an aid in natural selection, but the evidence of genetics shows conclusively that these effects are not inherited. Conklin follows Weismann in extending the principles of selection to many of the reactions of organisms, which are, he says, generally able to select between that which is satisfactory and that which is not. "No one can at present explain this property of life, but apparently it is a general characteristic of all living things." In other words, the selection is not exclusively by way of the environment, as the organism itself can select or reject. As Weismann said, the selection principle "does not create the primary variations but it does determine the paths of development which these follow." Thus we are brought face to face again with fundamental problems of life from a new angle.

THE PINEAL BODY

Of the organs reputed to have an internal secretion, the pineal body has thus far successfully eluded all efforts to determine its function. As patients with tumors of this organ have been found to exhibit changes characteristic of precocious puberty, a relationship of the pineal body to sexual physiology has been postulated. But the results of pinealectomy in the hands of different investigators have been conflicting and confusing. Uniform effects on the primary or secondary sexual apparatus in either male or female could not be elicited.

The discovery independently by Silberstein and Engel¹ in Vienna and by Saphir² in Chicago that the pineal body contains estrogenic substance adds to the problem of the physiologic rôle of this organ. Silberstein and Engel worked with the pineal bodies of steers and calves, Saphir with those from human beings; the presence of estrogenic substance could readily be demonstrated by the Allen-Doisy technic after implantation of small pieces of pineal tissue into castrated mice. The Vienna investigators found that the estrogenic substance could not be extracted by alcohol, ethyl ether and acetone. This is a curious observation in view of

the fact that the estrogenic fractions of the ovary, placenta, blood and urine are known to be soluble in varying degrees in these liquids. The estrus-inducing factor of the pineal body could, however, be taken up by dilute alkali but not by dilute acid, from powder remaining after acetone extraction.¹ A 640 mg. pineal body of a steer was found to contain at least 16 mouse units of estrogenic substance,¹ while Saphir² reported that the human organs, weighing on an average about 150 mg., contained at least 2 to 3 mouse units each. The Chicago investigator found estrogenic activity in the pineal bodies of both men and women and in that of a child (sex not stated). A gonad-stimulating effect of pineal tissue could not be detected by injection either into mice² or into rabbits,¹ nor did the intramuscular implantation of this material into mature female mice notably affect their sexual cycles.²

The significance of these results is obscure. It remains still to be determined whether or not the estrogenic factor of the pineal body exerts any important normal function in the physiology of the sexual organs, male or female. It must be remembered, for instance, that estrogenic substance may regularly be found in the male, yet no definite normal function has yet been attributed to this factor in this sex. The relationship of the pineal estrus-inducing substance to that found in other organs, tissues or body fluids is, of course, not yet known.

It is therefore too early to speculate as to the activity of the pineal body in the normal animal. The important investigations of Silberstein and Engel and of Saphir appear, however, to constitute a significant step in the eventual elucidation of the function of this organ.

Current Comment

THE VITAMIN C CONTENT OF HUMAN TISSUES

The recent isolation of vitamin C, its identification and its synthesis have opened a new field for the investigation of the physiologic rôle of this substance in the organism. Harris and his co-workers¹ in England determined by chemical methods its rate of excretion in the urine following oral ingestion. It was suggested that this method might serve as a means of determining latent scurvy in patients before detectable clinical signs appear. More recently Yavorsky, Almaden and King² in this country have assayed also by chemical means the vitamin C content of various human tissues obtained at necropsy. Material was obtained from sixty-seven individuals ranging in age from birth to 70 years. Thirty-one were less than 10 years old; of these the vitamin C content of the tissues was so low in four that latent scurvy was evident. In six of

1. Silberstein, F., and Engel, P.: Ueber das Vorkommen einer östrogenen Substanz in der Epiphyse, *Klin. Wchnschr.* 12: 908 (June 10) 1933.

2. Saphir, William: Concerning the Function of the Pineal Body, *Endocrinology* 18: 625 (Sept.-Oct.) 1934.

1. Harris, L. J.; Ray, S. N., and Ward, Alfred: The Excretion of Vitamin C in Human Urine and Its Dependence on the Dietary Intake, *Biochem. J.* 27: 2011 (No. 6) 1933. The Estimation of Vitamin C, editorial, *J. A. M. A.* 102: 1852 (June 2) 1934.

2. Yavorsky, Martin; Almaden, Philip, and King, C. G.: The Vitamin C Content of Human Tissues, *J. Biol. Chem.* 106: 525 (Sept.) 1934.

the remaining thirty-six patients the tissues were so depleted in the vitamin that the concentrations of the latter reached the levels found in terminal human or guinea-pig scurvy. While Yavorsky and his co-workers do not report the clinical diagnoses in the various individuals studied, they state that there had been no specific consideration of scurvy in any instance. A number of the patients apparently had been on dietaries low in the antiscorbutic factor for some time preceding admission to the hospital. The concentration and distribution of vitamin C in the various organs was found to correspond more or less closely with those in the guinea-pig. However, a wide range of variation occurred among the different patients. The results of the Pittsburgh investigators further suggest that chemical examinations of body fluids for vitamin C might be of considerable clinical value.

Association News

MEETING OF MEDICAL ADVISORY BOARD OF COMMITTEE ON ECONOMIC SECURITY

The Medical Advisory Board, appointed by Secretary Perkins, chairman of President Roosevelt's Committee on Economic Security, to advise the committee's technical staff in its study of programs of public health, medical care and health insurance, met in Washington on November 14 and 15. The board met in executive session with all its members present as follows: Drs. Walter L. Biering of Iowa, Rexwald Brown of California, James Deacon Bruce of Michigan, George W. Crile of Ohio, Harvey Cushing of Connecticut, Robert B. Greenough of Massachusetts, J. Shelton Horsley of Virginia, James Alexander Miller of New York, Thomas Parran Jr. of New York, George M. Piersol of Pennsylvania and Stewart R. Roberts of Georgia. Other persons attending the meeting included Edgar Sydenstricker, in charge of the medical and health phases of the studies of the Committee on Economic Security, I. S. Falk of the technical staff, and by invitation Dr. R. G. Leland and A. M. Simons of the Bureau of Medical Economics of the American Medical Association.

Nathan Sinai, Michael M. Davis and W. Frank Walker also met with the board as consultant staff members associated with the dental, hospital and public health advisory committees which have also been appointed by Secretary Perkins and which are to meet in the immediate future. The meeting was opened by short addresses from Secretary Perkins and Edwin E. Witte, executive director of the Committee on Economic Security. Secretary Perkins and Mr. Witte requested the close cooperation and advice of the medical profession in developing the health aspects of the President's program for economic security. Owing to the fact that the Medical Advisory Board will make its recommendations to the Committee on Economic Security no public statement of its deliberations was given out, but we are informed by Mr. Witte that the technical staff of the committee presented to the board tentative proposals on the three subjects above mentioned in extending and improving public services, tax supported medical care for dependents and other population groups affected with certain diseases and health insurance against illness.

Health insurance was discussed from the point of view of considering the details of a plan suitable to the various needs of the American people and the interests of the medical professions in the event that legislation on this subject is proposed by the administration. The board requested an extension of time for this study. Arrangements were effected whereby Dr. Leland and Mr. Simons will participate in this study with the technical staff. It is anticipated that the board will meet again within the next six weeks or two months.

THE ATLANTIC CITY SESSION

Application for Space in the Scientific Exhibit

Application blanks are now available for space in the Scientific Exhibit at the Atlantic City session of the American Medical Association, June 10-14, 1935. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next two broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

November 29. Holiday; no broadcast.
December 6. Keep Fighting Diphtheria.
December 13. Shopping for Health.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

November 27. Dollars and Disease, Morris Fishbein, M.D.
December 4. The Quick Lunch, W. W. Bauer, M.D.
December 11. Care of the Handicapped, Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Walter C. Overstreet, Jonesboro, has resigned as health officer for Craighead County.—Dr. Sherod A. Drennen was elected acting mayor of Stuttgart, October 3.

Society News.—Dr. Arthur B. Chase, Oklahoma City, among others, addressed the Tenth Councilor District Medical Society at Fort Smith, September 18, on "Pain in Heart Disease."—At a meeting of the Mississippi County Medical Society in Blytheville, October 2, Drs. Robert G. Henderson and John P. Henry, Memphis, Tenn., discussed skin diseases and allergy, respectively.—The Pope County Medical Society was addressed at Russellville, October 11, by Drs. John M. Smith on "Gallbladder Disease and Associated Pathology" and Robert H. Hood, "Dietetic Treatment of Gallbladder Disease."—Speakers before the Fifth Councilor District Medical Society at Camden, October 11, were Drs. Hugh L. Moore and George L. Carlisle, Dallas, Texas, and James A. Warner, St. Louis.—At a meeting of the Pulaski County Medical Society in Little Rock, October 1, Drs. John L. Kantor, New York, and Paul B. Magnuson, Chicago, discussed "Functional Disturbances of the Gastro-Intestinal Tract" and "Diagnosis of the Causes of Low Back Pain," respectively. Dr. Andrew C. Ivy, Chicago, addressed the society, October 6, on "Etiology and Therapeutic Rationale of Peptic Ulcer."

CALIFORNIA

Dr. Ashley Named Health Officer.—Dr. Nilton N. Ashley has been appointed health officer of Oakland, succeeding Dr. Arthur Hieronymus, who has held the position since 1931. Dr. Ashley is 44 years of age and a graduate of the University of Louisville School of Medicine.

Medical Board Re-elected.—At a meeting of the state board of medical examiners in Sacramento in October, the following physicians were re-elected: William R. Molony, Los Angeles, president; Clark L. Abbott, Oakland, vice president, and Charles B. Pinkham, San Francisco, secretary-treasurer.

University News.—Dr. Robert F. Loeb, associate professor of medicine, Columbia University College of Physicians and Surgeons, New York, conducted a clinic on diabetic acidosis before the faculty and students of the University of California Medical School, October 13. Dr. Frank B. Young, Long Beach, addressed the faculty and students, October 10, on "The Antiquity of Diseases."

County Society Library Opened.—The formal opening of the library of the Los Angeles County Medical Association took place, November 27, in the auditorium of the association building. Dr. George Dock, president, made the presentation of the Barlow Medical Library on behalf of the medical library association, and Dr. Philip H. Stephens, president of the county society, the speech of acceptance. Dr. Herbert M. Evans, professor of anatomy and Herzstein professor of biology, University of California Medical School, gave an address, and greetings were offered by Miss Louise Ophuels, vice president of the library association.

DISTRICT OF COLUMBIA

Dr. Fowler Retires as Health Officer.—The retirement of Dr. William C. Fowler, health officer of the District since 1918, will be effective November 24, when he will reach the statutory retirement age of 70. Dr. Fowler graduated from Georgetown University School of Medicine in 1888, and became associated with the health department in 1894 as sanitary officer. From 1906 to 1907 he served as chief medical inspector in charge of the contagious disease service and in 1917 was made assistant health officer. The following year he was appointed health officer. No successor to Dr. Fowler has been announced, but newspapers reported that a reorganization of the department is being contemplated and until this takes place Dr. Edward J. Schwartz will be acting health officer. The committee to study the reorganization will be composed of representatives of the District medical society, the U. S. Public Health Service, and the hospitals of Georgetown and George Washington universities.

FLORIDA

Health at Miami.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended November 10, indicate that the highest mortality rate (20.3) appears for Miami, and the rate for the group of cities as a whole, 11.1. The mortality rate for Miami for the corresponding period last year was 4.7, and for the group of cities, 10.4. The annual rate for the forty-five weeks of 1934 was 11.3 as against a rate of 10.8 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

ILLINOIS

Dental Survey.—The state department of health and the Illinois State Dental Society are cooperating in a fall and winter dental health survey of school children. Diet and periodic dental inspections with the aim of preventing tooth decay will be emphasized. In the educational program to coincide with the survey, prenatal care, especially from the standpoint of the diet of prospective mothers, and the diet of children will be particularly stressed in connection with efforts to prevent dental decay. The periodic inspection of teeth and the prompt correction of caries were also emphasized.

Society News.—At a meeting of the Iowa and Illinois Central District Medical Association in Moline, October 31, Dr. Foster Kennedy, New York, discussed "The Interdependence of Neurology, Psychiatry and General Medicine," and Dr. Grandison D. Royston, St. Louis, "The Care of Obstetrical Damage to the Cervix and Pelvic Supports."—Speakers before the Peoria City Medical Society, November 6, were Drs. Clarence Baxter Brown on "Ectopic Pregnancy"; Emil Z. Levitin, "Schizophrenia"; William A. Hinckle, "Anatomical Causes of Proctologic Pathology," and Harry A. Durkin, "Prognostic Consideration of Heart Diseases."

Chicago

American Medical Association Night.—The Chicago Medical Society designated its meeting, November 21, "American Medical Association Night." Speakers were Drs. Walter L. Bierring, Des Moines, Iowa, President of the Association, on "Plans for Economic Security"; William C. Woodward, director, Bureau of Legal Medicine and Legislation, "The Health Insurance Program," and Edward H. Cary, Dallas,

Texas, past president, "Some Suggestions Toward Medical Cooperation." A dinner in honor of the guest speakers preceded the meeting. Other officials of the Association were on the reception committee.

Society News.—The Hebrew University Society was recently organized with Dr. Maurice Lewison as president. The purpose of the society is to support the Hebrew University in Palestine, particularly the university hospital and medical center, which is being built on Mount Scopus. Other officers are Drs. Alfred A. Strauss, vice president; Mayer H. Lebensohn, treasurer, and Charles Newberger, secretary. The society is affiliated with the American Jewish Physicians Committee of New York, of which Dr. Nathan O. Ratnoff is president and Dr. Emanuel Libman is chairman of the executive committee. —Dr. Joseph L. Miller will deliver the presidential address at the nineteenth annual meeting of the Institute of Medicine of Chicago, December 4; his subject will be "The Influence of Claude Bernard's Experimental Methods on Medicine."

KANSAS

Birth Registration Campaign.—The Kansas State Board of Health, the federal bureau of the census and the state emergency relief committee are sponsoring a campaign to insure correctness of records and to emphasize legal, social and economic importance of birth registration. Cards will be mailed to every family in Kansas, enclosing birth information, with a request that it be completed for return to the vital statistics department of the state board of health. It is believed that this plan will strengthen the registration of the past year.

Society News.—Dr. Walter L. Bierring, Des Moines, Iowa, President, American Medical Association, will address the Shawnee County Medical Society, December 3.—Dr. Wilfred Cox, Wichita, read a paper on "Dermoid Cysts of the Ovary" before the Sedgwick County Medical Society, October 16.—At a joint meeting of the Clay and Washington county medical societies in Clay Center, October 10, Dr. Edward H. Skinner, Kansas City, Mo., discussed "Preventable and Curable Conditions in the Field of Malignancy."—Dr. Thomas J. Sims Jr., Kansas City, addressed the Wyandotte County Medical Society, November 20, on "Obstetrical Anesthesia and Analgesia." Speakers before the society, October 16, were Drs. Harry R. Wahl and Russell W. Kerr, Kansas City; their subjects were "Primary Carcinoma of Lungs with Marked Mediastinal and Cardiac Extension" and "Extensive Diffuse Carcinoma of the Stomach with Widespread Visceral Metastases." G. Farrell Webb, D.D.S., discussed "Dental Infection as Related to Medicine."

KENTUCKY

State Medical Election.—Dr. Joshua B. Lukins, Louisville, was chosen president-elect of the Kentucky State Medical Association at the annual meeting in Harlan in October, and Dr. Carl C. Howard, Glasgow, was installed as president. Vice presidents elected were Drs. Benjamin F. Robinson, Lexington; Robert L. Collins, Hazard, and Reason T. Layman, Elizabethtown. The next meeting will be held in Louisville.

Society News.—Dr. James W. Bruce addressed the Jefferson County Medical Society, Louisville, November 5, on "Cutaneous Burns." Dr. John J. Moren will speak, November 19, on "Relation of Trauma to Diseases of the Nervous System."—Dr. Adolph O. Pfingst addressed the Louisville Medico-Chirurgical Society, November 9, on "Internal Carotid Cavernous Sinus Aneurysm in Infancy."—Dr. George A. Hendon was the speaker before the Louisville Surgical Society, November 22, on "Mechanical Drainage."—Dr. J. Oliver Knight addressed the Louisville Urological Society, November 27, on "Benign Hypertrophy of the Prostate."—Dr. Milton Smith Lewis, Nashville, Tenn., addressed the Third District Medical Society at Bowling Green, October 17, on treatment of eclampsia.

MASSACHUSETTS

The Dunham Lectures at Harvard.—Dr. Ulrich Friedemann, formerly professor of internal medicine at the University of Berlin and director of the division of infectious diseases at the Virchow Krankenhaus, will deliver three lectures at Harvard Medical School under the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences, December 4, 6 and 11. The first two lectures will be on "Distribution of Dyes, Drugs and Toxins in the Animal Body," and the third on "The Pathogenesis of Diphtheria."

Personal.—Dr. Clifford D. Moore has been named chief executive officer of the Boston Psychopathic Hospital, succeeding the late Dr. Samuel S. Cottrell.—Dr. Lawrence J.

Henderson, professor of biological chemistry, Harvard University Medical School, was awarded the honorary degree of doctor of science by the University of Cambridge, England, October 22.—Dr. C. Macfie Campbell, professor of psychiatry, Harvard University Medical School, Boston, has recently been elected president of the Massachusetts Psychiatric Society; Dr. Charles E. Thompson, Gardner, vice president, and Dr. Oscar J. Raeder, Boston, secretary.—Dr. Walter B. Cannon, George Higginson professor of physiology at Harvard Medical School, has been granted leave of absence from March 15 to Sept. 1, 1935.

MISSISSIPPI

Personal.—Dr. Romeo R. Halfacre, assistant superintendent of the state asylum, Jackson, was recently appointed superintendent of the Ellisville State School by the state board of administration, succeeding Dr. Hugh L. McKinnon, Hattiesburg.—Dr. James T. Googe, Lexington, has been appointed health officer of Copiah County, succeeding Dr. William L. Little, Wesson, who has been conducting the unit on a part time basis. With Dr. Googe's appointment, the unit has been restored to a full time basis.—Dr. James V. May, Port Gibson, has retired from active practice on account of illness. He served as president of the Claiborne County Medical Society for several years.

Graduate Course in Obstetrics.—Clinics and lectures on antepartum and postpartum care will be available for group or individual consultation, beginning January 1, through the state committee on graduate medical education, under the direction of Dr. Maxwell E. Lapham, Philadelphia. The state medical association made the course possible at its meeting in Natchez last May when it appropriated \$1,500 and requested the Commonwealth Fund to cooperate financially with the association, the Tulane University of Louisiana School of Medicine and the state board of health. Classes of physicians will be organized in convenient centers to meet for two hours one day a week for eight or ten consecutive weeks. The first centers proposed are Natchez, Centreville, McComb, Columbia and Silver Creek.

NEW HAMPSHIRE

Health Insurance Opposed.—The Merrimack County Medical Society at a meeting in Concord, October 31, recorded its opposition to the adoption of a health insurance plan by the state or national government.

Dr. Bielschowsky Joins Dartmouth.—Dr. Alfred A. Bielschowsky, until recently professor of ophthalmology at the University of Breslau, Germany, has joined the department of research in physiologic optics at Dartmouth Medical School, Hanover, for six months of special work. Dr. Bielschowsky had been associated with the University of Breslau since 1923 and before that had been a member of the faculties of the universities of Marburg and Leipzig.

NEW JERSEY

Personal.—Dr. Martin H. Collier, Camden, was elected president of the eastern section of the American Sanatorium Association at its annual meeting at White Haven, Pa., October 7-8.—Dr. William C. Raughley, Berlin, was honored by the Camden County Medical Society at a meeting in Camden, October 2, in recognition of his fifty years of medical practice. He received a certificate of honor.

Theobald Smith Receives Another Award.—The New Jersey Health and Sanitary Association at its annual dinner, November 16, presented its annual award for meritorious service to Dr. Theobald Smith, director emeritus of the Department of Plant and Animal Pathology, Rockefeller Institute for Medical Research, Princeton. Dr. Smith could not attend the dinner because of illness, and the award, a bronze plaque, was accepted for him by Dr. Carl TenBroeck, present director of the Princeton branch. Mr. James E. Brooks, Newark, made the presentation, reviewing Dr. Smith's career as physician, teacher, student and scientist.

Meeting of Physicians and Pharmacists.—The Bergen County Medical Society met jointly with the Bergen County Pharmaceutical Association in Hackensack, November 13, with the following program: Charles W. Ballard, Ph.D., professor of materia medica, Columbia University College of Pharmacy, New York, "The Physician, the Patient and the Pharmacist"; Dr. Walter S. McClellan, medical director, Saratoga Springs Commission, New York, "Hydrotherapy and Indications for the Use of Natural Carbonated Mineral Waters"; Adolph F. MacQuier, Pharm.M., professor of pharmacy, Rutgers University, "Relationship of the Drug Store to the Physician";

Robert P. Fisehelis, Ph.M., Trenton, president of the American Pharmaceutical Association, "Problems Requiring Cooperation of the Allied Medical Professions."

NEW YORK

Diphtheria Campaign.—The departments of health and education of the city of Albany and the Medical Society of the County of Albany are cooperating in a campaign for the inoculation of children against diphtheria. Cooperating physicians have agreed to perform the inoculations for a nominal fee during the campaign, the city to pay for those unable to pay for themselves. The health department has agreed not to administer the treatment until January 1, and both city departments have agreed not to conduct diphtheria clinics in public or parochial schools during the present school year.

Graduate Lectures in Rochester.—The following series of lectures was presented under the auspices of the Medical Society of the State of New York before the Medical Society of the County of Monroe in Rochester, October 22-26:

- Dr. Arthur C. DeGraff, New York, Normal Functions of Small Blood Vessels and Alterations Produced by Disease.
- Dr. William Goldring, New York, Kidney Function as Affected by Disturbance of Circulation in the Kidney Itself.
- Dr. De Graff, Cardiac Function as Affected by Disturbance of Circulation in the Heart Itself.
- Dr. Norman Jolliffe, New York, Liver Function as Affected by Disturbance of Circulation in the Liver Itself.
- Dr. Clarence de la Chapelle, New York, A Consideration of the Extremities as Affected by Disturbance of Peripheral Circulation.

New York City

Tree Memorial to Madame Curie.—The sixty-seventh birthday of the late Madame Marie Curie, November 7, was observed by the planting of a tree in City Hall Park, with ceremonies in which Mayor La Guardia and Park Commissioner Robert Moses participated. Various French and Polish societies and the consul generals of France and Poland also took part.

Endowment for Long Island College.—The late Mr. Frank L. Babbott, who died in Brooklyn in December 1933, bequeathed a fund of approximately \$1,500,000 to the Long Island College of Medicine, Brooklyn, as a special endowment fund, the income from which is to be applied to the furtherance of medical education and research. Mr. Babbott's son, Dr. Frank L. Babbott Jr., is president of the college.

Hospitals' Work Increases.—The United Hospital Fund has published the results of a study of hospital service during the period from 1927 to 1933 showing a heavy increase in the hospital population. The total number of beds increased from 33,535 in 1927 to 41,064 in 1933 and the annual number of patients increased from 549,824 in 1927 to 673,767 in 1933. The largest increase was found in visits to outpatient departments, from 4,183,933 in 1927 to 6,843,025 in 1933. Shifting of patients from voluntary to municipal hospitals was shown by a change in the percentages cared for by the two groups: 65 per cent of the patients were cared for in voluntary hospitals in 1933 as compared with 72.2 per cent in 1927. Another study showing the operating expenses of twenty-seven general hospitals of the fund disclosed that expenditures in the inpatient departments in 1928 were \$13,916,538, toward which earnings from patients provided 74.2 per cent; in 1933 the expenses amounted to \$12,493,568, with earnings of 61.8 per cent. In 1928, earnings from outpatient departments paid 61.9 per cent of the operating expenses and in 1933 only 54.9 per cent.

Examination for Psychiatrist to Board of Education.—The board of examiners of the New York City Board of Education announces an examination for license as psychiatrist open to men and women applicants for service in the bureau of child guidance. November 30 is the final date for the receipt of applications, which may be obtained at the offices of the board or which will be sent on receipt of a request accompanied by a large stamped, self-addressed envelop. Graduates from recognized medical schools with three years' experience in the practice of psychiatry are eligible; one year must have been spent in institutions for mental disease and two in an organization or clinic for study and treatment of personality and behavior disorders of children. The present age limits for this examination are 35 to 45 years, but the board of education has been asked to lower the limit to 30 years and therefore tentative applications will be received from persons under 35 and over 30. The examination will be in five parts. The first is a thesis of from 7,500 to 10,000 words on the functions and duties of a psychiatrist in maintaining the effective service of a child guidance bureau in a large city school system. Part II is an evaluation of experience, record and personal research studies. Parts III, IV and V will be given only in

New York City subject to the call of the examiners; they include submission of case records, an interview test and a medical examination. The salary will be from \$6,000 to \$7,000 a year. For information address the Board of Examiners, 500 Park Avenue, New York.

NORTH DAKOTA

Personal.—Dr. and Mrs. Jess H. Moeller, Maddock, were honored recently when 200 friends gathered at their home to observe the twenty-fifth anniversary of their residence in the city; Dr. Moeller was presented with a purse of silver.

Society News.—Dr. Howard K. Gray, Rochester, Minn., addressed the Devils Lake Medical Society in October on "Surgery of the Biliary Tract."—Dr. Rosslyn B. Mitchell, Winnipeg, Manit., addressed the Grand Forks Medical Society, recently, on toxemia in pregnancy.—The North Dakota Anti-Tuberculosis Association celebrated the twenty-fifth anniversary of its founding, October 22.

OHIO

Society News.—Dr. Frank H. Lahey, Boston, addressed the Mahoning County Medical Society, Youngstown, November 20, on "Cancer of the Rectum and Colon."—Speakers at a meeting of the Adams County Medical Society, Manchester, October 17, were Drs. Frederick C. Leeds, Winchester, on "Puerperal Infection"; Wells Teachnor, Columbus, "Cancer of the Rectum and Colon," and Andrew R. Carrigan, Manchester, "Acute Poliomyelitis."—Dr. Hugh Wellmeier addressed the Miami County Medical Society, Piqua, October 12, on "Congenital Syphilitic Conditions in Children."—Dr. Walter G. Stern, Cleveland, lectured on treatment of fractures at a meeting of the Columbiana County Medical Society, Lisbon, October 16.—Dr. Isidor S. Ravdin, Philadelphia, addressed the Stark County Medical Society, Canton, October 9, on acute appendicitis.—Drs. George C. Malley, Parkersburg, W. Va., and Martha Margaret O'Neal, Zanesville, addressed the Muskingum County Academy of Medicine, Zanesville, October 2, on "Intracranial Hemorrhage of the New-Born" and "Pyloric Stenosis in the New-Born," respectively.—Dr. Frederick C. Herrick, Cleveland, addressed the Summit County Medical Society, Akron, November 6, on "Purulent Appendicitis with Rupture of the Appendix."—Dr. Virgil S. Counsellor, Rochester, Minn., addressed the Montgomery County Medical Society, Dayton, on "Conservatism in Gynecology," October 19, and Dr. Sumner L. S. Koch, Chicago, November 2, on "Acute Infections of the Hand."—Dr. John Alexander, Ann Arbor, Mich., addressed the Cleveland Academy of Medicine, November 16, on "The Present Status of Chest Surgery."

PENNSYLVANIA

Society News.—The Fayette County Medical Society held its fall clinic November 8, with Drs. Evan W. Meredith, Howard G. Schleiter and John F. McCullough, all of Pittsburgh, conducting surgical, medical and roentgenologic clinics, respectively.—Dr. James A. Cahill Jr., Washington, D. C., addressed the Lackawanna County Medical Society, November 6, on surgical consideration of acute conditions in the abdomen.—Dr. Philip F. Williams, Philadelphia, addressed the Cambria County Medical Society, Johnstown, November 8, on "The Toxemias of Pregnancy."—Dr. Frank H. Lahey, Boston, addressed the Delaware County Medical Society, Chester, November 5, on "Hyperthyroidism and Its Complications with Other Diseases."

Philadelphia

Public Health Night.—The Philadelphia County Medical Society held a "Public Health Night," November 14, with the following speakers: Dr. Henry F. Smyth, assistant professor of industrial hygiene, University of Pennsylvania, "Studies of Philadelphia Air Conditions"; David H. Wenrich of the zoological laboratory, University of Pennsylvania, "Amebiasis and the Carrier," and Franz C. Schnelkes, New York, "Chlorine and the Prevention of Disease."

Wards Named for Hospital Staff Members.—The medical board of the Philadelphia General Hospital announces that several wards will be named for distinguished physicians who have been members of the hospital staff, with dedicatory ceremonies December 4 in the auditorium of the hospital. One building will be named the Sir William Osler Building and the wards will be dedicated to the memory of the following physicians: Drs. Frederick P. Henry, Benjamin Rush, William W. Gerhard, David Hayes Agnew, Horatio C. Wood, C. Lincoln Furbush, Charles K. Mills and J. Chalmers DaCosta.

SOUTH CAROLINA

Malaria Has Increased.—The state department of health recently reported that 800 more cases of malaria had occurred in the state up to the end of September than occurred in the corresponding period of last year. The increase has been noticed especially since July; more than 300 cases per month have been reported. Malaria control work is proceeding slowly because of lack of funds, according to the state health officer, Dr. James A. Hayne, Columbia.

Society News.—Speakers at a meeting of the Tri-County Medical Association (Orangeburg, Bamberg and Calhoun Counties) in Elloree, September 20, were Drs. Samuel E. Harmon, president-elect of the South Carolina Medical Association, on "Modern Economic Problems of the Physician"; Orlando B. Mayer, "Influenza and Pneumonia with Special Reference to Treatment and Use of Oxygen"; George H. Bunch, "Suppurative Pericarditis"; James Richard Allison, "Cancer Information and Propaganda"; Thomas A. Pitts, "Radiation"; William R. Barron, "Prostatic Obstruction." All the speakers are from Columbia.

VIRGINIA

Personal.—Dr. Ernest L. Stebbins has resigned as health officer of Henrico County to join the staff of the New York State Department of Health, Albany.—Dr. William R. Bond, professor of physiology, Medical College of Virginia, Richmond, has been granted a leave of absence for the remainder of the academic year.

Officers of Special Societies.—Several societies that met in conjunction with the Medical Society of Virginia in Alexandria early in October elected officers as follows: Dr. Robert V. Funsten, University, was chosen president and Dr. Bernard H. Kyle, Lynchburg, secretary of the Virginia Orthopedic Association; Drs. William P. McDowell, Norfolk, and W. Ambrose McGee, Richmond, president and secretary, respectively, of the Virginia Pediatric Society; Drs. John H. Neff, University, and Linwood D. Keyser, Roanoke, president and secretary, respectively, of the Virginia Urologic Society.

WISCONSIN

University News.—The regents of the University of Wisconsin, Madison, have appointed a committee to work out plans for using a \$450,000 bequest left to the university by Miss Jennie Bowman earlier in this year for the establishment of a cancer institute. Members of the committee are Glenn Frank, LL.D., president of the university; Dr. Charles R. Bardeen, dean of the medical school, and Edwin B. Fred, Ph.D., dean of the graduate school.

Society News.—Drs. Albert C. Broders, Rochester, Minn., and William D. Stovall, Madison, addressed the Winnebago County Medical Society, Oshkosh, October 30, on "Grading of Cancer in Its Relationship to Prognosis and Treatment" and "The State Program for the Control of Cancer," respectively.—Dr. James C. Sargent, Milwaukee, addressed the Dane County Medical Society, Madison, October 9, on "Urinary Tract Stones."—Drs. Eugene S. Knox, Green Bay, and Herman A. Heise, Milwaukee, addressed the Racine County Medical Society, Racine, October 18, on "Gas Gangrene" and "Detention of Alcohol in Body Fluids (Quantitatively) and the Factor of Alcohol in Automobile Accidents," respectively.

GENERAL

Society News.—Dr. Fred M. Hodges, Richmond, Va., was chosen president of the American Roentgen Ray Society at its annual meeting in Pittsburgh, September 25-28, and Dr. George W. Grier, Pittsburgh, was installed as president. Vice presidents elected are Drs. Lyell C. Kinney, San Diego, Calif., and John Sproull, Haverhill, Mass., and the secretary is Dr. Eugene P. Pendergrass, Philadelphia. The next meeting will be held in Atlantic City in September 1935.—Dr. David Riesman, Philadelphia, was named president-elect of the International Postgraduate Medical Assembly of North America at its annual meeting in Philadelphia, November 5-9.—Dr. Thomas J. Collier, Atlanta, Ga., was elected president of the Associated Anesthetists of the United States and Canada at its meeting in Boston, October 18, and Dr. F. Hoeffler McMechan, Rocky River, Ohio, was reelected secretary. The next annual session will be held at Atlantic City, June 10-14.

Registry of Brain Tumors at Yale.—A series of about 2,000 tumors of the central nervous system collected by Dr. Harvey Cushing, now Sterling professor of neurology at Yale University School of Medicine, New Haven, during his service at Johns Hopkins in Baltimore and the Peter Bent Brigham Hospital, Boston, has been installed at Yale. It is

intended that these elaborately catalogued specimens be made useful as far as possible to those interested and it is hoped that the collection will be increased. It is thought that it will be of use to those who encounter rare tumors that they wish to have identified if possible and concerning which they may desire information, particularly on the basis of type prognosis. Any one who may wish to send specimens for diagnosis or may seek information of other sorts is welcome to do so, an announcement states. The following physicians have consented to act as an advisory board:

Dr. Percival Bailey, professor of surgery and neurology, University of Chicago.

Dr. Francis C. Grant, assistant professor of neurological surgery, University of Pennsylvania School of Medicine, Philadelphia.

Dr. Samuel C. Harvey, professor of surgery, Yale University School of Medicine, New Haven.

Dr. George J. Heuer, professor of surgery, Cornell University Medical College, New York.

Dr. Wilder G. Penfield, professor of neurology and neurological surgery, McGill University Faculty of Medicine, Montreal.

Dr. Ernest Sachs, professor of clinical neurological surgery, Washington University School of Medicine, St. Louis.

Dr. William P. Van Wagenen, associate professor of neurological surgery, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

Dr. Simeon B. Wolfbach, Shattuck professor of pathological anatomy, Harvard University Medical School, Boston.

Dr. Louise C. Eisenhardt is curator of the collection.

Changes in Status of Licensure.—The State Board of Medical Examiners of Alabama announces the following action:

Julius G. Henry, Akron, license reinstated, August 21.

At a meeting of the Georgia State Board of Medical Examiners, October 11, the licenses of the following to practice medicine were revoked for violations of the Harrison Narcotic Act:

Dr. Alva H. Weathers, Atlanta.

Dr. William R. Thomas, St. Mary's.

Dr. Loring B. Palmer, Atlanta.

Dr. Luis Balmori, McAdenville, N. C.

At a recent meeting of the Kansas State Board of Registration and Examination, the following action was taken:

Dr. Matthew L. Miller, Coffeyville, license revoked because of conviction on felony charge.

Dr. Christopher C. Kesner, LeRoy, license restored.

The State Board of Health of Missouri recently reported the following action:

Dr. Dawsey Ryan, Bernie, placed on probation for one year, October 26, for excessive use of alcohol.

The Board of Registration in Medicine of Massachusetts reports the following actions:

Dr. Harold Van Gaasbeek, Chicopee Falls, license revoked, July 12, because of his conviction in court as an accessory before and after the fact in an abortion.

Dr. Everett D. Hooper, Boston, license restored, August 30.

The Illinois State Department of Registration and Education reports the following action:

Dr. Gilbert H. Wynekoop, Chicago, license revoked, October 15, because he was adjudged insane.

Dr. Alice Lindsay Wynekoop, Chicago, license suspended, October 15, pending the ultimate disposition of the appeal from the order of conviction in the criminal court of Cook County, the suspension to become a revocation in the event that the order of conviction is affirmed. Dr. Wynekoop was sentenced to prison following her conviction of murder.

Dr. John A. Newhouse, Caledon East, Ont., license revoked, October 11, for narcotic violation.

Dr. Archibald L. Calvin, Chicago, license revoked, October 11, following his conviction of manslaughter.

The Indiana State Board of Medical Registration and Examination reports the following action taken in October:

Dr. William Hamlin Curtiss, San Diego, Calif., license revoked for violation of the Harrison Narcotic Act.

Dr. Ralph K. Brown, New Albany, license revoked for violation of the Harrison Narcotic Act. Dr. Brown was recently sentenced to Fort Leavenworth.

The Texas State Board of Medical Examiners has reported the following revocations of licenses during the past year:

Richard L. Smith, Waco; Gustav R. Gerson, League City; John C. Hudson, Cedar Hill, and James L. Rountree, Argo, for narcotic addiction.

W. D. Yearly, Dallas, for violation of five year suspension of license.

Edgar M. Hughes, Truscott, because of commitment to a hospital for mental disease.

The New Jersey Board of Medical Examiners, at a meeting September 19, took the following action:

Dr. Charles F. Baxter, Paterson, license revoked for conviction of a crime involving moral turpitude; namely, obtaining money under false pretenses.

Annual Report of Red Cross.—Physical handicaps and health defects affecting 240,000 children were treated and corrected through the activities of the American Red Cross in 1933, according to the annual report, issued October 27. The report shows that 770 public health nurses made more than a

million nursing visits to 154,000 patients, nearly 20 per cent of whom were maternity cases. Several hundred more nurses were engaged in teaching home hygiene and care of the sick to 62,000 students during the year. The nursing service furnished nurses for epidemics of typhoid and malaria and in several disasters, notably the Los Angeles floods and the Texas hurricane. The food and nutrition service reached more than 7,000 students during the year, families affected by unemployment being especially aided through instruction in food selection. Two special funds were administered, one of \$25,000 given by Will Rogers for public health work and one of \$15,000 given by Scottish Rite Masons for giving employment to "white collar" workers.

CANADA

Hospital News.—Hospitals and clinics in greater Winnipeg have recently agreed that no patient will be admitted to their outpatient departments for consultation or treatment except on the production of a letter from a private practitioner.—Dr. Ernest C. Menzies, Montreal, has been appointed superintendent of the provincial hospital at Fairville, New Brunswick, succeeding Dr. James V. Anglin, retired.

Personal.—Dr. Murray Maclaren, St. John, N. B., entertained the St. John Medical Society at a dinner at the Riverside Country Club, August 18, in celebration of the fiftieth anniversary of his graduation from the University of Edinburgh Faculty of Medicine. The society presented a silver tray to Dr. Maclaren.—Dr. Reginald O. Davison, director of the division of communicable diseases in the Saskatchewan Department of Health since 1922, has been appointed deputy minister of health for the province.

Society News.—Dr. Lorimer J. Austin, professor of surgery, Queens University Faculty of Medicine, Kingston, Ont., addressed the St. John Medical Society, September 14, on carcinoma of the colon.—Dr. George W. Rogers, Dauphin, was elected president of the Manitoba Medical Association at the annual meeting at Winnipeg in September. A feature of the meeting was a symposium on "Upper Right Abdominal Pain," presented by Drs. Donald C. Balfour and Byrl R. Kirklin, Rochester, Minn.; Charles H. Hunter and Brandur J. Brandon, Winnipeg, and Lewis J. Carter, Brandon. Dr. Louis B. Wilson, Rochester, Minn., made an address at a dinner sponsored by the Medical Alumni Association on "Present-Day Defects in Medical Education."—Dr. Hugh H. Christie, Esterhazy, was elected president of the Saskatchewan Medical Association at the recent annual meeting; Dr. George H. Lee, Shaunavon, honorary president.

Government Services

Surgeon General Cruises with Fleet

Rear Admiral Perceval S. Rossiter, surgeon general of the U. S. Navy, sailed from Norfolk on the U. S. S. *Langley*, October 12, to join the fleet at Guantanamo Bay, Cuba. According to the *Military Surgeon*, this is the first time a surgeon general of the navy has made an extended cruise with the fleet and observed medical department activities afloat at close range. Surgeon General Rossiter's trip included a cruise on the flagship of Admiral Joseph M. Reeves during exercises in West Indian waters and the Caribbean. He transferred to the hospital ship, the U. S. S. *Relief*, in the Canal Zone, on which he completed the voyage to the West Coast. He will inspect all naval medical departments on the West Coast before he returns to Washington, D. C., about the first of the year.

Selling Fraudulent "Warm Springs" Crystals

W. C. Dunham, Macon, Ga., has been sentenced to a year in the penitentiary and two of his associates are awaiting trial on a charge of conspiring to violate the Federal Food and Drugs Act by advertising and selling "Warm Springs Crystal Compound" as coming from Warm Springs, Ga. The company and its so-called crystals, which were found to be Glauber's salt, were disavowed in the beginning by the Warm Springs Foundation as having no connection with the springs except that the office was set up in the town. When the "crystals" began to appear in interstate commerce, members of the company were indicted by a grand jury. It was reported that the salt was bought at 2 cents a pound and sold for \$1.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 27, 1934.

Examination of the Eyes of Air Pilots

The air ministry has issued revised regulations for medical examination of fitness for flying. Those for eye examination are of interest. The standard of visual acuity, without correcting glasses, is 6/6 distant vision in each eye. But the eye specialist may at his discretion recommend acceptance when the acuity is 6/9 (for short service commissions 6/12) provided it is correctable to 6/6 in each eye. For private flying and for navigators a certain allowance is made and correcting glasses are allowed to be worn, provided a degree of acuity can be attained, with or without glasses, equal to at least 80 per cent of the normal visual acuity for each eye taken separately, or 90 per cent for one eye and 70 per cent for the other. No candidate, generally speaking, will be passed who shows a manifest hypermetropia of 2 diopters or over. The reason for this is that the continued effort to focus on the retina is apt to induce a tonic action of the ciliary muscle and also of the internal recti. This tonic action produces errors of judgment of distance in flying. In addition, under the effects of high altitude loss of accommodation is liable to occur, so that a pilot cannot see his instruments and will be liable to make a bad landing.

Great importance is attached to muscle balance and visual judgment, as these play a greater part in accurate flying than visual acuity. It has been proved that lack of true ocular muscle balance is the most common cause of error in judgment in landing. Exophoric pilots tend to flatten out their aircraft too early, because they judge the ground to be nearer than it is, while esophoric pilots tend to fly into the ground. In addition to these there are "bad landers" from defective neuromuscular coordination. A test for muscular balance favored by the British air ministry is the Bishop-Harman adjustable diaphragm, which enables the field of vision of one eye to be separated entirely or partially from that of the other. The capacity to maintain an even ocular muscle balance (and therefore binocular vision) under increasing difficulty produced by progressively diminishing the overlap of the visual fields is thus tested. Both eyes must have good visual fields as tested by hand movements. Color vision must be normal, as in landing at night colored lights are used as signals.

Crossing Places for Pedestrians

The latest measure for the prevention of road accidents—the provision of marked crossing places for pedestrians—has been described in a previous letter. New regulations have been issued concerning them. There is no compulsion of the pedestrian to cross at the indicated places, but pedestrians who remain on a crossing longer than is necessary will be liable to a fine of \$10. The general effect of the new regulations is that at crossings where the traffic is controlled by police or automatic signals the pedestrian has the absolute right of way only when the traffic has been stopped by the policeman's hand or the signal light. At crossings not so controlled he has the right of way at all times and the traffic must give way to him. But he must go straight across and so hinder the traffic as little as possible. Vehicles must not stand on a crossing. The driver of every vehicle approaching a crossing must, unless he can see that there is no pedestrian thereon, proceed at such a speed that he can stop if necessary before reaching the crossing. Every pedestrian on the crossing shall have precedence of him. The Pedestrian's Association is not satisfied on one point. The

minister of transport has not implemented his undertaking that a driver shall be required to give way to a pedestrian who, while on the footpath, indicates his intention to cross. It is urged that as a consequence a pedestrian will not be able to exercise his right to cross where there is a continuous stream of vehicular traffic but will have to wait indefinitely. Another innovation is the indicating of the crossing places (which are already marked on the ground) by yellow globes on poles about 7 feet high. Under the light of the lamps at night these globes show up. They were introduced because of difficulty in seeing the crossing places at night. They have been erected at distances of every few hundred yards in the London streets and though they must be useful are something of a disfigurement.

The Medical Training of South African Natives

The number of European physicians in South Africa is quite insufficient for the needs of the natives and the problem of training native physicians has arisen. The Witwaterstrand University of South Africa does not provide higher education for natives, and those willing and able to pay for it have to go overseas to British schools. But the university has laid down conditions under which it would be willing to train natives. In view of the strong prejudice of the European community, non-European students cannot be admitted to the existing medical classes but must be taught in separate classes. But it is laid down that the same training should be given and the same standard demanded as for European students. As the finances of the university could not support the additional burden entailed by the establishment of classes for non-European students, provision should be made by the government for the additional cost, including buildings and equipment as well as recurrent expenses.

PARIS

(From Our Regular Correspondent)

Nov. 5, 1934.

French Urological Congress

The French Urologic Congress held its annual session in Paris in October. Dr. Chauvin of Marseilles, who had been appointed at the preceding annual meeting to read a paper on a specially chosen subject, gave an exhaustive review of inflammations of the testis and epididymis, exclusive of tuberculosis and syphilis. The first part of the paper took up the chronic forms of gonorrheal epididymitis, which are difficult to distinguish from other forms of chronic inflammatory enlargement of this structure, especially tuberculosis. The suppurating form of gonorrheal epididymitis is more frequently encountered. If the gonorrheal infection is latent, the differential diagnosis between an epididymitis due to the gonococcus from one due to tuberculosis or to the ordinary pyogenic organisms may be very difficult.

The second part of the report was devoted to the nonspecific forms of orchiepididymitis, which received little attention until toward the close of the last century. There is often a history of gonorrheal infection or of an injury. The organisms most commonly found are the colon bacillus and the various types of staphylococci, and they may be secondary to similar infections (generalized or localized) elsewhere in the body. Such localizations, however, more commonly involve the testis than the epididymis and hence the most probable mode of invasion of the latter structure is canalicular; that is, by way of the lumen of the vas deferens from infections of the prostate, seminal vesicles or a latent urethritis. The route of infection may also, but much less commonly, take place by way of the lymphatics of the vas, rarely by way of the veins. One sees clinically these nonspecific epididymitis cases in acute or nodular or suppurative or fibrous indurative form. The clinical picture resembles closely that due to the so-called specific forms. The *B. coli*

type involves the entire epididymis and hence may simulate a gonorrheal or tuberculous infection. Those due to the staphylococci occur in younger persons and are characterized by a less acute onset, less of a tendency to be bilateral but subject to frequent acute exacerbations.

The diagnosis of the various "nonspecific" forms depends on a search for other organisms than the gonococcus and tubercle bacillus. In the acute, the treatment is the same as in acute "specific" cases. In the chronic type, foci of infection must be eliminated in the urethra, prostate and seminal vesicles. Surgical intervention may be called for if fistulas persist or there are frequent acute exacerbations. Such operations as simple incision or removal of the epididymitis usually suffice. Castration is seldom indicated.

Pay Patients in Charity Hospitals

The medical profession of France has protested to the authorities regarding the large number of patients able to pay who receive free treatment in the dispensaries and wards of public hospitals. In the city of Paris alone there are about 35,000 beds available for the treatment of free patients, all under the direction of a central organization, the Assistance publique. The director of the latter has given instructions that in the future every applicant must sign a statement of his financial condition in order to exclude from free services those who are able to pay a physician in private practice. A recent writer in the *Concours médical* does not believe that such an exclusion of pay patients will ever be conscientiously carried out, because the budget of the free hospitals is in such a state that only about half of the money needed for maintenance is given by the local governments or received from legacies. Two solutions present themselves in the future. First, that only patients be received in the hospitals who cannot pay at all, and that additional structures be erected in connection with charity hospitals, where pay patients can be treated by the same medical staffs. This has been already carried out at Nancy, in eastern France. Second, that the entire medical personnel be given full time positions, with sufficiently adequate remuneration to enable them to forego the wish to treat private patients outside the hospital.

Madame Curie

In the September 22 issue of the *Presse médicale* appeared an account of the achievements of Madame Curie, by Professor Roussy, director of the Cancer Hospital of the University of Paris. Born in 1867 in Poland, Miss Sklodowska began her studies in France in 1894 and married Pierre Curie, a young physicist, the following year.

The first investigator to describe radioactivity of certain uranium salts and of the element itself was Henri Becquerel, in February 1896. Madame Curie, who was working independently in the laboratory of Professor Lippman, made her first communication in April 1898, before the Academy of Science, in which a new method, using electricity, was described, of demonstrating radioactivity in two minerals, pitchblende (uranium oxide) and chalcocite (double phosphate of copper and uranyl) as being much more marked than in uranium itself.

Pierre Curie associated himself with the work of Mme. Curie and on July 18, 1898, they announced the existence of a new radioactive substance contained in pitchblende. They suggested that the new metal be called polonium, in honor of Mme. Curie's natal country. Finally, Dec. 26, 1898, the discovery of radium was announced under the title "a new radioactive substance found in pitchblende." Three years later, Pierre Curie and Henri Becquerel read a paper on the physiologic action of radium emanations, and soon after some of the element was employed at one of the public hospitals of Paris in the treatment of cancer.

Mme. Curie and her husband received recognition in the form of the Nobel prize in physics and later in chemistry. Fellowship in the Academy of Science was bestowed on Mme. Curie after the death of her husband. Her daughter and son-in-law (Dr. Joliot) were associated with Mme. Curie in her research work and they will shortly announce the discovery of a method of preparing radium in the laboratory.

She continued her work until failing health compelled her to abandon it.

Burns of the Anterior Segment of the Eye

Prof. F. Terrien, at one of his clinics, called attention to certain features of burns by steam and by acid. To detect minute lesions of the cornea, which are invisible on examination even with the aid of a magnifying lens, Terrien employs a 1 per cent solution of fluorescein. After the instillation of one or two drops, the areas that have been denuded of their epithelial covering appear as greenish spots. In the first case this test revealed an extensive superficial burn of the cornea, which healed without loss of vision following the use of lavages, application of 1 per cent iodoform ointment and instillations of atropine. Burns due to steam can be considered as the least serious of all burns of the eye. In the second case, cement had been the cause of the burn. Although there had been corneal ulceration, treatment by hot applications and lavages had effected almost complete recovery.

In the fourth case the burn followed an explosion during the preparation of sulphuric acid and involved the eyelids, cornea and conjunctiva. In such cases the prognosis should be guarded so far as the cornea is concerned. Although apparently not involved primarily, it may become opaque as the result of secondary changes.

As an eye wash to be employed in large quantities, Terrien prefers a 1.4 per cent saline solution followed by a 1 per cent iodoform or mild silver protein salve to prevent the formation of a symblepharon. Burns due to lime are the most to be feared because here there are two factors, the heat generated by the lime and its chemical action.

BERLIN

(From Our Regular Correspondent)

Oct. 1, 1934.

Difficulties Encountered in Combating Venereal Diseases

The German Society for Combating Venereal Diseases instituted an inquiry among the physicians and hospitals concerning the management of venereal patients. The replies received indicate that in about half of the cases the treatment of persons of restricted means is inadequate. While a research is being made for the proper society to shoulder the burden of the expense, valuable days and weeks are often lost, particularly in the rural communities. In the case of persons who are insured indirectly through the head of the family, in which event the *krankenassen* bear only half of the expense for medicines, a delay often arises, if the patients are without means, before the other half of the cost of medicines can be guaranteed. In like cases an interruption of treatment may occur or the treatment may even be discontinued entirely. A similar situation arises when private insurance companies declare in their policies that no compensation will be paid for venereal diseases or when the granting of aid under such conditions is left to the discretion of the advisory board. Sometimes the public welfare department advance patients funds on condition that they shall be repaid within a certain time, and if the patient has any mortgageable property they may demand a mortgage to insure prompt repayment of such obligations. In some cases, parents are asked to guarantee the repayment of funds advanced for medical care of their children. As the examples just mentioned

show, hospitals and departments of public welfare do not preserve as they should the rights of privileged communication. It thus happens that nearly all women patients of a physician who records the actual diagnosis on the sickness certificate lose their positions. Many patients are deterred from applying for treatment, as they often must sit for hours in crowded policlinics beside morally depraved persons of both sexes. Another subject of frequent complaint is the unsatisfactory low fee allowed for treatments. A specialist often receives only from 12 to 20 cents for a treatment. A physician is held accountable if he demands higher fees than those established. In the replies to the questionnaire many physicians emphasized that the medicines needed for thorough treatment cost from two to four times the amount of the fees allowed. Many consultation centers state that practicing physicians refuse to cooperate with them. The reporting of negligent patients and the detection of sources of infection are carried out in a lax manner. Hence, Professor Spiethoff, of the University of Jena and the head of the German Society for the Combating of Venereal Diseases, has made a special appeal to the German physicians in which he emphasizes their duties in the matter of ferreting out sources of infection. The hospitals report that the number of hospital patients declines from year to year, not as a result of the decrease in gonorrhea but because of the difficulty encountered in being registered in the hospital under the auspices of the sick insurance institutions and public welfare offices. Hospital treatment may in various cases be prematurely canceled at the request of just such expense bearers. Many sick insurance companies grant, on principle, a period of hospitalization of only fourteen days. Patients with gonorrhea are sent to the hospital only in the event of serious complications. If the organizations defraying such expenses grant a period of hospitalization to a patient, they generally favor those hospitals with the lowest standards of treatment, where no special departments are to be found. Admittance was frequently refused to especially dangerous patients, such as prostitutes and concubines, on grounds of false economy. According to reports, it is believed that the hospital treatment of prostitutes may be done away with by enforcing sexual restraint on them. In the light of all this, it is of prime necessity that extensive treatment of venereal diseases be guaranteed by legal and organized measures. The state must find ways and means of forcing unapprehensive persons to fulfil their duties. Larger and broader demands must be made of the physicians' organizations.

It may be said with respect to prostitution that an artificially increased supply results in an artificially increased demand. In many large cities, attempts have been made again to confine prostitutes to designated houses and streets (which for years has been legally contested). The disadvantages of such confinement are not questioned. Only one tenth of the prostitutes are known to the authorities, and only a small number of these women can be provided for in brothels. Consequently this confinement has no influence on the disadvantages and dangers attendant on the widely scattered separate domicile of prostitutes. On the other hand, the streets frequented by the girls become centers of attraction for corruption, vice and perversion. Even the most conscientious medical examination is of no avail, because of frequent and promiscuous intercourse. Finally, such confinement is conducive to organized vice and prostitution. If prostitutes are segregated in secluded houses, if they choose their own dwelling or seek night quarters which to all appearances are inconspicuous, it may be regarded as a lesser evil. Despite quiet tolerance of such quarters in the streets frequented by prostitutes, the police are liable to interfere at any time.

Members of Krankenkassen and Number of Patients Treated

Recently a report was made on sickness insurance for the year 1933. Now the reports for the first six months of 1934 have been given out. The number of krankenkassen, as a result of merger, has notably diminished and the number of krankenkassen members has risen so that the tendencies displayed by the 1933 report have been continued. The membership increase in the federal insurance companies as in the

TABLE 1.—Increase in Membership of Federal Insurance Companies

End of Month	Number of Members (Thousands)		Increase per Thousand in 1934 - Corresponding Month of Preceding Year
	1933	1934	
January.	17,539	18,907	314
February	17,671	19,171	264
March.	17,040	19,444	273
April.	18,170	19,948	503
May.	18,516	20,158	210
June	18,616	20,163	5

auxiliary insurance organization, comprising both obligatorily insured and voluntarily insured persons, may be observed in table 1.

The slight increase in June is based on certain mathematical facts. The increase in insured from the beginning of 1934 to the end of June 1934 amounted to 1,570,000, and from the latter date to the beginning of 1933 amounted to 2,624,000. This increase is closely connected with the decrease in unemployment; here it must be kept in mind that not all the newly employed have also been obligatorily insured (e. g., because

TABLE 2.—Distribution of Members

Type of Organization	Number of Kassen in Each Organization	Approximate Number of Members (Thousands)	Number of Compulsory Insured, June 30, 1934 (Thousands)
Municipal krankenkassen	1,592	12,345	10,100
Rural krankenkassen	423	1,570	1,668
Factory krankenkassen.	3,354	3,044	2,697
Guild krankenkassen	726	545	476
Milner's krankenkassen	17	564	553
Total number of krankenkassen recognized by federal law.	6,412	18,374	15,496
Auxiliary (private) krankenkassen.	47	1,790	1,426
Total	6,459	20,164	16,922

TABLE 3.—Treatment During 1934

Month	Sick	Total	Percentage	
			Men	Women
January.	562,947	3	2.7	3.6
February	540,384	2.8	2.4	3.5
March.	488,656	2.5	2.2	3.2
April.	471,475	2.4	2	3
May.	465,553	2.3	2	2.9
June	480,828	2.4	2.1	3
Average	502,640	2.36	2.23	3.2

the salaries are too large to require this). Others have been able to evade compulsory insurance on similar grounds.

The distribution of members among the various krankenkassen and the distribution of compulsorily insured and voluntarily insured by June 30, 1934, is given in table 2.

Of 18,373,980 members of kassen recognized by federal law, June 30, 1934, 11,930,996 were men and 6,442,984 were women. The number of patients treated ("unemployable ill and puerperal women"), as measured by the sum total of insured for the year 1933, shows an average of 2.7; this means that 2.7 out of every 100 insured receive treatment. In table 3 is given the development in 1934

The already considerable decline of the number of sick demonstrated even further improvement in the year 1934. The numbers are generally higher for women than for men. The average for cases of absolute illness for the first six months of 1934 is likewise lower than the 1933 average. The municipal *krankenkassen* have the highest incidence of cases, in accordance with the size of their membership. The danger of illness is, as can be seen from the numbers, greatest in mining.

BUCHAREST

(From Our Regular Correspondent)

Oct. 1, 1934.

History of the Rumanian Faculty of Medicine

The Rumanian Medical Academy offered prizes for the best treatises on the history of the faculty of medicine in Rumania. Two were awarded prizes. It appears that the first medical school in Valachia, a province of Rumania, was founded ninety-three years ago. There were physicians practicing in Rumania prior to 1840, but they were foreigners: Italians, Germans and Greeks. There was among them also a Rumanian, Cretulescu, who felt the necessity of trained assistants who could help physicians in hygienic work, so he planned for a small surgical school at the Coltea Hospital. The hospital accepted his proposal and the surgical school was opened Sept. 21, 1841. There being no books, Cretulescu edited a book from which the apprentices could learn anatomy and physiology. Three hundred copies were distributed free among the students. March 3, 1843, Dr. Cretulescu appealed to the hospital board to place the whole Coltea Hospital at his disposal in order to establish a clinic for students. The board rejected this proposal, whereupon Cretulescu resigned and the school was taken over by Drs. Vartiade and Risdofer. The first graduates with diplomas left the school by the end of 1843. Then the school was closed, to be reopened May 2, 1852. The school was reopened in a much better condition as regards teachers and equipment, but it did not last longer than two months, for another school was established in the Mihai Voda palace, where the state archives were displaced.

About this time there came to Rumania a man of Italian descent, Carol Davila, but brought up and educated in France. He founded in the Mihai Voda palace the "small surgical school," and appealed to Prince Stirbey for permission to annex this school to the military hospital, which at this time was located in the building. The first professors in the school year of 1855-1856 were Davila, Poliuza, Barasch and Suhamel. In 1857, Davila had his pupils do anatomic dissections, of course secretly, in a barn, for such work was not compatible with the morals of the times. Dobrescu, a surgeon of Targoviste, narrated to many people, the following story, stating that he heard it from his father: A Gipsy woman came to the military hospital of Mihai Voda requesting the corpse of her son in order to bury him. By accident she stepped into the dissecting room, where Professor Davila was giving demonstrations on the cadaver of her son. She recognized the corpse and started such a shouting that the whole community became alarmed and Professor Davila and his pupils had to leave town to escape lynching. When the minister of war, Colonel Odobescu heard of this he immediately closed the medical school. Davila hastened to the French consul general, Beclard, and made a detailed report. The consul commanded Davila to reopen his school at once but henceforth to conduct it under the auspices of France. The patriotic Davila went to the prince and informed him what had happened. The prince considered the decree of the consul an offense and ordered Davila to open his medical school under the auspices of Rumania.

In 1858 the French ministry of public instruction issued a decree, which declared the Bucharest medical school to be equivalent to the French medical and pharmaceutical school and

at the same time the ministry permitted Bucharest senior students to complete their studies in France. The modest medical school became in 1869 a faculty of medicine. In 1860 the Mihai Voda palace proved inadequate and the faculty was moved to the military hospital in Stirbey Voda Street. In 1869 a building for the faculty was constructed in the boulevard, where it remained until 1901, when it was replaced by the modern well equipped Cotroceni building.

The Bucharest pathologic and bacteriologic institutes were opened, Aug. 12, 1887, the first under the management of Dr. Victor Babes, late lecturer to the Budapest University, for many years assistant to Professor Högyes. The object in establishing this institute was to conduct a campaign against epidemic diseases and rabies.

Another university with a medical faculty was established in 1890 in Jassy, the capital of Moldova, and with the annexation of Transylvania the country gained a third faculty of medicine, that of the University of Cluj, the capital of Transylvania. There is a fourth university in the country in Czernowitz, capital of Bucovina, without a faculty of medicine. It is the intention of the government shortly to erect here buildings for a faculty of medicine.

Pharmaceutic Firm Peddles Advertising Leaflets

One effect of the boycott of German goods has been that a large pharmaceutic firm descended from the pedestal of good taste and commenced house to house peddling with leaflets strongly recommending the use of a diuretic, one of its products. The firm is the Bayer firm, known as "Bayer-Meister-Lucius," I. G. Farbenfabrikenindustrie Aktiengesellschaft, Leverkusen a/Rh., Germany. The representative of the firm distributed leaflets (printed in German) to every house.

The Campaign in Bessarabia Against Typhus Exanthematicus

In Bessarabia, a province of Rumania, numerous cases of typhus exanthematicus have occurred in recent years, fortunately with but slight mortality. The government sent a special commission to Bessarabia to fight the scourge. Since March of this year, 245,000 persons have been deloused and individually disinfected, and 240 villages have been subjected to house to house disinfection. The special commission in one county (Lapusna) opened ten public baths. Formally, 90 per cent of the Bessarabian villages were infested with lice. The campaign has been so efficacious that last week only two cases of typhus exanthematicus occurred in the region of Chisenew.

MEXICO

(From Our Regular Correspondent)

Oct. 29, 1934.

Reorganization of Public Health Service

The members of the federal department of public health in Mexico have recently organized the so-called *unidad médico-sanitaria cooperativa*. The departments of inspection of immigrants, the campaign against prostitution, prevention of epidemics, the control and supervision of food, the water supply and the sewage services, which heretofore have been independent departments, now will cooperate as a unit under direct control of the department of public health of the capital of the state. The central department at the capital of the state has branches and connections with each given field in the state, so as to cover all cities, towns, villages, ports and ranches, and direct contact and advice from the central federal department of public health. The units are already functioning in Veracruz and Cuernavaca, are being organized in Nuevo León, Puebla, Guanajuato, Jalisco and Querétaro, and are being planned in Sonora, Sinaloa, Hidalgo and Morelos. A health unit in the department of irrigation, has been established in Anáhuac, an

important agricultural city in Nuevo León. Attention has also been given to the sanitary condition of places frequented by tourists, with an aim to prevent disease, especially various important places on the international highway that will connect Mexico City with the United States and which is now under construction. A sanitary brigade was recently sent to Tamazunchale to give smallpox and typhoid vaccination to the inhabitants and also to ascertain whether or not the conditions of the city meet the requirements for the establishment of a health unit in it. Tamazunchale is a city of importance on the international highway, in its passage through San Luis Potosí. The coordination of the health services represent preliminary steps for the establishment of the Mexican Plan Sexenal, according to which public health will greatly improve during the six year period of President Cardenas's administration, which will start December 1.

Modernization of Mexican Hospitals

The public, private, municipal and governmental hospitals in Mexico City have recently improved. The hospital Casa de la Beneficencia Española, a property of the Sociedad Española de Beneficencia, which was located on San Juan de Letrán Street, recently moved to a new location in the modern suburban town Chapultepec Heights. It now meets all the requirements that science demands of modern hospitals. The old site was donated to the city for the extension of a boulevard, now in construction, from the city to Los Alamos, a suburb.

The Hospital Francés, a hospital for private patients, has doubled its number of beds and has a new chapel for religious services for patients and their relatives. The new furniture and equipment are of the best type.

The Mexican Red Cross Emergency Hospital, for the care of persons injured in accidents, has moved to its own new building at the corner of Monterrey and Durango streets. The new building, the furniture and equipment are modern.

The government of the city supports also a department with services for the immediate treatment of persons injured in accidents and other emergencies. This department is known as the Hospital of Emergencies of the Green Cross. Up to recently its functions were limited to the performance of emergency operations and the administration of first aid. The Hospital of Emergencies of the Green Cross recently was radically renovated by the establishment of a new central station and of small outlying stations covering all parts of the city. Each station has a suitable building with waiting and resting rooms and medical and surgical wards, also an ambulance service, and physicians and nurses who work in turns so as to provide twenty-four hour service. These improvements have resulted in saving the lives of many of the injured.

Reunion of Texas Internists in Mexico City

The members of the Texas Club of Internal Medicine, under the chairmanship of Dr. Kopescki, held their annual reunion in Mexico City, September 17-21. The program was organized by the members of the Sociedad Mexicana de Medicina Interna, who received their Texas colleagues as their hosts. The papers presented by members of the Sociedad Mexicana de Medicina Interna were written in English and discussed by the members of both societies. Some of the topics discussed were cancer of the esophagus, the clinical and roentgen picture of silicosis in Mexico, the treatment of tuberculosis in Mexico, pseudocancer of amebic origin, the first book on physiology published in America, biliary lithiasis, a comparative study of cardiac telerradiography and orthodiagraphy, lymphoid leukemia, immune serum in exanthematous typhus, a new method of pyretotherapy, schizophrenia and physical therapy. The program included visits to the Hospital General, Hospital Juárez, Manicomio General of Mixcoac, the Instituto de Higiene of Popotla, the

School of Medicine, the public health department and some other places of medical interest. Scientific meetings were held at the Hospital General, various well equipped departments of which, especially those devoted to medical education, were shown to the visitors. The equipment of this hospital for the teaching of cardiology, with apparatus for collective auscultation, and that for the teaching of urology, deserve especial mention. The Texas physicians were invited to a special meeting of the Sociedad Mexicana de Medicina Interna and to a meeting of the Academia Nacional de Medicina of Mexico, held in their respective headquarters, in honor of the visitors. A banquet presented by the Mexican physicians to the Americans, which was characterized by great cordiality, ended the reunion, during which the fraternal relations and better understanding of the American and Mexican physicians were emphasized. English was spoken in all receptions given to the visitors.

Meeting of Surgeons

Mexican surgeons will meet in a general reunion, November 18-24, at the Hospital Juárez, a surgical center of renown. The reunion was organized by the members of the Sociedad de Cirugía del Hospital Juárez, under the auspices of the members of the Office of Public Welfare of the Federal District. Some departments of the hospital, which have been recently improved or remodeled with the resources of the public welfare department, will open with inaugural ceremonies during the days of the reunion. The scientific program will be of interest. There will be an exposition of surgical instruments and apparatus made by Mexican physicians and surgeons.

Marriages

SYLVESTER W. RENNIE, Wilmington, Del., to Miss Margaret Carolyn Valentine of St. Louis in New York, September 29.

BERKELEY HANCOCK MARTIN to Miss Elizabeth Sydnor McCraw, both of Richmond, Va., September 29.

EUGENE BYRON GLENN, Asheville, N. C., to Miss Virginia Grace Mason of Birmingham, Ala., November 3.

THOMAS EDGAR PAINTER, Williamsburg, Va., to Miss Frances Angelina Curtis of Liberty, N. C., October 15.

DUNCAN SHAW OWEN, Fayetteville, N. C., to Miss Mary Gwyn Hickerson of Lenoir, in October.

JOSEPH LINN HETZEL to Miss Margaret Spencer de Lancey, both of Waterbury, Conn., October 12.

CHARLES DEXTER LUFKIN, Northfield, Minn., to Miss Ann E. Gwynne of Windber, Pa., recently.

CHARLES LORRAINE CABELL to Miss Elizabeth DeVega Danford, both of Richmond, Va., July 28.

JOSEPH STANLEY FAULKNER, Hazard, Ky., to Miss May Drew Hendren of Danville, recently.

WILLIAM LOUIS WOOLFOLK, Owensboro, Ky., to Miss Julia Porter of Paris, Tenn., October 20.

CLARENCE S. THOMAS to Miss Mary Elizabeth Keller, both of Nashville, Tenn., November 3.

ARTHUR E. MORGAN to Miss Frances Mauney, both of Lincolnton, N. C., October 25.

DAVID HENRY POER to Miss Margaret Underwood, both of Atlanta, Ga., October 30.

JOHN EDWARD SHORT to Miss Catherine Julie Connelly, both of Los Angeles, October 9.

ALONZO NEWTON BAKER to Miss Esther McLaren, both of Marion, Ill., October 25.

GEORGE HAMMOND to Miss Marian Davis, both of Ann Arbor, Mich., October 1.

EMANUEL J. RICHTER to Miss Amy Maret, both of New York, in August.

JAMES LEE PITTMAN to Miss Clare Jones, both of Atlanta, Ga., October 16.

BOOKER LEE to Miss Nellie Estelle Lindsay, both of Pulaski, Va., in June.

Deaths

Wendell Christopher Phillips * President of the American Medical Association in 1926-1927, died at his home in New York, November 16, aged 77. Dr. Phillips was born in Hammond, N. Y., June 9, 1857. After attendance at Potsdam (N. Y.) Normal School, 1876-1879, he entered the University of the City of New York Medical Department, receiving his degree in 1882. Specializing in diseases of the ear, nose and throat, he became consulting aural surgeon to the New York Post-Graduate and Flushing hospitals and aural surgeon to the Manhattan Eye and Ear Hospital. He served as a member of the House of Delegates of the American Medical Association for six years, 1912-1917, and as chairman of the Section on Laryngology, Otology and Rhinology, 1923-1924. He was a member of the Board of Trustees from 1917 to 1924 and was for several years a member of the Executive Committee and also chairman of the board. Dr. Phillips became president-elect of the Association in 1925. He was a member of the American and of the New York otolaryngologic societies, and was president of the American Laryngological, Rhinological and Otological Society in 1907; he was also a member of the New York Academy of Medicine and in 1912 was president of the Medical Society of the State of New York. In 1919 Dr. Phillips helped organize the American Federation of Organizations for the Hard of Hearing and in 1920 became its first president. He was a fellow of the American College of Surgeons and in 1904 president of the New York County Medical Society. Dr. Phillips contributed much to the subject of otology in medical literature, including a textbook on "Diseases of the Ear, Nose and Throat, Medical and Surgical," which is used in many medical colleges. He was widely known in the medical profession for his high ideals, his enthusiastic leadership, his warm congeniality and his unwavering support of organized medicine.

William Chittenden Lusk, New York; Bellevue Hospital Medical College, New York, 1893; member of the Medical Society of the State of New York; emeritus professor of clinical surgery, New York University, University and Bellevue Hospital Medical College; fellow of the American College of Surgeons; consulting surgeon to the Bellevue, St. Vincent's and Manhattan State hospitals; aged 66; died, October 24, of Parkinson's disease.

Mathew Nelson Voldeng * Woodward, Iowa; College of Physicians and Surgeons of Chicago, 1887; member of the House of Delegates of the American Medical Association, 1912-1920 and in 1924; member and past president of the Iowa State Medical Society; member of the American Psychiatric Association; professor of pathology, 1897-1898, and of neurology and psychiatry, 1899-1902, Drake University Medical Department, Des Moines; superintendent of the Cherokee (Iowa) State Hospital, 1902-1915; medical superintendent of the Hospital for Epileptics and School for Feeble-minded; aged 71; died, October 21.

Henry John Wynkoop * Bath, N. Y.; New York University Medical College, 1898; Cornell University Medical College, New York, 1899; fellow of the American College of Surgeons; on the staffs of the Bath Hospital, Pleasant Valley

Sanatorium and the Veterans' Administration Facility; aged 58; died, October 16, of coronary thrombosis.

John Alexander Cochran * Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881; veteran of the Spanish-American and World wars; for many years medical inspector in the health department; aged 74; died, November 1, in the Brooklyn Hospital, of heart disease.

William Jones Wallace * Oklahoma City; University of the South Medical Department, Sewanee, Tenn., 1901; professor of genito-urinary diseases and syphilology, University of Oklahoma School of Medicine; member of the American Urological Association and fellow of the American College of Surgeons; on the staff of the State University Hospital; aged 61; died, September 19, of multiple myeloma.

Walter Booth Hotchkiss, Fort Steilacoom, Wash.; Chicago Homeopathic Medical College, 1904; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; on the staff of the Western State Hospital; aged 64; died, October 13, of lobar pneumonia and cerebral embolism.

Newton Harvey Lindsey * Pauls Valley, Okla.; Memphis (Tenn.) Hospital Medical College, 1898; past president and secretary of the Garvin County Medical Society; fellow of the American College of Surgeons; part owner of the Lindsey-Johnson Hospital; aged 64; died, October 25, of coronary occlusion.

Charles James Howard * Rutland Heights, Mass.; Columbia University College of Physicians and Surgeons, New York, 1897; member of the Colorado State Medical Society; for many years on the staff of the Veterans' Administration facility; aged 61; died, October 25, of heart disease and bronchial asthma.

George Rufus Drake * Plymouth, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1906; past president of the Luzerne County Medical Society; aged 55; on the staff of the Wilkes-Barre (Pa.) General Hospital, where he died, October 15, following an operation for appendicitis.

Nelson Henry Beemer, Toronto, Ont., Canada; University of Toronto Faculty of

Medicine, 1874; formerly professor of mental diseases at his alma mater; member of the American Psychiatric Association; for many years superintendent of the Ontario Hospital, Mimico; aged 81; died, September 23.

Archie W. Herrick * Bay City, Mich.; Saginaw (Mich.) Valley Medical College, 1901; past president of the Bay County Medical Society; at one time health officer of Bay City; on the staff of the Mercy Hospital; aged 66; died, October 22, of gallbladder disease and angina pectoris.

James David Hobson * Missoula, Mont.; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1910; served during the World War; secretary of the Western Montana Medical Society; aged 50; died, October 13, of pneumonia.

Theodore Hamilton Weagley * Marion, Pa.; College of Physicians and Surgeons, Baltimore, 1882; past president of the Franklin County Medical Society; on the staff of the Chambersburg (Pa.) Hospital; aged 72; died suddenly, September 24, of angina pectoris.



WENDELL CHRISTOPHER PHILLIPS, M.D.
1857-1934

Sophie Bade Scheel, Passaic, N. J.; New York Medical College and Hospital for Women, New York, 1901; formerly professor of the practice of medicine at her alma mater; aged 75; died, October 10, at her home in Rosemawr, of cerebral embolism and arteriosclerosis.

Benjamin George Moran @ Nashua, N. H.; University of the City of New York Medical Department, 1891; fellow of the American College of Surgeons; aged 64; on the staffs of the Nashua Memorial Hospital and St. Joseph's Hospital, where he died, September 26.

James Wesley McClendon, Supply, Okla.; Kentucky School of Medicine, Louisville, 1894; member of the Oklahoma State Medical Association; medical superintendent of the Western Oklahoma Hospital; aged 66; died, October 2, at his home in McAlester.

George Wells Fitz, Peconic, N. Y.; Harvard University Medical School, Boston, 1891; aged 74; died, October 28, in the Eastern Long Island Hospital, Greenport, of injuries received when the automobile in which he was driving was struck by a train.

Frank Leavens Walton, Muskogee, Okla.; Louisville (Ky.) Medical College, 1890; member of the Oklahoma State Medical Association; formerly member of the state legislature; at one time county health officer; aged 66; died, October 6, of pernicious anemia.

William Patrick O'Ready @ Claymont, Del.; Georgetown University School of Medicine, Washington, D. C., 1927; on the staffs of the Wilmington General, Delaware and St. Francis hospitals, Wilmington; aged 38; died suddenly, October 9, of heart disease.

James Barbee O'Bannon @ Mount Carmel, Ky.; University of Louisville School of Medicine, 1892; secretary of the Fleming County Medical Society; for many years county health officer; aged 70; died, October 23, of sarcoma of the hip and sigmoid.

William Constantine Abaly, Madison, Wis.; College of Physicians and Surgeons of Chicago, 1886; aged 71; died, October 12, in the Wisconsin State Hospital, Mendota, of cerebral hemorrhage, bronchopneumonia and arteriosclerosis.

Henry J. Harnisch @ Flagstaff, Ariz.; St. Louis Medical College, 1881; member of the Missouri State Medical Association; for many years on the staff of the Lutheran Hospital, St. Louis; aged 76; died, October 23, of heart disease.

Herbert Rogers Wardlaw @ San Angelo, Texas; University of Texas School of Medicine, Galveston, 1907; aged 52; on the staff of the Shannon West Texas Memorial Hospital, where he died suddenly, October 11, of heart disease.

Joseph Isaac Bluestone, Brooklyn; University of the City of New York Medical Department, 1890; for many years on the staff of the Beth Israel Hospital; aged 74; died, November 2, of cerebral thrombosis and bronchopneumonia.

Homer Elbert McGhee, Kansas City, Mo.; University Medical College of Kansas City, 1912; member of the Missouri State Medical Association; served during the World War; aged 49; died, October 14, of pneumonia.

Thomas Hayden Ensor, Omaha; St. Louis Medical College, 1880; formerly mayor of South Omaha; aged 76; died, October 13, in the Providence Hospital, Detroit, of chronic cholecystitis and coronary thrombosis.

Leonard Daniel McCarthy, Perry Point, Md.; George Washington University School of Medicine, Washington, D. C., 1929; aged 35; on the staff of the Veterans' Administration Facility, where he died, October 11.

Philip H. Comas, Baxley, Ga.; University of Maryland School of Medicine, Baltimore, 1882; member of the state legislature and formerly state senator; aged 73; was found dead, October 19, of heart disease.

J. W. Crewdson, Louisiana, Mo.; University of Louisville (Ky.) School of Medicine, 1880; member of the Missouri State Medical Association; mayor of Louisiana; aged 75; died, September 29, of chronic nephritis.

John Walter Crews, Atwood, Okla. (registered in Oklahoma by the state board of health, under the Act of 1908); member of the Oklahoma State Medical Association; aged 69; died, in October, of pneumonia.

Wilbur Ervin Wendt, Beaver Dam, Wis.; University of Wisconsin Medical School, Madison, 1934; aged 23; died, October 2, in the Wisconsin General Hospital, Madison, of chronic nephritis and uremia.

John Aloysius Hickey, Winthrop, Mass.; Harvard University Medical School, Boston, 1896; aged 68; died, October 26, of arteriosclerosis, chronic endocarditis, acute nephritis and bronchopneumonia.

Margaretta Rulison Riegel Valentine, New York; Syracuse University College of Medicine, 1912; aged 50; died, October 9, in the Holy Name Hospital, Teaneck, N. J., of intestinal obstruction.

Louis Frederick Arensberg, Arensberg, Pa.; University of Michigan Medical School, Ann Arbor, 1867; Civil War veteran; formerly member of the state legislature; aged 91; died, September 21.

Margaret Billingsley Mills, Ottumwa, Iowa; Northwestern University Woman's Medical School, Chicago, 1893; formerly city health officer; aged 72; died, September 30, in the Ottumwa Hospital.

Otis Wood Allison @ Danville, Ill.; Rush Medical College, Chicago, 1905; aged 57; on the staff of the Lake View Hospital, where he died, October 28, of aplastic anemia and acute myeloid leukemia.

William Stephen Lynch, Buffalo; University of Buffalo School of Medicine, 1904; served during the World War; aged 54; died, November 1, in the Sisters Hospital, of cardiovascular disease.

William T. Hamilton, Athens, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; aged 67; died, October 20, in the General Hospital, of nephritis, arteriosclerosis and uremia.

Herbert Clift Brown @ Brookfield, N. Y.; Syracuse University College of Medicine, 1881; for many years health officer of Brookfield; aged 77; died, November 1, of cerebral hemorrhage.

Jackson M. Nunez, Swainsboro, Ga.; University of Georgia Medical Department, Augusta, 1886; member of the Medical Association of Georgia; aged 75; died, in October, of cerebral hemorrhage.

Rossie R. Walker, Laurens, S. C.; University of Louisville (Ky.) School of Medicine, 1908; member of the South Carolina Medical Association; aged 51; died, October 16, of coronary thrombosis.

John Felton Taylor, San Francisco; College of Physicians and Surgeons of San Francisco, 1918; aged 42; died, September 19, in St. Joseph's Hospital, of carcinoma of the urethra.

Leo Charles Kinsella, Chicago; Chicago Medical School, 1923; member of the Illinois State Medical Society; aged 52; was found dead, October 24, of carbon monoxide poisoning.

Albert Brandon Davenport, Columbus, Ohio; Columbus Medical College, 1890; aged 72; died, October 18, in St. Anthony's Hospital, of arteriosclerosis and bronchopneumonia.

Edward Orton Willoughby, Dayton, Ohio; Cleveland Homeopathic Medical College, 1901; formerly county coroner; aged 60; died suddenly, October 15, of coronary thrombosis.

Robert William Oakley, Moline, Ill.; Northwestern University Medical School, Chicago, 1902; served during the World War; aged 59; died, October 18, in the Moline City Hospital.

William Edgar Vaden, Chattanooga, Tenn.; Vanderbilt University School of Medicine, Nashville, 1899; member of the Tennessee State Medical Association; aged 62; died, October 22.

James Martin Joshua Luke @ Miami, Fla.; University of Louisville (Ky.) School of Medicine, 1913; served during the World War; aged 45; died, October 9, of angina pectoris.

Caleb Huntington Atwater, Wallingford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1871; aged 91; died, October 28.

Clarence Burdette Wean, Andover, Ohio; Western Reserve University Medical Department, Cleveland, 1901; aged 57; died suddenly, October 14, of angina pectoris.

Edwin Barney Herring, Dundee, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; aged 70; died, October 20, of a self inflicted bullet wound.

William Thomas Greene, Bumpus Mills, Tenn.; University of Tennessee Medical Department, Nashville, 1894; aged 75; died, October 9, of carcinoma of the prostate.

Edward Everett Kenyon, South Kingstown, R. I.; University of Vermont College of Medicine, Burlington, 1880; aged 74; died, September 22, of angina pectoris.

Joseph Albert Lowe, Pleasant Prairie, Wis.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1902; aged 64; died suddenly, October 16, of angina pectoris.

William Rupert Esdale, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1926; aged 33; died, October 17, of meningitis.

John Brodie Head, Gallatin, Tenn.; University of Nashville Medical Department, 1869; aged 85; died, September 29.

Bureau of Investigation

KELPE'KOE

The Commercial Possibilities of Crude Ore as a "Patent Medicine"

"Kelpe'koe" is a later name given to a product known earlier as "Pacific Health Ore." In the latter part of 1931 it was reported that a Mr. Ben Sweetland, president of the Sweetland Advertising, Inc., of New York City, had become interested in the financial possibilities of selling this brand of crushed rock as a "patent medicine." As a result of this interest, Kelpe'koe, Inc., was brought into existence.

The company was incorporated Dec. 15, 1931, under the state laws of Arizona, with 5,000,000 shares of common stock at a par value of 10 cents a share to be sold to the public at 20 cents a share. Of these 5,000,000 shares, 1,103,429 shares were issued to the Pacific Health Ore Company for all the assets of that company, including perpetual lease on the deposit of shale and a contract to purchase the property outright and the exclusive distribution of the ore. One half of the 5,000,000 shares, or 2,500,000 shares, were "issued or to be issued for bonuses, services, etc." On Oct. 30, 1934, the Corporation Commission of the State of Arizona reported that since 1932 Kelpe'koe, Inc., had failed to file reports or pay its annual registration fee as required by law. It appears, therefore, that the company is "legally dead" under the laws of Arizona.

THE STOCK-SELLING SCHEMES

In January 1932, promotional letters were sent out by W. L. Coe & Company of Seattle, setting forth the alleged commercial possibilities in the sale of the product Kelpe'koe. W. L. Coe & Company have been described as "a small concern doing a mail-order and telephone business in mining stocks." It is of incidental interest to learn that the broker's license of W. L. Coe & Company is said to have been canceled in June 1932. The promotional literature sent out by the Coe concern enlarged on the marvelous financial possibilities in the sale of blue shale at \$4.85 a pound or \$9,700 a ton!

In the stock prospectus sent out at this time, it was stated that Kelpe'koe, Inc., was located at Salem, Ore., and had a capitalization of \$500,000, "all common and non-assessable." The following were given as the officers and directors of the company: Ben Sweetland, D. R. Riegel, P. D. Ott, R. H. Pfeffer, Bailie N. Savage.

Further, according to the prospectus, the company was sending out daily 10,000 letters advertising Kelpe'koe, from which it was claimed they received 600 to 800 orders a day. From this the promoters estimated that this should net the company a profit of from \$50,000 to \$100,000 a month. At that time, according to the prospectus, shares in Kelpe'koe, Inc., were being offered, not at twenty cents, but at thirty cents each.

As already stated, the first prospectus was sent out in January 1932 by W. L. Coe & Company. In the same month another series of Kelpe'koe stock-selling letters was sent out by the American Exploration Company of Spokane, Wash. These letters were signed B. Saunders, secretary-treasurer of the American Exploration Company. A follow-up on this promotional letter came on the stationery of R. H. Pfeffer, whose letterhead described him as president of the American Exploration Company. Mr. Pfeffer, it will be noted, was one of the men listed as an officer and director of Kelpe'koe.

The letters from the American Exploration Company were typical of dubious promotional schemes. They stressed the instances of other companies that had started as midgets and had become financial giants; they reminded the prospective purchaser "of the millions of dollars that are made annually in 'patent medicines'"; they estimated that Kelpe'koe stock would have "an earning power of from 12 cents to 24 cents per share and a potential market value of at least \$1 to \$2 a share the first year."

The letters further impressed the prospective buyer with "the fact that there are only a very few shares of Kelpe'koe stock available for distribution." There was enclosed with the letter a "\$10 option on 250 shares of stock in Kelpe'koe, Inc." and the recipient was urged to send \$10 for this option cer-

tificate. He was told that if he sent in the \$10 he would be under no obligation to purchase the additional 200 shares, but would receive 50 shares for the \$10. Those who were thus approached but failed to send in the \$10 received some days later a letter from Mr. R. H. Pfeffer. This letter was even more appealing than the earlier one, and the recipient was urged to send in \$10 in full payment for the option certificate already referred to and any time within thirty days from the date of Mr. Pfeffer's letter the \$10 would be returned if the purchaser was not satisfied.

A later letter from Mr. Pfeffer in February 1932 enclosed three certificates of stock (one for 100 shares and two for 200 shares each) in Kelpe'koe, Inc., issued in the name of the person to whom the letter was written and to whom was given the "privilege of purchasing from 100 to 500 shares at 20 cents a share"—provided the remittance was mailed not later than twelve days following the receipt of the letter. The stock certificates were very imposing, printed in green and black, and bore what purported to be serial numbers imprinted in red.

Range No.

Bowser-Morner Testing Laboratories
BOWSER-MORNER TESTING LABORATORIES
Established 1911

Chemists Metallurgists Testing Engineers

OFFICE, 210 CLEVELAND BLVD.
JUL. 10, 1934

Dayton, Ohio,
Oct. 2, 1930

Certificate of Tests

Report to _____

Report on **Health Ore.**

Laboratory No. **65241** Your Mark **Pacific Health-Ore.**

Analysis of water-soluble material expressed as percentage by weight of original ore

Silica	SiO ₂	.....	.040
Iron Oxide	Fe ₂ O ₃	.....	1.670
Aluminum Oxide	Al ₂ O ₃	.....	1.480
Calcium Oxide	CaO	.....	.270
Magnesium Oxide	MgO	.....	.200
Nickel Oxide	NiO	.....	.020
Sodium Oxide	Na ₂ O	.....	.200
Potassium Oxide	K ₂ O	.....	.100
Sulfuric Trioxide	SO ₃	.....	5.930
Phosphoric Anhydride	P ₂ O ₅	.....	.007
Chlorine	Cl	.....	.015
Manganese Oxide	MnO	.....	.940
Ferrous Iron		.....	.230
Ferric Iron		.....	Trace
Iodine		.....
Total			12.883%

Probably combined as:

Silica	SiO ₂	.....	.040
Aluminum Sulfate	Al ₂ (SO ₄) ₃	.....	4.967
Calcium Sulfate	CaSO ₄	.....	.656
Magnesium Sulfate	MgSO ₄	.....	.597
Manganese	MnSO ₄	.....	.053
Nickel Sulfate	NiSO ₄	.....	.041
Sodium Chloride	NaCl	.....	.025
Phosphate	Na ₂ P ₂ O ₇	.....	.008
Sulfate	Na ₂ SO ₄	.....	.417
Potassium Sulfate	K ₂ SO ₄	.....	.165
Petrous	FeSO ₄	.....	2.556
Ferric	Fe ₂ (SO ₄) ₃	.....	.828
Organic Matter		.....	2.500

Respectfully submitted,
MEMBERS OF AMERICAN SOCIETY FOR TESTING MATERIALS
BOWSER-MORNER TESTING LABORATORY

Photographic facsimile of an analysis sent out when Kelpe'koe was being promoted as a stock selling proposition. The earlier name for Kelpe'koe was Pacific Health Ore. Note that the ingredients are shown to be combined in inorganic and not organic form, as claimed by this concern. Note, too, that the only ingredients present in substantial amounts are aluminum sulphate and iron (ferrous) sulphate—green vitriol. No cobalt was reported found!

The American Exploration Company is said to have sold over a million shares of Kelpe'koe, Inc., stock, from the sale of which it received over \$8,000 and Kelpe'koe, Inc., over \$24,000. Presumably Mr. Pfeffer, as president of the former company and as an officer and director of the latter, participated in the profits of both. The National Better Business Bureau reports that in February 1932 the Pennsylvania Securities Commission served notice on the American Exploration Company to cease offering stock in Kelpe'koe, Inc., in Pennsylvania. The American Exploration Company, like many other concerns with which Mr. Pfeffer has at times been connected, seems no longer to be in existence.

THE PRESENT CONCERN

So much for the earlier promotional activities of Kelpe'koe. Today the company is said to have the following personnel:

Pheron D. Ott, president; D. R. Riegel, vice president, and Bailie N. Savage, secretary, treasurer and manager; the directors of the company are also its officers. Ben J. Sweetland, its first president, withdrew in 1932; R. H. Pfeffer, his successor, withdrew in 1933.

Just as the earlier personnel included no physicians or pharmacists but did include advertising men and stock promoters, so the present officers and directors are without medical or pharmaceutical qualifications. Mr. Ott, the president, is said to have been engaged previously in the gasoline service-station business and later to have been an employee of a grocery concern. Mr. Riegel, its vice president, is said to be,



Photographic reproduction (greatly reduced) of one of the Stock Certificates for 200 shares that were sent out by Mr. Pfeffer, former president of the Kelpe'koe concern, when he was attempting to promote the sale of stock in his company.

and to have been for many years, in the automobile agency business. Mr. Savage, it appears, was a bank clerk prior to becoming secretary, treasurer and manager of Kelpe'koe, Inc.

It is a curious and possibly significant fact that, although Kelpe'koe, Inc., has been doing business for three years in the state of Washington and has sent and is sending out from Seattle quantities of advertising matter all over the United States, the secretary of state at Olympia, Wash., notified the Bureau of Investigation, in reply to a request, that the department of state was "unable to locate Kelpe'koe, Inc., on the records of this office, either as a foreign or domestic corporation." From this it would seem that Kelpe'koe, Inc., as a corporation is legally dead in Arizona, where it was first incorporated, and is legally unknown in the state of Washington, where it has its quackery headquarters. It would appear from the Revised Statutes of Washington that as Kelpe'koe, Inc., as a foreign corporation has failed to pay its annual license fee and to file and record its certified copy of the charter, as well as the appointment of its agents, it is subject to certain penalties, as provided by the state law.

WHAT IS KELPE'KOE?

As part of the advertising "come-on" in the W. L. Coe & Company prospectus, there was reproduced what purported to be an analysis of the product, made by the Bowser-Morner Testing Laboratories of Dayton, Ohio. This analysis is reproduced in miniature with this article. It will be seen from this analysis that the essential substances in Kelpe'koe are aluminum sulphate and ferrous sulphate (green vitriol). The other ingredients may be disregarded because of their minute amounts. The method of using this preparation will be referred to later.

In the circular letter that accompanied the reproduction of the Bowser-Morner Testing Laboratories' report, it was stated:

"The laboratory report was startling, indeed. The ore was found to contain fifteen different minerals—the very elements contained in the human body. And furthermore, tests revealed that these minerals were in organic form . . ."

This wording is typical of the loose use of scientific terms common to nostrum exploiters. The body does *not* contain fifteen "minerals," although it does contain more than that number of "elements." Even the analysis referred to, it will be noted, discloses *not* fifteen elements, but only thirteen, and specifically declares that these elements were combined in the *inorganic* form and not in the organic form, as the promoters' letter said.

As originally exploited, the product was put out as a frank cure-all, and it was claimed that "sensational results have been obtained with Pacific Health Ore in the following conditions: Diabetes, Kidney and Liver Disorders, Gas and Ulcers of the Stomach, Hemorrhoids, Colitis, Eczema and Skin Trouble, Rheumatism, Goiter, Tonsillitis, Infections, Female Disorders, Etc." After the change of name from Pacific Health Ore to Kelpe'koe, the therapeutic claims became more specific. And the price was nearly doubled! As Pacific Health Ore it was sold for \$2.50 a pound; as Kelpe'koe it was sold for \$4.85 a pound. "Never give the sucker a break!"

One of the specific claims for Kelpe'koe was that it was a "rejuvenator"—and was "the most effective natural tonic and body builder for men and women ever discovered in the history of medical research." One letter sent out by Kelpe'koe, Inc., opened with this paragraph:

"Rejuvenate! What a word to conjure with! How vividly it recalls Goethe's immortal poem, Faust—the most dramatic story of rejuvenation ever written."

Then in the four-page broadside, the *Kelpe'koe News*, under the heading: "Men—Old Age Deferred—Youthful Glands":

"Owing to the glandular rejuvenation of Kelpe'koe, it is a most potent factor in renewing strength and restoring vigor and vitality."

Kelpe'koe is sold today in two forms—"Natural" and "Capsules." Kelpe'koe "natural" comes in a carton of four quarter-pound packages of the crushed ore. The instructions for preparing it as a medicine are to empty one of the quarter-pound packages into a bottle and pour over it a pint of hot water. This is to be allowed to stand for twenty-four hours, shaking occasionally and then straining off the supernatant liquid, which is to be taken one or two teaspoonfuls at a time, diluted in a glass of water. "Kelpe'koe Capsules" contain a dirty-white powder said to be produced by the evaporation of strong solutions of "Kelpe'koe Natural."

The Kelpe'koe concern's recent advertising has been devoted to the thesis that solutions of this crushed ore will cure diabetes. The outfit even has the effrontery to circularize physicians, to whom it particularly recommends the "Capsules."

A year after the first stock-selling letter was sent out with the laboratory report, the Kelpe'koe concern added *cobalt* to the list of the alleged ingredients of its nostrum. In this connection the following facts are of interest: The names of three laboratories have been used in the advertising of Kelpe'koe: Bowser-Morner Testing Laboratories of Dayton, Ohio, already referred to; Arthur D. Little, Inc., Cambridge, Mass., and A. L. Knisely Chemical Laboratories, Seattle. (Mr. Knisely is described by Kelpe'koe as "former Chief Chemist for the U. S. Pure Food and Drug Administration at Seattle.")

★ USERS OF INSULIN

have obtained some measure of relief and scientific research has now developed a treatment of more permanent benefit, to be used with or without Insulin. More liberal diet permitted. Write Kalpokoe Corporation, Seattle, Washington.

Most of the Kelpe'koe advertising seems to be of the "direct-by-mail" type. Some advertising has been done in magazines of the cheaper type.

The implication in the Kelpe'koe advertising is that all these analysts found "cobalt" among other ingredients in the ore. A glance at the Bowser-Morner report shows that that laboratory did not mention cobalt as an ingredient. Arthur D. Little, Inc., reports that they also did not report on finding cobalt—in fact, they were given a list of the Kelpe'koe ingredients and asked to determine whether the material submitted corresponded with the list given—and cobalt was not in the list!

But apparently it was decided that cobalt would make good advertising material when the Kelpe'koe concern had unearthed an old and obscure newspaper clipping that fitted in with the plan to exploit the nostrum as a cure for diabetes. It appears that a French physician, Bertrand, claimed in 1926 that the potency of insulin for the elimination of dextrose in the blood would be increased when the reaction takes place in the pres-

ence of infinitesimal amounts of nickel and cobalt. The Kelpe'koe concern is sending out today (1934) a photographic reproduction of a news item reporting the meeting of the American Chemical Society Institute at Northwestern University at Evanston, Ill. This item referred to the mention—entirely incidental—of Bertrand's theory. The Kelpe'koe letter that accompanies the reproduction of the news item states that this is a "report which bids fair to revolutionize all former ideas as to the treatment of diabetes." The news item bears a date line of August 1 but no year. Recipients naturally infer that it means August 1934; actually the meeting was held six years ago—in 1928!

The facts are that, although eight years have elapsed since Bertrand first made his report, his theory has found no general acceptance by scientific medicine.

The perniciousness, not to say wickedness, of exploiting this crude ore as a rational treatment for diabetes, and the implied claim that by using it, it will be possible to abandon the use of insulin, is, of course, not as obvious to the diabetic as it is to every physician. Not that the Kelpe'koe concern is crude enough to state that its product is a specific or a cure for diabetes. "Patent medicine" concerns in 1934 don't work that way. Kelpe'koe, Inc., in fact, specifically states that the product is "not offered to you as a medicine, specific or cure,"—and then goes on to publish testimonials alleged to be from diabetics who claim to have been cured! As has already been stated, on the admission of the exploiters themselves, the person who takes Kelpe'koe is getting, for all practical purposes, merely a solution of alum and iron sulphate.

In due time, undoubtedly, the overworked branch of the federal authorities that looks into the misuse of the mails by quacks and others will get around to Kelpe'koe, Inc. This, too, in spite of the fact that the Kelpe'koe concern in its advertising states that "Among the users and boosters for Kelpe'koe are included . . . Post Office inspectors. . . ."

Correspondence

FLAT FEES IN INDUSTRIAL MEDICAL SERVICE

To the Editor:—May I call your attention to the following action taken by the Lumbermens Mutual Casualty Company, 4750 Sheridan Road, Chicago:

Recently I received many communications from members of the Chicago Society of Industrial Medicine and Surgery stating that they had been sent a flat fee of \$4.50 on all bills they had rendered to the Lumbermens Mutual Casualty Company for medical services to injured employees coming under the Illinois workmen's compensation act when these employees lost no time from work. This \$4.50 was to remunerate them for their services regardless of the size of their bill, in some instances the bill running well above \$20 but rarely as low as \$4.50. This action was taken without consulting the doctors in question, and on making inquiry of Mr. Howe, second vice president and general claim manager, they were informed that, from a study the Lumbermens Mutual Casualty Company had made, the bill for medical and surgical services should not average over \$4.50.

At a special meeting of the Chicago Society of Industrial Medicine and Surgery, called for the purpose of discussing this particular question, the unanimous decision was that the secretary be instructed to inform Mr. Howe, second vice president and general claim manager of the Lumbermens Mutual Casualty Company, that the doctors specializing in industrial medicine and surgery were unanimously opposed to a flat fee proposition and that they were unanimously rejecting this proposition of \$4.50. The secretary notified Mr. Howe of the action of the society but he did not as much as acknowledge the letter, and I understand that, regardless of the protest, he

is proceeding with this plan, apparently hoping that at this time of financial distress some of the doctors might possibly accept the flat fee proposition.

A \$4.50 fee cannot possibly buy proper medical and surgical attention to injured workmen, who are entitled to the best medical and surgical services that money can buy. We are at a loss to understand why an institution as large as the Lumbermens Mutual Casualty Company is alleged to be resorts to cutting the doctor's medical and surgical fees when the other insurance companies writing the same class of business continue to pay their bills on a fee basis, not on flat rates.

If the Lumbermens Mutual Casualty Company succeeds, it will probably force the companies handling similar business to adopt the \$4.50 fee plan or to discontinue writing compensation insurance, for no insurance company could compete with the Lumbermens Mutual Casualty Company in writing compensation insurance. The final answer would be for the industrial surgeon either to accept the \$4.50 flat fee or discontinue doing industrial work.

W. C. NORDHOLZ, M.D., Chicago.

Secretary-Treasurer, Chicago Society of
Industrial Medicine and Surgery.

INTRAVENOUS THERAPY AND VENOCLYSIS

To the Editor:—Reading the communication on the intravenous drip by W. Forrest Dutton in *THE JOURNAL*, October 20, was like hearing from an old friend, because his book *Intravenous Therapy* has been my vade mecum since its publication.

I was surprised to learn that any discussion had arisen over the priority of the intravenous drip. I had always ascribed that honor to Dr. Matas and never supposed that there was any question or doubt about it.

In my paper of December 1924 in *Southern Surgical Transactions* for 1924 will be found quotations with ample credit to Friedman, Penfield and Teplitz, Unger and Huess, Matas, Woodyatt, Sansum and Wilder. My "bid for fame" rests on the fact that I have devised an apparatus and worked out a technic by which this "means of grace" is made instantly available and its range of useful application expanded almost without limit in the field of therapeutics. By using the modus operandi that I employ, men all over the country have succeeded in achieving results considered impossible, as their letters to me will verify. For example, I have kept patients alive and in a fair state of physical prosperity for twenty-one days, excluding all other sources of nutrition. With the same technic, blood transfusions can be regulated with due regard to the ratio between delivery and distribution and dangerous reactions thereby avoided. By guaranteeing absolute rest to the stomach I have to date cured thirty-five cases of gastric and duodenal ulcers. Then why should I worry about priority? Thomas Edison neither discovered nor invented electricity, Henry Ford did not invent the automobile and Napoleon did not invent war.

I wish to say in defense of my so-called hybrid word that it was submitted before the Southern Surgical Association in December 1924 in the following language, which appears on the title page of my article as a footnote: "I feel very apologetic for the use of a word as the title of my paper that has not received the stamp of approval or been authorized by custom. But, in searching for a name that was descriptive and euphonious to apply to this somewhat rare therapeutic measure. I fell upon the term venoclysis by analogy. We have proctoclysis, hypodermoclysis; why not venoclysis?"

Seven years elapsed before any suggestions of its impropriety were registered. In the meantime it had become current and found its way into the newer dictionary (Dorland), which might be considered a mark of authoritative recognition. I believe that words, like people, should be rated according to their

utility rather than their origin. Some of our most useful and distinguished citizens sprang from a dual or dubious source.

If venoclysis is denied admission to our medical vocabulary, in order to be consistent we must banish such words as ovariectomy, appendectomy and almost all of those ending in the good old Greek suffix "itis." Even appendicitis, duodenitis and a host of others would have to go. Besides, venoclysis is such a nice word. It possesses euphony. It trips lightly off the tongue and falls musically on the membrana tympani. It at once proclaims its meaning and makes a proximate appeal to the average man and has rendered ten years of useful service.

G. A. HENDON, M.D., Louisville, Ky.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NONSPECIFIC URETHRITIS

To the Editor:—A white man, aged 24, had a discharge from the urethra about ten days following illicit intercourse. There was some burning on urination as well as increased frequency. He was first seen by another physician, who took smears that were negative for gonococci. He was given two injections of mild silver protein by this physician, with a subsidence of the discharge. Because his doctor did not take his case seriously, he consulted me for further treatment. The discharge five days after it first appeared was seropurulent in character, which left a yellowish stain on gauze. I have given him injections of a silver antiseptic for the past three weeks with but slight improvement in the amount of the discharge. Diathermy to the prostate and prostatic massage have also been given without improvement. The patient is a lawyer and is considerably upset by his predicament, as he contemplates marriage within a few months. In about ten smears that have been taken and examined, gonococci have not been discovered, merely numerous pus cells. My first impression was gonorrhea, but since the condition did not yield to treatment and no specific organisms have ever been found, I felt that he might be suffering from a nonspecific urethritis. At the present writing, about six weeks after the onset, there is no frequency, urgency, nocturia or dysuria. The discharge still persists in spite of treatment and is almost serous in character with white specks and matting at the meatus. The teeth, tonsils and gallbladder are normal, and the Wassermann reaction is negative. He has been complaining of dull pains in the right lower quadrant of the abdomen for some time and was told by his doctor that he had chronic appendicitis. Could a prostatitis from a focal infection elsewhere give such a clinical picture? Is it possible that this man has a gonorrheal infection without my being able to find the organisms on smear? Please omit name.

M.D., New York.

ANSWER.—From the data submitted there is little evidence that a gonococcal infection is being dealt with in this case. The length of the incubation period, while not ruling it out, certainly minimizes this possibility. This presumption is strengthened by the fact that no positive smears have been obtained. To be unable to demonstrate gonococci in the profuse untreated discharge of a specific urethritis would be unusual.

The symptomatology presented and the clinical course outlined arouse the suspicion of an acute urethral flareup based on a preexistent pathologic condition of the lower urinary tract. The influence of trauma (sexual or otherwise), prolonged drinking, infections of the upper respiratory tract and distant foci has repeatedly been demonstrated in the activation of these otherwise dormant pathologic conditions. Great care must be exercised in this particular case to exclude the presence of seminal vesiculitis, which may be determined by the microscopic examination of the prostatovesicle fluid obtained on massage and stripping. If repeated massage reveals only normal bodies, attention is directed to the possible presence of a urethral stricture. Cysto-urethroscopic study is indicated should these studies fail to bring to light pathologic changes.

Treatment in this particular case will naturally depend on the results of these diagnostic measures. The presence of a seminal vesiculitis or prostatitis will require regular weekly massage followed by the through and through irrigation or deep instillation of some such solution as 5 per cent silvol. Should a strictured urethra be encountered, progressive dilation and instillation of the urethra is indicated. In those cases of nonspecific urethritis not complicated by prostatic or seminal vesiculitis or the presence of urethral stricture, irrigations of mercuric oxycyanide solution in 1:4,000 dilution act in most cases as a specific. This could well be used in the treatment of this case either with or without massage.

RECURRENT DISLOCATION OF SHOULDER

To the Editor:—A white man, aged 35, in good health, has a left shoulder which dislocates easily, with anterior dislocation, either being necessary to effect reduction. Please advise where suitable exercises for strengthening this joint may be obtained. Is surgery to close rent in capsule indicated? Kindly omit name.

M.D., Iowa.

ANSWER.—The treatment of recurrent dislocation of the shoulder depends to some extent on the nature of the condition. In some instances, defects in the head of the humerus that may be due to obstetric paralysis, infantile paralysis or congenital defects or to changes that occurred after the first dislocation may be present. Occasionally, as the result of fractures at the time of the first dislocation, the glenoid cavity is left deformed or with the anterior and inferior edge displaced. Fractures of the greater or lesser tuberosity of the humerus sometimes complicate the picture at the time of the first dislocation and the resulting diminution of function of the supraspinatus and infraspinatus muscles predisposes to repeated dislocations. Weakness of the supraspinatus and infraspinatus muscles as a result of injury or paralysis also predisposes to shoulder luxation.

The most common pathologic condition, however, is found in the capsule itself and consists of a wide rent in the anterior and inferior portion of the joint capsule and in detachment of this portion of the capsule from the margin of the glenoid cavity, occurring at the time of the first dislocation. Such defects tend to repair by scar tissue, which is usually overstretched each time that the head of the humerus slips out of the glenoid until the joint becomes so relaxed that it is no longer stable.

Judging from the brief description, the patient probably falls within the latter group. If there is no definite evidence of muscular weakness, particularly of the deltoid, supraspinatus and infraspinatus muscles, and no contracture of the pectoralis major, teres minor or latissimus dorsi, exercises cannot be expected to strengthen the joint. Operations for prevention of redislocation have been varied. Exposure of the joint in its anterior inferior aspect by way of the axilla and plication of the capsule has been advocated. Other surgeons have preferred to use strips of fascia lata for reinforcement of the relaxed joint. In some instances these fascial strips have stretched so that the defect in the capsule has recurred. Within recent years many orthopedic surgeons have adopted a technic described by Nicola, which utilizes the long head of the biceps muscle to stabilize the shoulder joint successfully. In the hands of those who have used it extensively, this procedure has been almost uniformly successful.

Other procedures that have not been widely adopted consist of the use of a tendon sling through the humeral head formed from one of the peroneal tendons of the foot or a procedure to deepen the glenoid by means of a bone graft driven into its anterior and inferior edge.

This subject has been briefly reviewed in a recent paper by Nicola: Recurrent Dislocation of the Shoulder, *J. Bone & Joint Surg.* 16:663 (July) 1934.

POSSIBLE LATENT SYPHILIS

To the Editor:—In November 1933 a Wassermann report of a patient was four plus alcohol antigen and four plus cholesterinized antigen. Physical examination was otherwise negative and there was no history of primary or secondary syphilis. A marital history was essentially negative. The man has three children living and well; a twin died soon after birth. He was given ten injections of 0.9 Gm. of neosarsphenamine intravenously and 2 cc. of iodobismutol intramuscularly, these medications being given at the same visit. Directly after the first course of ten injections he was given a second course, this time receiving eleven injections of the same medication and on March 24, 1934, at the end of the tenth injection a blood Wassermann reaction was one plus in alcohol antigen and one plus in cholesterinized antigen. He was then given a third course of ten injections of 0.75 Gm. of neosarsphenamine and 2 cc. of iodobismutol and following this last course on July 10 a blood Wassermann reaction was one plus in alcohol antigen and four plus in the cholesterinized antigen. What I should like to know is whether I am fully justified in trying to obtain a negative Wassermann reaction on this patient by further injections of neosarsphenamine. He is in excellent health and shows no symptoms of syphilis other than the Wassermann reaction. Any further suggestions you have in regard to this case will be appreciated. Please omit name and address.

M.D., New York.

ANSWER.—The diagnosis of latent syphilis in this patient cannot be completely substantiated until after the spinal fluid has been examined. Lumbar puncture with a laboratory examination of the spinal fluid, including cell count, protein estimation, quantitatively titered Wassermann reaction with amounts of fluid ranging from 0.1 to 1 cc., and a colloidal gold, mastic or benzoin test, should be done immediately. If the spinal fluid is positive, treatment must not only be continued to deal with the asymptomatic neurosyphilis, which is likely to progress if the patient's treatment is stopped at this point, but in all

probability should be altered to include the use of tryparsamide, fever therapy or both. If the spinal fluid is negative, treatment may proceed on the assumption that the patient has latent syphilis.

The studies of the Cooperative Clinical Group (Venereal Disease Information 13:317, 351, 371, 389 and 407, 1932; 14:1, 1933) show that about 35 per cent of all patients with latent syphilis are Wassermann fast, that the optimal amount of treatment for latent syphilis consists of a little over a year of continuous treatment with alternating courses of an arsphenamine and compound of bismuth or mercury, and a second year of intermittent treatment with three long courses of a bismuth compound separated by rest periods of from two to three months. This amount of treatment should be given regardless of serologic progress.

In this particular patient it appears that thirty consecutive weekly combined treatments of 0.9 Gm. of neoarsphenamine and 2 cc. of iodobismutol have been given. This is overtreatment. If the spinal fluid test is negative, it would be wise to give the patient a rest of two or three months, to be followed with an eight injection course of neoarsphenamine given without bismuth, and in a dosage not exceeding 0.6 Gm. This course might be immediately followed by a twelve injection course of bismuth preferably with an insoluble salt such as the salicylate, a rest period of two or three months, another course of bismuth, another rest period, a third course of bismuth, and then treatment discontinued, the patient to be followed with periodic physical examinations at yearly intervals for the remainder of his life.

DIET IN RENAL DIABETES

To the Editor.—Is there a renal diabetes? And what would be the proper diet restriction? I have had a patient under observation four years whose blood sugar ranges from 120 to 150. Only once did it go to 180. The urine of this patient presents a marked glycosuria constantly. The quantitative analysis of a twenty-four specimen is always close to normal.

H. H. RITTENHOUSE, M.D., Bridgeville, Pa.

ANSWER.—Cases of renal diabetes, more properly termed renal glycosuria, actually occur although they are not common. This diagnosis can be made only when it has been shown that sugar appears in the urine at a time when the blood sugar is below the usual kidney threshold value of 180 mg. per hundred cubic centimeters. It must of course also be established that the sugar which appears in the urine is dextrose and not some other form of carbohydrate, which is being ingested. The simple yeast fermentation test is usually sufficient for the latter purpose. The only treatment advised for renal glycosuria is to avoid undernutrition through loss of sugar in the urine, by supplying additional carbohydrate in the diet.

In regard to this patient, it is difficult to understand how he could present a constant marked glycosuria and still not show much sugar in the twenty-four hour quantitative analysis. Two possibilities suggest themselves. If the single urine specimens that have been tested qualitatively have been taken shortly after meals, they might show a markedly positive test. However, these specimens when diluted in the total twenty-four hour specimen containing much normal urine might give a low total sugar content. If this is the case, the patient has alimentary glycosuria. At present it is advisable to regard such patients as potentially or mildly diabetic and treat them accordingly. The other possibility is that the patient is excreting some other form of sugar than dextrose and that the qualitative sugar test is not specific for dextrose, while the quantitative method used is specific.

EPILEPSY AND SYPHILIS

To the Editor.—A man, aged 35, developed epilepsy at the age of 28 years. His past history is negative for allergy, migraine and convulsions in childhood. There has been no epilepsy in other members of his family. The first epileptic seizure occurred in 1927, at which time a four plus Wassermann reaction of the blood was disclosed. Since then he has had grand mal seizures at the rate of one every four to six months. In 1930 the blood Wassermann reaction was strongly positive; the blood sugar was found decreased to 83.3 mg. He was given seventeen injections of neoarsphenamine. Three months ago, during another seizure, the blood Wassermann reaction was found to be four plus, but the spinal fluid Wassermann reaction and serologic tests were not reported. He has had no treatment since 1930. Physical examination at present is entirely negative. There are no stigmas of syphilitic infection. What treatment should be instituted if the spinal fluid Wassermann reaction is positive and serologic tests show a syphilitic colloidal gold curve? If the latter are negative? Please omit name.

M.D., New York.

ANSWER.—Epilepsy due to syphilis is relatively rare in the absence of outspoken neurologic manifestations of syphilis. When it occurs in patients who have syphilis it is usually associated with dementia paralytica (which seems unlikely in

this case because of the long duration of the convulsions), or with a more or less purely vascular neurosyphilis. Although the neurologic changes in this case are not stated, it is probable that the patient has idiopathic epilepsy, which has no relation to syphilis. The spinal fluid should of course be examined. If the spinal fluid Wassermann reaction is positive in any dilution, regardless of other abnormalities in the cell count, protein content or colloidal gold curve, it would be desirable to treat the patient with fever, preferably malaria, which in turn should be followed by two years of continuous antisyphilitic treatment with alternating courses of tryparsamide, an arsphenamine and a bismuth compound. If the spinal fluid is normal, it may be stated that the patient has so far been inadequately treated for latent syphilis, whether or not associated with epilepsy. His treatment should be continued until he has received five full courses each of neoarsphenamine and a bismuth compound.

An effort should be made to control the epileptic seizures with phenobarbital, the dosage of which should be adjusted to suit the individual needs of the patient.

BRONCHIAL ASTHMA IN A SAXOPHONE PLAYER

To the Editor.—My brother, aged 24, had measles and diphtheria at the age of 6, the latter infection leaving him with a bilateral chronic purulent otitis media. Three years ago he presented allergic manifestations by violent and prolonged sneezing fits when he got out of bed in the morning. Two years ago he began to wheeze only while he slept. Last winter (1933) he was seized with a severe attack of bronchial asthma and coughing. He was relieved by epinephrine and morphine. From that time on exertion or walking against the wind always made him short of breath. One could hear him wheeze and cough. Roentgenograms were taken of his chest and sinuses with negative results. He was tested for irritants and was found markedly sensitive to feathers, rabbit hair and wool. He was mildly sensitive to dog, cat, horse and a few articles of food. He had a course of injections of stock dust vaccines without any apparent relief. Of course, his room is bare of any rugs, blankets and feathers, cotton and kapok having been substituted. For the past few months he has felt perfectly well during the day but every morning at about 5 o'clock he is awakened by a choking sensation and a paroxysm of coughing. He is spontaneously relieved at about 9 a. m., usually after a bowel movement. From this foregoing brief description will you please answer these questions: Is it possible that these attacks are initiated by an accumulation of feces in the bowel? Would a vaccine of the predominating fecal organisms be of any advantage? Would a stock vaccine of upper respiratory organisms be of any benefit? Is there a positive demand for him to discontinue his profession (saxophone playing)? Can you suggest any other drugs? I am and have been using potassium iodide, ephedrine and calcium. Any other suggestions that you have will be greatly appreciated.

M.D., New York.

ANSWER.—From the history and observations given there would seem to be no doubt that this patient is definitely allergic and has a true bronchial asthma. The chronic bilateral otitis media is probably of no importance here. The fact that he is short of breath on exertion would suggest the probability that the bronchial asthma is already complicated by a fairly severe emphysema; if this is true the emphysema has occurred very early in the course of the asthma; the saxophone playing, which further balloons out already distended lungs, is probably one reason, at least, for the early appearance of the emphysema. For this complication the best advice is to (1) quit playing the saxophone or any other wind instrument, (2) avoid overexertion and (3) apply some such instrument as was described by Alexander and Kountz (Symptomatic Relief of Emphysema by an Abdominal Belt, *Am. J. M. Sc.* 197:687 [May] 1934), in which a belt, pad and bolt are used to increase the abdominal pressure so as to push up the diaphragm and so lessen the emphysema.

The best treatment of bronchial asthma is, of course, to find the cause of the attacks and to remove it. It might be wise to retest the patient by complete cutaneous and intracutaneous tests, to remove all offending substances (allergens) completely, and to take prolonged injections of those allergens which are important and which cannot wholly be avoided; e. g., rabbit hair, wool, feathers, house dust and horse dander. Such a course of treatment might well extend over one to three years, beginning with injections twice a week for three or four months, then once a week for a month or two, then once in two weeks to keep up what immunity is acquired by the injections. Short courses of treatment usually fail.

In addition, it would be wise to sew in the mattress and pillows with a light rubber sheeting; this sheeting should then be washed once a week. This procedure is beneficial in many cases, probably because it markedly decreases the amount of house dust and fungi. The home should be kept clean with an electric vacuum cleaner; no sweeping or dusting should be permitted.

It is important, of course, to keep the bowels open, but there are no authentic data that show a relationship between bowel infection and bronchial asthma; vaccines prepared from fecal

organisms have given disappointing results. When success has followed such a vaccine the results are probably due to a nonspecific protein action and, in common with all such nonspecific methods of therapy, the results are only temporary in the vast majority of cases. Vaccines from the sputum offer a better chance of success, but here also the results usually are only temporary. A useful prescription for many cases of bronchial asthma consists of apomorphine hydrochloride 0.13 Gm., potassium iodide 20 Gm., and sufficient syrup of sarsaparilla to make 120 cc. The dosage is a teaspoonful every four hours.

The potassium iodide loosens the sputum and the apomorphine is an excellent expectorant. For severe attacks, subcutaneous administration of epinephrine hydrochloride in doses of from 0.5 to 1 cc. of the 1:1,000 solution is still supreme. Morphine should not be given except in a few cases in which epinephrine and other drugs have failed; and, when used, morphine should be injected in small doses with a great deal of caution. Some fatalities have followed the combined use of morphine and epinephrine. Ephedrine by mouth is often very efficient. The main problem here, however, is to find the cause and thoroughly eliminate it if possible, and to desensitize to those important causes which cannot be completely eliminated.

MUSCLE TWITCHING AFTER DEATH AND RIGOR MORTIS

To the Editor:—I was called recently to see a patient who had apparently been overcome by heat. He was a man, aged 41, of robust build, a heavy drinker of intoxicants, who had been in good health up to the day on which I was called. While doing heavy manual labor in the hot sun, he fell unconscious and on my arrival one hour later was still unconscious, almost pulseless. Blood pressure was 50 systolic, 30 diastolic; temperature was 108 F., and breathing was labored. His condition gradually got worse and he died in about half an hour in spite of stimulants and an ice bath. The interesting feature about this case and concerning which I would appreciate your opinion is the following: For at least forty-five minutes after this man appeared to be dead by the usual criteria, as absence of breathing and heart tones and the mirror test, there were spontaneous movements of the limbs, as flexing and extending the fingers, bending the knees slightly, and quivering of the tendons of the wrists and arms. The body would lie still for as long as ten minutes, and then a knee would rise as much as 2 inches from the bed or the fingers would move. The case was discussed with several physicians. Some say that such movements are possible post mortem in those dying of thermic fever or delirium tremens. The others maintain that these movements indicated that some spark of life was still present, that the movements would not have been possible if death had actually taken place, and that attempts at resuscitation should be continued as long as these movements continued. I would greatly appreciate your opinion on this question. If it is printed in the columns of THE JOURNAL, kindly omit my name and address.

M.D., Wisconsin.

ANSWER.—Spontaneous, fibrillar contractions of the muscles occur occasionally soon after death, especially in muscular individuals who die suddenly or after a very brief illness. High temperatures favor these contractions. A well known phenomenon is the fibrillation of the appendix of the right auricle of the heart, which may be observed even several hours after death (*ultimum moriens Halleri*). At necropsy, when the skin is being removed from the chest, fibrillar twitchings of the bundles of the serratus and major pectoral muscles are frequently seen. Rigor mortis too has to be taken into consideration and rigor mortis is apt to set in early on hot days. Since rigor mortis does not affect all muscles simultaneously but one group of the muscles after the other, certain movements may result, such as the rising of an arm or limb or a closing of the mouth. From the symptoms described there are no indications that the patient was still alive when pronounced dead.

HIGH DIASTOLIC BLOOD PRESSURE

To the Editor:—I have been unable to find in any of the textbooks a precise and logical explanation for the cause and significance of a high diastolic blood pressure. What is the pathologic basis and why is it considered a symptom of severe heart damage? Please omit my name.

M.D., California.

ANSWER.—High diastolic pressure may be found in essential hypertension, in chronic nephritis, in chronic lead poisoning, in some instances of increased intracranial pressure, as when a tumor presses on the medulla, in coarctation of the aorta, and in the rare cases of tumor of the suprarenal gland and pituitary basophilism. The immediate cause of high diastolic pressure is believed to be an increased tone of the peripheral blood vessels, especially the arterioles. The exact cause of the persistent increase of arteriolar tone is not known. Usually, though not always, arteriosclerosis and arteriolosclerosis are associated. When there exists a tendency toward arterial change, the development of arteriosclerosis is aided by the

hypertension. The resultant organic narrowing of the peripheral vascular bed is contributory to the development of a high diastolic pressure. Hypertrophy of the heart follows, invariably accompanied by some disease of the coronary arteries, often of an advanced degree. Cardiac irregularities, especially extrasystoles, may make their appearance; in some, auricular fibrillation develops, although usually not until late in the disease. Finally, signs of congestive heart failure become manifest. Thus, it is apparent that a high diastolic blood pressure should not be considered "a symptom of severe heart damage"; rather, severe heart damage may follow as a consequence of the hypertension, or of the associated coronary arteriosclerosis, or both.

DERMATITIS IN GLASS WOOL INDUSTRY—SALT IN HEAT EXPOSURE

To the Editor:—I have been doing some industrial work for a firm that makes glass wool. Minute particles of glass collect on the workers' skin and, together with the intense heat, produce a dermatitis, which is very irritating and difficult to combat. These men are required to take a shower at the end of the shift, but the cases of dermatitis continue. From the sketchy details given could you suggest treatment? What is the best and most economical method of treating drinking water for use in hot weather? We are using salt tablets. Could you recommend or suggest a modern textbook on industrial medicine?

H. A. CAMPBELL, M.D., Newark, Ohio.

ANSWER.—The dermatitis described is essentially the result of mechanical action on skins made more susceptible to injury through profuse sweating. The problem is not one of treatment but of prevention of further exposure. Exhaust systems should be installed wherever practically adaptable to the entrainment of small glass particles. Protective garments worn by workers will serve as a barrier against contact with these glass slivers, but in hot weather it is not always feasible to wear gauntlets and neck cloths, because of obvious discomfort. The application of water soluble soap to the skin when dry will provide some protection but may not prove to be entirely adequate to the situation.

The use of salt tablets in drinking water supplied for the purpose of replacing the chloride losses in perspiration has proved satisfactory and economical. Certain objections may be raised to the ingestion of large tablets of salt as being less desirable from a hygienic point of view than the intake of saline solution or loose salt. However, under industrial conditions the use of tablets has proved more expedient.

Below are listed several publications on industrial medicine and hygiene:

- Dr. Alice Hamilton's "Industrial Toxicology," New York, Harper & Brothers, 1934 (contents mostly limited to occupational diseases).
- Dr. Alice Hamilton's "Industrial Poisons in the United States," New York, Macmillan Company, 1929 (similar, but larger volume).
- Kober and Hayhurst's "Industrial Health," Philadelphia, P. Blakiston's Son & Co., 1924 (standard textbook on occupational diseases with extensive information on industrial hygiene and industrial medicine).
- Dr. Carey P. McCord's "Industrial Hygiene for Engineers and Managers," New York, Harper & Brothers, 1931 (primarily devoted to industrial hygiene, with chapters on industrial medicine and occupational diseases).

USE OF DINITROPHENOL

To the Editor:—A white woman, aged 33, married, has been under my care since Feb. 19, 1934, for the treatment of obesity. Her height is 5 feet 5 inches (165 cm.) and her original weight was 236 pounds (107 Kg.). Dinitrophenol sodium (Eastman Kodak) was used; the original dose was 1½ grains (0.1 Gm.) three times a day, later increased to the same amount four times a day. The patient lost 31 pounds (14 Kg.) in the period from February 19 to July 15. During this period she showed no untoward effects. Perspiration was marked. Since July 15 the loss of weight has ceased and there has been a gradual gain of weight, amounting at present to 8 pounds (3.6 Kg.). This has been associated with cessation of perspiration and constipation. The drug is potent, since some of the same batch is effective on other patients. There has been no limitation of the diet. Your suggestions will be greatly appreciated. Should the dose be increased? Kindly omit name.

M.D., Connecticut.

ANSWER.—Some patients who have been given dinitrophenol for long periods may develop a partial tolerance to the drug. In this patient medication should be stopped for two weeks, and then treatment resumed with a dose of 0.1 Gm. three times a day. After two weeks of this dose, if weight loss is not secured, the dose may be increased again to 0.1 Gm. four times a day, or if it proves necessary, even to as high as a total of 0.65 Gm. daily. The symptomatic response is the best guide as to the upper limits of dosage. It should not be overlooked that weight control is fundamentally a problem of balancing food intake against its use as energy. If the patient uses the medication as an excuse for greatly increased food intake, no reduction drug can be successful. It would therefore be

better to establish this patient on an adequate but not excessive diet before resuming the dinitrophenol medication. In many cases this measure permits the use of much smaller doses of dinitrophenol.

CASTOR OIL AND QUININE FOR THE INDUCTION OF LABOR

To the Editor:—A patient, several days overdue, was given castor oil and quinine to induce labor, after taking which she did not feel any fetal movements. After twenty-four hours she started in labor and at this time no fetal heart tones could be heard. A normal baby was born which to all appearances had been dead from twenty-four to thirty-six hours. Are there any cases on record in which castor oil and quinine have caused the death of the fetus when given at full term? The mother had no idiosyncrasy to quinine sulphate, but no cause except the medication could be found for the death of the baby. What is the general opinion of the profession in using this method of inducing labor? Kindly omit name.

M.D., Michigan.

ANSWER:—There seems to be not a little evidence that castor oil and quinine sometimes cause the death of the fetus in utero, though it is not easy to prove the fact since occasionally, when the gravida goes over term, the fetus dies without apparent cause.

Gellhorn (*Am. J. Obst. & Gynec.* 13:779 [June] 1927) claims that quinine can be fatal to the fetus, and more recently E. L. King of New Orleans has said the same. It is not known how this comes about. Some uteri react to quinine but most do not, and there has been no proof that tempestuous uterine contractions regularly follow the quinine in the cases in which the child has died. A frequent finding has been meconium-discolored liquor amni.

In the case cited it seems as if quinine (or perhaps the oil) caused the death of the fetus.

The dose of quinine should be reduced to a single capsule of 0.2 Gm., or 3 grains.

USE OF SCHILLING DIFFERENTIAL HEMOGRAM

To the Editor:—Are there any large cities in the United States using (with confidence) the Schilling differential count other than St. Louis? It is being used as a routine in several large hospitals in St. Louis. What, in general, is the Association's opinion of the procedure? What literature references other than Gradwohl's translation of "The Blood Picture" by Schilling can you give me? I shall greatly appreciate any information you may be able to furnish me.

R. C. PETERS, M.D., Kirkwood, Mo.

ANSWER:—Schilling began the writing of his simplified index in 1911. By 1925 his method was in common use in Germany and many European clinics. During the past few years the method has come into use in this country. Many large cities other than St. Louis use the Schilling hemogram. It must not be assumed, however, that this method or any other laboratory procedure is a short cut in the formulation of a clinical diagnosis. It is a valuable source of information when intelligently used, and by adding another feature to the mosaic which in its entirety represents a diagnosis or a prognosis, it is of distinct value. Excellent discussions on the theory and application of the Schilling hemogram may be found in

Pepper, O. H. P., and Farley, D. L.: *Practical Hematological Diagnosis*, Philadelphia and London, W. B. Saunders Company, 1933.

Reznikoff, Paul: *Immature White Blood Cell Counts in Infectious Diseases*, *THE JOURNAL*, Sept. 28, 1929.

Piney, Alfred: *Recent Advances in Hematology*, Philadelphia, P. Blakiston's Son & Co., 1927.

Reznikoff, Paul: *White Blood Cell Counts in Convalescence from Infectious Diseases*, *Am. J. M. Sc.* 184:167 (Aug.) 1932.

OPERATIVE PROCEDURE IN COLITIS

To the Editor:—A man, aged 35, has suffered for four years from mucous colitis, during which time he has been treated with diathermy, autogenous vaccines and whatnot, but with no success. Finally in 1932 he was advised to consent to an operation. A colostomy was performed in August 1932. Since then he has put on weight and looks and is perfectly healthy, his only complaint being a constant mucous discharge from the rectum. The family history and personal history are essentially negative. What can you tell me regarding the prognosis in a case of this sort, and is there any hope for a resection? If there is, how long after operation is such possible? Kindly omit name.

M.D., New York.

ANSWER:—Colostomy is rather unusual treatment for "mucous colitis." Colostomy occasionally has been performed for chronic ulcerative colitis, when the disease is limited to the distal segments of the large intestine and associated with unusual stricture or fistula. Whether or not resection could be done would depend on the activity and complications of the disease. If the lining of the bowel seems to be in fairly good condition and the lumen is reasonably roomy, the colonic stoma might be closed. If resection becomes necessary, it is well to wait until the active disease in the lower segments of the intestine has subsided.

PILONIDAL CYST OR FISTULA IN ANO

To the Editor:—A traveling salesman, aged 35, otherwise in perfect health, has anal fistula of ten years' standing. He has no pain except when hairs grow into an opening, and only a small discharge occasionally. But at different times there has been a discharge from five or six different openings. I hesitate to attempt the classic operation owing to the extent of mutilation probably necessary with loss of time and danger of failure of some kind. I wonder whether it is worth while to try autogenous vaccine or nonspecific protein with or without a purse-string or temporary mucous flap for the rectal opening. Also, what is the danger in delay? Does recovery ever occur spontaneously? Current literature on this subject seems to be scarce. I would like as much information as you can give in this column. Please omit name.

M.D., Wisconsin.

ANSWER:—The description of the condition suggests pilonidal cyst with multiple openings. If this is the case, there is no communication with the anal canal and the treatment consists in a wide excision of all tracts and the cyst itself. If, however, the condition is a complicated fistula in ano with multiple openings, radical surgery is the only method that offers any possible chance of cure. This consists in a careful dissection of all the tracts and going through the sphincter at the point where the tract enters the anal canal. All the tracts must be left open to granulate in by themselves; otherwise there would be a recurrence of the condition.

SURGICAL REPAIR OF OLD PERINEAL LACERATION

To the Editor:—What is the preoperative and postoperative care for an old complete laceration of the perineum in a woman, aged 38, who has had the condition for eighteen years? Continence of feces is maintained by a band of scar tissue. In the repair should this band of scar tissue be sacrificed and the torn sphincter ends brought together, or would you retain the band of scar tissue and rebuild the perineal body above it? What percentage of such old cases are successfully repaired by bringing the torn sphincter ends together? Kindly do not mention name.

M.D., New York.

ANSWER:—Preoperative care is unnecessary except for a simple enema, which should be given not later than four hours preceding operation.

The supporting band that maintains continence may perhaps be spared. The preliminary incision is preferably made high and sufficiently curved laterad to the anus to permit the dissection downward of a short wide flap over the anus. Extensive denudation and repair of the perineum constitute a prominent feature in the procedure. Bringing together the torn sphincter ends is helpful but is a lesser factor and does not usually suffice unless there is a coincidental perineal repair. An illustrated description of the technic will be found in Curtis's *Text-book of Gynecology*, ed. 2, page 272.

THYRONINE OR DESICCATED THYROID

To the Editor:—In case there was a deficiency of the thyroid such as after thyroidectomy, which would be the best to give, and why, thyroxine or desiccated thyroid? I do not mean to consider the cost. Please omit name.

M.D., Utah.

ANSWER:—Desiccated thyroid would be superior because it contains all the thyroid secretion and has been found to possess greater calorogenic activity than an amount of thyroxine of equal iodine content when administered by mouth. This is attributed both to the existence in desiccated thyroid of a thyroxine-peptide complex (Harington and Salter, *Biochem. J.* 24:456, 1930) which is more soluble than thyroxine and possibly less readily destroyed in the digestive tract and also to the activation or transformation of diiodotyrosine, which is an important normal constituent of the thyroid gland. It is to be supposed that as replacement therapy the desiccated thyroid containing both these substances would more nearly serve as a complete substitution product.

ENDEMIC GOITER

To the Editor:—Is Forest Park, Pa., in a goiter belt? Is the condition aggravated when patients with hyperthyroidism move into a goiter district? The patient whom I have in mind has hyperthyroidism and wishes to go on her vacation to Forest Park, Pa., and has sought my advice on that point. Please omit name.

M.D., New York.

ANSWER:—Forest Park, Pa., is not in what could be called a goiter belt, although endemic goiter does occur there. The incidence of toxic goiter does not run parallel to that of endemic goiter. In some regions where there is more endemic goiter there is less toxic goiter, but this is not everywhere true. There is no reason to think in this case that the hyperthyroidism would be aggravated by a change in locality such as that mentioned. More would depend on the amount and nature of the rest obtained during the vacation.

OXYURIS VERMICULARIS

To the Editor.—Please send me information with regard to the treatment of adult infestation with *Oxyuris vermicularis* by means of aluminum subacetate. My patient is a man, aged 35, who has been infested for a period of ten years. According to my information, aluminum subacetate is the best treatment over a period of time. If it is your opinion that other medication would be more effective, will you please outline such treatment? Please omit name and address.

M.D., New York.

ANSWER.—It is not probable that solution of aluminum subacetate is any more efficient than would be any other astringent, such as tannic acid solution, because the adult females, the only ones that can be reached by this treatment, are dislodged without difficulty from the anus and rectum by almost any form of enema. The young parasites, on the other hand, which inhabit the small intestine, are not reached by any other treatment than by anthelmintics, such as santonin, oil of chenopodium, or tetrachloro-ethylene taken by mouth. Santonin is given in doses of 0.01 Gm. for each year of age not to exceed an adult dose of 0.2 Gm. It is best to give one dose daily for a week. Tetrachloro-ethylene is at present preferred to oil of chenopodium. It is given in 0.5 cc. capsules, in an adult dose of 2 to 3 cc., followed in two hours by a saline purge such as sodium sulphate. As it may cause transient dizziness, the patient is best confined in bed for the day. Colon irrigations should be combined with the internal treatment, and quinine sulphate 1:1,000 solution is probably as good as any other agent.

PREPARATION OF CADAVERS

To the Editor.—In *Queries and Minor Notes* in *THE JOURNAL*, Oct. 7, 1933, page 1173, the preparation of cadavers for dissection in tropical countries is described. Is it necessary to use this solution of phenol, glycerin and alcohol in this country? If this solution is used for injection, can the immersion of the cadaver in a solution of 3 per cent phenol and water be eliminated? I do not plan to prepare a cadaver for dissection until the latter part of October, when it should be a little cooler here. Would this make a difference in the preparation? To save you looking this town up on a map, I want to tell you that it is located in southern Texas about 60 miles west of Brownsville.

LLOYD M. SOUTHWICK, M.D., Edinburg, Texas.

ANSWER.—It is absolutely necessary to use this solution or some similar one anywhere in this country. This one contains no arsenic; the use of arsenic for this purpose is prohibited in several states. If the cadaver is to be completely dissected within three months, immersion is not absolutely necessary; covering, when not being dissected, with wet cloths, and a big oilcloth sheet may be substituted.

VENOUS ECTASIA OR MELANOMA

To the Editor.—A man, aged 60, suddenly developed two bluish colored areas on the inner margin of the lower lip, about 0.125 mm. in diameter. These spots are perfectly flat, are not tender, and can be made to change color slightly on pressure. They are slightly larger than a year ago when they first appeared, but two more similar spots have appeared under the upper lip.

M.D., Massachusetts.

ANSWER.—The differential diagnosis lies between venous ectases and metastatic melanoma. The statement that the spots change color on pressure favors the diagnosis of vascular lesions, and the probabilities also weigh on that side; but the problem is so important that it is deemed best to have the case carefully studied by a specialist before treatment is instituted.

If, as seems probable, the decision is in favor of the venous dilatations, radium can be used with good results: a half strength plaque screened with 0.1 mm. of lead and applied for three periods of an hour each on three days within the same week. This may be repeated after an interval of a month or six weeks.

IMPETIGO

To the Editor.—During the last few months I have seen several cases of a skin lesion that resembles impetigo. Most of the patients are girls of the upper grade or high school ages. The lesions are scattered with no particular arrangement, but the hands and face are particularly affected. They resemble impetigo, but the crusts are not so heavy and the discharge is rather less purulent than in impetigo. Sometimes they itch considerably. The individual lesions are very persistent but finally clear up, leaving pigmented areas that are very disfiguring. They are very resistant to treatment. It seems to me that they clear up in spite of, and not because of, any medication, though I have tried all the usual agents. Have you any suggestions as to what it is and what to do for it?

E. R. HUCKLEBERRY, M.D., Garibaldi, Ore.

ANSWER.—There is little doubt that the condition described is impetigo contagiosa. The discharge in impetigo is more often thin and straw colored than purulent, and the crusts are not necessarily heavy. The itching is typical. The resistance to treatment, however, is unusual. The crusts should be

removed with warm water and soap; a saturated solution of boric acid is applied and then a 5 per cent ointment of ammoniated mercury. Short exposures to ultraviolet rays will hasten the cure. Five per cent silver nitrate solution is recommended in resistant cases.

NORMAL AND ABNORMAL TEMPERATURE

To the Editor.—I would appreciate very much your giving me the following information: What is normal temperature? What is the highest temperature to be considered normal in adult males? In adult females? In children? Is there such a thing as a physiologic temperature running higher in certain individuals which is normal for them? If so, how is it determined and how much elevation has been recorded in such individuals?

J. D. RILEY, M.D., State Sanatorium, Ark.

ANSWER.—The normal temperature of man and of woman averages 37 C. (98.6 F.) and 37.1 C. (98.78 F.) except for the first week of life. Axillary temperatures have been correlated with age, as follows:

In the first ten days.....	37.75 C. (99.95 F.)
Ten days to puberty.....	37.43 C. (99.39 F.)
Fifteenth to twentieth year.....	37.19 C. (98.94 F.)
Twenty-first to seventieth year.....	36.85 C. (98.33 F.)
Eightieth year.....	37.26 C. (99.06 F.)

The extreme variation in this table is 1.43 degrees F. The table also answers the question of the temperature of children. The variations being normal for the various age groups, individuals apparently enjoying good health have been known to have temperatures higher than those given. However, no deviation greater than 1.8 degrees F. is to be considered normal (Hewlett). A rectal temperature above 37.2 C. (98.96 F.) is considered by some as evidence of disease.

CHILD WITH CONGENITAL SYPHILIS

To the Editor.—Should a child with congenital syphilis untreated be excluded from attending public school?

EDWARD JOYCE, M.D., Hurley, S. D.

ANSWER.—In general, no. Children with prenatal syphilis by the time they reach school age no longer present infectious lesions even though untreated. Their attendance at school should be encouraged in every way possible, for they are frequently somewhat above the ordinary in intelligence, and disabilities and handicaps in the form of intercurrent complications such as interstitial keratitis should be compensated for in every possible way so far as the child's education is concerned. It is particularly inhuman and quite unnecessary from the public health standpoint to add to the burdens of these children either stigmatization or the loss of intellectual opportunity by exclusion from school.

CLEFT PALATE

To the Editor.—In cases of inoperable cleft palate, at what age and how successfully can dentures be used to close the cleft? How often do they have to be changed and is the average "good dentist" able to handle such an assignment? The patient I have in mind was taken to one of America's leading medical men in this line a few months after birth. He did not believe operation advisable at that time and told the parents to bring the child back at the age of 18 months. They brought the baby back and he told them to wait two years more. The cleft does not appear to be closing up at all. The two year period has about elapsed.

PAUL R. HOWARD, M.D., Monmouth, Ill.

ANSWER.—It is hardly practical to fit a plate in an open palate before the six year molars erupt. The question arises as to whether this is an inoperable case. Most of these patients can be operated on to advantage between the age of 1 and 2 years; there are a few that have a much better chance of success if operation is postponed until the first molar teeth are fully erupted, or even until the six year molars have erupted.

Any man doing general dentistry who would take sufficient interest in the case would be capable of handling it if the age and conditions are suitable for a plate.

SEBACEOUS CYSTS

To the Editor.—I would appreciate information concerning the destruction of sebaceous cysts on the lobule and areolar portions behind the ear. Are there any satisfactory sclerosing agents that may be injected? Would fulguration or desiccation currents be of any value?

D. C. MALCOLM, M.D., Onaga, Kan.

ANSWER.—At times roentgen treatment will cause small sebaceous cysts to disappear. From four to eight treatments are required at weekly intervals. The dose is approximately 75 roentgens. Either filtered or unfiltered radiation may be used. This amount of treatment is safe. Unfortunately, the effect on the cyst is uncertain. Radium may be used instead of x-rays.

Surgical diathermy may be used. One way to use this method is to make a small opening into the cyst with the cutting current and a needle electrode. Then the inner surface of the cyst wall is electrodesiccated. Surgical diathermy may be followed by considerable reaction, sloughing and, perhaps, an objectionable scar. At times the result is excellent.

The injection into the cyst of sclerosing substances after the contents of the cyst have been evacuated, substances such as phenol (carbolic acid) or a concentrated solution of trichloroacetic acid, may effect the desired result, but not infrequently a discharging sinus remains.

Many believe that the best method is scalpel excision with healing by first intention.

NEURITIS OF VULVA

To the Editor—I have under my care a woman, aged 58, who complains of vulval pain. The pain seems to be localized in the soft parts. Physical examination is absolutely negative as far as I can ascertain. Would you be kind enough to outline the possibilities and the treatment advised? Please omit name.

M. D., District of Columbia

ANSWER.—Pain in the soft tissues of the vulva, independent of a demonstrable lesion, is not uncommon. Neuritis is the most frequent cause. Alcohol injection relieves some cases. Nerve resection is occasionally advisable.

In making certain that there is no local pathologic condition, it is essential to rule out sensitive areas at the orifices of the Bartholin gland ducts, as well as tender caruncles, minute lesions caused by repeated traumatism at intercourse, and discomfort incident to a small rectocele. Many patients are entirely relieved of vulval sensitiveness after learning that entrance into the vaginal canal should be made with care not to traumatize the anterior wall; pressure posteriorly seldom causes discomfort.

PROPHYLAXIS OF SEED WARTS

To the Editor.—The superintendent of schools informs me that the physical director is finding many seed warts among the high school pupils, especially among the girls. They have scrubbed the gymnasium floor each day and had the pupils immerse their feet in a solution of corrosive mercuric chloride. Can you give me any information regarding prophylactic treatment for this condition?

M. D., Iowa.

ANSWER.—Since the etiology of "seed warts" is obscure, the prophylaxis is somewhat indefinite. Various investigators have been able to produce warty lesions by inoculation, and it is believed that the infected organism is a filtrable virus and that injury is necessary for the portal of entry. For prophylaxis, Hazen suggests mopping the surface with a saturated solution of salicylic acid in alcohol. If this cannot be borne, the use of alcohol alone also seems to be beneficial.

EPHEDRINE FOR DILATING PUPILS

To the Editor.—Please give me information on what strength ephedrine solution to use for dilating pupils in presbyopia.

ROBERT MONFORT, M. D., Cheboygan, Mich.

ANSWER.—From 5 to 10 per cent of the salts of ephedrine.

BILATERAL EPIDIDYMITIS

To the Editor.—In Queries and Minor Notes in THE JOURNAL, October 6, I noticed a communication on bilateral epididymitis and signed M. D., Colorado. In the treatment outlined I saw no mention made of the use of diathermy. In my experience I have found no other therapy that gives such satisfactory results in epididymitis. I use the Wappler epididymitis clamp, applied laterally to both testicles, with plenty of soap suds to make a good connection. I give one half to three quarters of an hour treatments daily and follow each treatment with an intravenous injection of 5 cc. of a 10 per cent solution of calcium chloride (ampules). I continue this treatment for a month if necessary. The testicles will return to normal size, leaving practically no nodulation in the epididymis. I use a current strength of from 750 to 1,200 milliamperes, beginning with the former and gradually working up. I mention the Wappler clamp because it permits of adjustment to any sized swellings and is perfectly insulated so that the patient very quickly learns to carry out the treatment himself. CHESTER H. WOOLSEY, M. D., San Francisco.

HYDROCHLORIC ACID IN HAY FEVER

To the Editor.—In the answer to the query on hydrochloric acid in hay fever, on page 938 in THE JOURNAL, September 22, you mention the prescription in the *Journal of Allergy* in September 1930. In the *American Journal of the Medical Sciences* for October 1927 a similar prescription is given and, as I remember it, this was not news at that time. I have used the prescription at times with good results.

J. K. WILLIAMS WOOD, M. D., Willow Grove, Pa.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery, Jan. 7. Sec. Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY. *Written (Group B candidates)* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates)* New York, June 10. Sec. Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 10. Sec. Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

ARIZONA Basic Science Tucson, Dec. 18. Sec. Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical* Phoenix, Jan. 23. Sec. Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA Reciprocity Los Angeles, Dec. 5. Sec. Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT Endorsement Hartford, Nov. 27. Sec. Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE Wilmington, Dec. 11-13. Sec. Dr. Harold L. Springer, 1013 Washington St., Wilmington.

D.C. Basic Science, Washington, Dec. 27-28. 14-15. Sec. Commission on Licensure, Dr. Bldg., Washington.

KANSAS Topeka, Dec. 11-12. Sec. Dr. C. H. Ewing, Larned.

KENTUCKY Louisville, Dec. 4-6. Sec. State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA New Orleans, Dec. 6-8. Sec. Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND Regular, Baltimore, Dec. 11-14. Sec. Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homoeopathic*, Baltimore, Dec. 11-12. Sec. Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA Basic Science, Minneapolis, Jan. 2-3. Sec. Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical* Minneapolis, Jan. 15-17. Sec. Dr. E. J. Engherg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec. Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA Basic Science, Omaha, Jan. 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA Endorsement, Raleigh, Dec. 3. Sec. Dr. Benj. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA Grand Forks, Jan. 1-4. Sec. Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO Columbus, Dec. 3-6. Sec. Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA Reciprocity, Oklahoma City, Dec. 11. Sec. Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

OREGON: Portland, Jan. 2-4. Sec. Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA Philadelphia, Jan. 8-12. Sec. Board of Medical Education and Licensure, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 3-4. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

VIRGINIA Richmond, Dec. 12-14. Sec. Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WASHINGTON Basic Science, Seattle, Jan. 10-11. *Medical*, Seattle, Jan. 14-16. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN Basic Science, Milwaukee, Dec. 15. Sec. Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*, Madison, Jan. 8-10. Sec. Dr. Robert E. Flynn, 401 Main St., LaCrosse.

Massachusetts March Examination

Dr. Stephen Rushmore, secretary, Board of Registration in Medicine, reports the oral and written examination held in Boston, March 13-15, 1934. The examination included 64 questions. An average of 75 per cent was required to pass. One hundred and fifty-one candidates were examined, 66 of whom passed and 85 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Med.		----	75
Georgetown University School of Med.			75, 75
Tulane University of Louisiana			75
(1932) 75			
Johns Hopkins University School of Med.	(1930) 75, (1932)		75
University of Maryland School of Medicine and College of Physicians and Surgeons	(1927)		77.8
Boston University School of Medicine	(1931) 76.6, (1933)		75, 75
College of Physicians and Surgeons	(1931) 75		75
Harvard University	(1931) 78.4, 83.8		80
Middlesex College of Medicine and Surgery	(1929)		75
(1931) 75, 75, 75, 75.2, (1932) 75, 75, 75, 75, 75, 75, 75.2, 75.5, 75.7, 76.5			
Tufts College Medical School	(1932)		80.3
(1933) 75, 75.6, 75.7, 77.2, 77.8, 78.7, 79, 81			
Kansas City University of Physicians and Surgeons	(1931) 75.2, 78.8		79.6
Missouri			
University of Nebraska			
New York University			
Medical College	(1932)		75
Syracuse University College of Medicine	(1931)		75.3
Hahnemann Med. College and Hospital of Philadelphia	(1931)		75
(1933) 75			

University of Vermont College of Medicine.....	(1930)	79.7	
McGill University Faculty of Medicine.....	(1928) 85.8, (1932)	83.1	
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1929)	75.1	
University of Edinburgh Faculty of Medicine.....	(1932)	81.4	
Osteopaths *	75, 75, 75, 75.2, 75.4, 75.5, 76, 76, 77.7		
School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1933) 68.4, 69, 71		
Boston University School of Medicine.....	(1929)		70.5,
(1933) 69.6, 70.8			
College of Physicians and Surgeons, Boston.....	(1931) 64.5, 67,		
(1933) 68.7, 69.1			
Middlesex College of Medicine and Surgery.....	(1921)		49.4,
(1923) 59.7, (1924) 65.2, (1925) 54, (1926) 53.2, 71.6,			
(1928) 55.7, 66.8, (1929) 55.8, 60.5, 63.1, 63.8, 70.7,			
72.1, (1930) 62.6, 63.7, 65.3, 70, (1931) 53.1, 58.5,			
63.4, 69, 70.6, 72, 72.3, (1932) 60.7, 62.3, 63.8, 64.2,			
66.5, 66.7, 66.9, 68.7, 70.7, 70.8, 71.5, 72.7			
Kansas City University of Physicians and Surgeons, Missouri.....	(1929)		47,
48.2, 57.1, (1930) 67.3, (1931) 72, (1932) 52, 66.2,			
68.6, 69.5, 70.6, 73.3, (1933) 39, 46.6, 54.7, 68.1,			
70.3, 72.5			
Missouri College of Medicine and Science.....	(1927)		67.9
St. Louis College of Physicians and Surgeons, Missouri.....	(1923)		55.4
Medical College of Virginia.....	(1930)		71.1
Laval University Faculty of Medicine.....	(1932)		63.7
Regia Università degli Studi di Roma Facoltà di Medi- cina e Chirurgia.....	(1925)		50.7
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1932)		53.3
Government Medical School, Teheran, Persia.....	(1917)†		55.4
Faculté Française de Médecine de l'Université de St. Joseph, Beyrouth, Syria.....	(1927)†		70.9
Osteopaths* 42.9, 44.5, 55.4, 56.5, 56.5, 58.5, 59.9, 62.5, 62.8, 66.2, 66.7,			
69.2, 72.7			

One physician was successful at a special examination, held March 15. The following school was represented:

School	PASSED	Year Grad.	Per Cent
University of Michigan Dept. of Medicine and Surgery.....(1900)			80

Twenty-seven physicians were licensed by endorsement from January 8 to July 2. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Yale University School of Medicine.....(1932) N. B. M. Ex.			
Johns Hopkins University School of Medicine.....(1929) N. B. M. Ex.			
Boston University School of Medicine.....(1929), (1932) N. B. M. Ex.			
Harvard Univ. Med. School (1929), (1930, 4), (1931, 5), (1932) N. B. M. Ex.			
Tufts College Medical School.....(1931), (1932, 4), (1933, 2) N. B. M. Ex.			
Columbia Univ. College of Phys. and Surgs.....(1930), (1931, 3) N. B. M. Ex.			

* Examined in medicine and surgery.
† Verification of graduation in process.

District of Columbia Reciprocity Report

Dr. W. C. Fowler, secretary, Commission on Licensure, reports 12 applicants licensed by reciprocity from Jan. 29 to July 15, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine.....(1931)			Maryland
Georgetown University School of Medicine.....(1931)			Maryland, Virginia
Howard University College of Medicine.....(1930)			Maryland, Virginia, (1931) Georgia, Virginia
Hahnemann Medical College and Hospital, Chicago.....(1911)			Iowa
Northwestern University Medical School.....(1924)			Iowa
Columbia College, College of Physicians and Surgeons.....(1895)			New York
Cornell University Medical College.....(1905)			New Jersey
Osteopath			California

South Dakota January Report

Dr. Park B. Jenkins, director, Division of Medical Licensure, reports the written and practical examination held in Pierre, Jan. 16-17, 1934. The examination covered 13 subjects and included 110 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Three physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
State University of Iowa College of Medicine.....(1932)			86
University of Michigan Medical School.....(1931)			84
University of Minnesota Medical School.....(1927) 86, (1933)			84
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....(1932)			Iowa
College of Physicians and Surgeons, Medical Department Kansas City University, Kansas.....(1897)			Kansas
St. Louis University School of Medicine.....(1914)			Oklahoma
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Rush Medical College.....(1932) N. B. M. Ex.			

South Dakota July Report

Dr. Park B. Jenkins, director, Division of Medical Licensure, reports the written and practical examination held in Rapid City, July 17-18, 1934. The examination covered 14 subjects and included 95 questions. An average of 75 per cent was required to pass. Six candidates were examined, all of whom passed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School.....(1931)			88
University of Minnesota Medical School.....(1927)			86
Creighton University School of Medicine.....(1928) 87, (1933)			86, 87
University of Nebraska College of Medicine.....(1933)			88
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Bennett College of Eclectic Med. and Surg., Chicago.....(1915)			W. Virginia
State University of Iowa College of Medicine.....(1928)			Iowa
John A. Creighton Medical College.....(1906)			Nebraska
University of Nebraska College of Medicine.....(1921)			N. Dakota

Book Notices

A Manual of the Practice of Medicine Prepared Especially for Students. By A. A. Stevens, A.M., M.D., Consulting Physician to St. Agnes Hospital, Philadelphia. Thirteenth edition. Cloth. Price, \$3.50. Pp. 685, with 16 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

The fact that this is the thirteenth edition attests the usefulness of this manual. The author has held to his original purpose to give to the book an elementary character and he has not added much to its size, although in this edition a number of new subjects appear for the first time. Some of these are massive collapse of the lung, psittacosis, hyperinsulinism, osteitis fibrosa cystica and agranulocytic angina. It must have been difficult for the author to keep the book so condensed, in view of the many important developments in medicine that have come about since the book was first published in 1892. The material under some subheadings is confined to a few lines, and that gives certain portions of the volume a character suggestive of a medical dictionary. The author has met the same difficulty that many other medical book writers have in that it is almost impossible to include the latest advances in view of the rapidity with which they are made. In the discussion of heat stroke and heat exhaustion, for example, nothing appears to have been said about the use of common salt as a prophylactic, which advance came out of the experience gained in the care of workers who are building the so-called Hoover Dam. The author mentions, however, that in the treatment of heat stroke the intravenous and subcutaneous injection of salt solution has proved beneficial in some cases.

Selected Surgical Papers (1876-1914). By Frederic S. Dennis, M.D., F.R.C.S. In two volumes. Boards. Pp. 940, with illustrations. New York: Privately Printed, 1934.

These selected papers were edited and printed by the author with few changes, and those only mistakes in the original articles. He has two reasons for publishing these as a collection of papers: first, to cover his personal experience during the periods of septic surgery, of the open treatment of wounds, of the antiseptic method of Lord Lister and finally following the advent of asepsis; second, to present in tangible form the history, during the life of a single individual, of the greatest science and art that have been employed in aid of humanity. One reads of the marked improvements in surgery during the period of septic surgery by following sound surgical principles even before antiseptics was known. The treatment of a large series of cases with compound fractures reported in 1884 would be a credit to a modern hospital surgical service. Covering the range of surgery as it was known during the years to the present generation are presented most excellent results for that time, in resections for tuberculosis of the knee, gunshot wounds of the abdomen, open operation on fracture of the patella, ligation for deeply located aneurysms, suprapubic cystotomy, trephining for skull fracture, carcinoma of the breast, gangrene of the lower extremity, brain tumor, and various operations on the gastrointestinal tract. His conclusions reported in 1899 about the operative indications for complications of appendicitis will bear

studying at this time. The breadth of knowledge in surgery as evidenced by his writings is stupendous. The surgical principles that he emphasized are as true today as when written, although the technic has changed. The author has performed a real service in printing in book form this collection of papers. They should be read by the student as well as the surgeon for a broader grasp of surgical principles and for the personal historical facts of the most important surgical era known.

Lærebog i intern medicin. Udgivet af Knud Faber, Peter F. Holst og Karl Petré. Binder I-IV. Third edition. Paper. Pp. 623, with 194 illustrations; 592, with 136 illustrations; 727 with 149 illustrations; 799, with 106 illustrations. Copenhagen: Gyldendalske Boghandel—Nordisk Forlag, 1927-1934.

This edition of the textbook for internal medicine is written in collaboration by a number of Scandinavian physicians who mostly have used their respective vernaculars in penning their part of the work, so that some chapters are in Danish, others in Swedish and others in Norwegian. The work gives a comprehensive description of each disease in particular and is divided into four volumes.

The first volume treats of infectious diseases and discusses infection in general, immunity and the use of serum therapy, passive immunization and active immunization and their combined employment, serum diagnosis and chemotherapy. Each infectious disease is described extensively, and chronic infections, animal parasites and poisonings by inorganic and organic agents are given in detail.

The second volume gives a thorough description of the diseases of the respiratory system, subdivided into diseases of the buccal cavity, the throat and the nose, diseases of the bronchi and the lungs, tuberculosis and diseases of the pleura; then diseases of the circulatory system, the mediastinum and the spleen, and the hemorrhagic diatheses. Tuberculosis is described under the headings of tuberculosis of the lungs and miliary tuberculosis, and in the chapter on the diseases of the circulatory system reproductions of electrocardiograms and schematic curves help to clarify the text.

The third volume describes the diseases of the digestive tract, subdivided into diseases of the esophagus, the stomach and the intestine; the diseases of the peritoneum, of the pancreas, of the liver, the gallbladder and the portal vein; the hematogenous medical diseases of the kidneys and the localization renal diseases; the diseases of the renal pelvis and of the urinary bladder; the diseases of the endocrine glands, and the avitaminoses. The diseases of the endocrine glands are thoroughly discussed and the chapter on avitaminosis is unavoidably short, while the diseases of the digestive system and of the kidneys are given the place of honor and are described competently and minutely.

The fourth volume treats of the diseases of the nervous system, the diseases due to disturbances of metabolism and the diseases of joints and muscles. It is quite natural that the diseases of the nervous system occupy the largest part of the volume; they are competently and completely described and are subdivided into organic nervous disorders, extrapyramidal diseases, diseases of the peripheral nerves, trophovasomotor neuroses, epilepsy, migraine and constitutional psychopathies. The diseases due to disturbances of metabolism are ably presented and the treatment of the diseases of the joints and muscles includes chapters on hydrotherapy and light therapy. The volume closes with a chapter on roentgen therapy in internal medicine. This textbook presents an imposing aspect on account of its size, it covers completely the whole field of internal medicine, it has been written by able physicians, it is beautifully edited, and it offers a profusion of excellent illustrations. It is unfortunate that the language difficulty prevents its general use among students and physicians.

Volumetric Analysis. By H. P. Starek, M.A., Head of the Science Department, the Technical College, Kingston-on-Thames. Cloth. Price, \$3. Pp. 259, with 11 illustrations. Baltimore: William Wood & Company, 1934.

The author gives a detailed presentation of the methods and problems of volumetric analysis and lists a variety of determinations. The subject is introduced by a brief description of volumetric apparatus and of the properties of the chief acid reagents used. Next a chapter is concerned briefly with the

source and properties of the most common indicators. Since the book is evidently primarily written for the beginning student, the theory of indicators is confined to a seven page chapter. The volume is then further divided into sections on acidimetry and alkalimetry, oxidation and reduction, precipitation methods, and some applications of these methods.

Sets of problems follow each of the main sections of the book. Ample illustrations are given of the various types of reactions. Almost all equations, however, are presented from a molecular point of view; no attempt is made to give ionic reactions. Special determinations intended for pharmaceutical students are indicated with Latin titles in parenthesis; some of the more difficult determinations with potassium permanganate, iodine and some others are set aside for "degree" and "advanced" students. The uses of potassium iodate and titanous chloride, as well as of each of the common oxidizing agents, are detailed in separate chapters. Finally, a brief chapter is devoted to explanation of volumetric processes in the estimation of two or more substances in a mixture or solution. Laboratory directions, especially for the beginner, are for the most part written into the text in the same type as explanatory material and aid in combining theory with practice, a procedure often neglected by students. Much care is taken to indicate clearly the stoichiometric relations involved between the reagent solution and the end product sought. In this manner the text also serves as a good reference work for the beginning student.

Papers of Charles V. Chapin, M.D.: A Review of Public Health Realities. Selected by Frederic P. Gorham, A.M., Sc.D. Edited by Clarence L. Scamman, M.D. With a foreword by Haven Emerson, M.D. Cloth. Price, \$1.50. Pp. 244. New York: Commonwealth Fund; London: Oxford University Press, 1934.

The collected papers of Dr. Charles V. Chapin will be recommended to every one who is interested in public health. Dr. Chapin, for many years health officer of Providence, R. I., has contributed some of the most important thoughts to modern public health. It was he who made the first comprehensive survey of public health activities of state government under the direction of the Council on Health and Public Instruction of the American Medical Association in 1915. On this preliminary work has been built much of the modern movement for appraisal of public health work. It was Dr. Chapin who early pointed out wasteful public health activities as opposed to effective lines of public health work. It was Dr. Chapin who pointed the finger of scorn at the "fetish of disinfection" and distinguished between justifiable measures and unjustifiable measures for the spread of infectious diseases. It was under his direction that the city of Providence not only maintained but utilized with telling effect the longest continuous record of vital statistics available from any American city. The collection published under this title is a representative selection. The book is illustrated with a picture of Dr. Chapin. It should have a place in the library of every public health worker. Physicians will find it intensely interesting and stimulating, especially in view of the growing interest of the profession in preventive medicine. The book contains among other features a complete bibliography of Dr. Chapin's most important contributions along the line of public health.

Modern Treatment in General Practice. Edited by Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E. Cloth. Price, \$4. Pp. 426, with illustrations. Baltimore: William Wood & Company, 1934.

These articles were written by specialists for the general practitioner. They were first published in the *Medical Press and Circular*, some as individual articles and others as symposiums. The authors of these articles generally are well known members of the profession in England. There was no attempt apparently to cover the entire field of medicine, and the subjects discussed, aside from those in the symposium, do not have any direct relation to one another. Some of the subjects discussed are acute circulatory failure, diabetic coma, blood transfusion, migraine, insomnia, chronic hoarseness, anemias and pyorrhea. One of the articles on the spa facilities in England opens with the statement that "if the value of spa treatment in the cure or prevention of disease were sufficiently well known, many sudden deaths and many years of suffering and crippleddom might be prevented, and many useful lives prolonged in happy content, and our spas would be overcrowded."

If such is the case, it would seem to be the duty of those who are expert and widely experienced in spa treatment to present evidence that will convince the profession quite generally of the accuracy of the foregoing statement.

Epidemic Myalgia: Bornholm Disease. By Ejnar Sylvest, M.D. With a foreword by Dr. Th. Madsen, Director of the Danish State Serum Institut, Copenhagen. Translated from Danish by Hans Andersen, M.D. Paper. Price, 8 Danish crowns; 7/6. Pp. 155. Copenhagen: Levin & Munksgaard; London: Humphrey Milford, Oxford University Press, 1934.

The original Danish edition of this monograph was discussed in the editorial columns of THE JOURNAL, February 10, under the title of epidemic myalgia, or pleurodynia. The editorial summary gives references to the reports of the outbreaks of the disease in the United States. Probably the disease is more frequent than is now realized. The translation into English of Sylvest's excellent monograph will be of great help in spreading the knowledge of epidemic myalgia, also called in Danish literature Bornholm disease on account of the great many cases occurring in the Danish island Bornholm, where Sylvest, a practicing physician, made his valuable observations. Bornholm is not the place, however, where the disease was recognized first.

Acute Intestinal Obstruction. By Monroe A. McIver, M.D., Surgeon-in-Chief, Mary Imogene Bassett Hospital, Cooperstown, N. Y. Cloth. Price, \$7.50. Pp. 430, with 62 illustrations. New York: Paul B. Hoeber, Inc., 1934.

This book thoroughly covers all phases of acute intestinal obstruction. The author has concentrated particularly on its clinical aspects. Approximately a sixth of the book is given over to a discussion and evaluation of experimental methods used in the study of intestinal obstruction. References made to important contributions in other studies of the disease and an adequate bibliography are presented at the end of each chapter. The book is well illustrated by reproductions from the original articles, to which frequent reference is made. Most of the illustrated cases used by the author were taken from the records of the Massachusetts General Hospital. The book is readable, and the author's knowledge of the disease, as evidenced by numerous contributions to the literature on intestinal obstruction before the publication of the book, makes it of exceptional value.

Medicolegal

Malpractice: Limitation of Actions; Concealment of Right of Action.—In June 1929 the defendant-dentist extracted ten of the plaintiff's teeth and prepared a denture. About three months later the defendant, attributing the pain of which the plaintiff complained to the fit of the denture, filed a small portion of it, administered a drug to alleviate the pain, and replaced the denture. On three other occasions, at intervals of about three months, the plaintiff returned to the defendant with the same complaint and the defendant each time followed the procedure just noted. Finally, at the suggestion of the defendant, the plaintiff, in August 1930, consulted another dentist, who discovered that three broken roots were embedded in the plaintiff's jaw bone and removed them. The pain disappeared. In May 1931 the plaintiff sued the defendant-dentist for malpractice and obtained judgment. The dentist then appealed to the court of appeals of Louisiana, Orleans.

The defendant contended that the Louisiana statute which requires tort actions to be instituted within one year from the accrual of the cause of action barred the plaintiff's suit. The statute referred to by the defendant [Civil Code, art. 3537], said the court, normally runs from the day on which the damage was sustained. An exception is recognized, however, in cases in which the plaintiff, through some act of the defendant, is kept in ignorance of the fact that damage has been done. The evidence here shows that for about fourteen months immediately following the extractions the defendant attempted to alleviate the pain from which the plaintiff was suffering. During this time the plaintiff did not know that roots were still embedded in his jaw bone and that they were the cause of the pain. Under such circumstances the statute did not commence to run until the plaintiff discovered the cause of his injury. So long

as the plaintiff continued to rely on the professional advice of the defendant and so long as the defendant continued to assure the plaintiff that the pain was being caused by the denture, there was no obligation on the part of the plaintiff to seek redress in the courts. It would be inequitable to permit a physician or dentist, who discovers that he has negligently injured his patient and continues to treat the patient, concealing the true condition until the action is barred, to plead then that the action is brought too late. It is immaterial whether the physician or dentist discovers the mistake and intentionally conceals it or negligently fails to discover it. The important factor is that through reliance on the physician's or dentist's care the patient has not discovered that the injury which he has sustained resulted from the fault of the physician or dentist.

The court of appeals could find no error and the judgment in favor of the plaintiff was accordingly affirmed.—*Perrin v. Rodriguez (La.)*, 153 So. 555.

Compensation of Physicians: Liability of Patient for Consultant's Fee; Creation of an Account Stated.—On the advice of his family physician, the defendant engaged Dr. H. G. Tobey to treat his son, who was suffering from mastoiditis. Dr. Tobey decided that an operation was necessary and suggested to the family physician that Dr. G. L. Tobey Jr. be engaged to operate. At the request of the family physician, Dr. G. L. Tobey Jr. did operate. On the failure of the defendant to pay for the services rendered, Drs. H. G. and G. L. Tobey Jr. brought suit for their fees. The defendant claimed that he neither engaged Dr. G. L. Tobey Jr. to render any medical or surgical services nor consented to his operating. He asserted that he engaged Dr. H. G. Tobey.

It is inconceivable, said the supreme court, Columbia county, New York, that the defendant did not know what physician was to operate on his son or that he had no knowledge as to who was treating and caring for his son during convalescence. Ordinary paternal interest, observed the court, would have compelled a father to ascertain these facts. Even had the services been performed without the consent or knowledge of the father, he would still be liable. In so holding, the court quoted as follows from *In Matter of Sherman's Estate*, 6 Pa. Co. Ct. Rep. 225, in which a patient was attended by a physician who subsequently, and without the patient's consent or knowledge, called another physician in consultation:

If the right in the consulting physician to compensation for this service is without legal merit, then the law is a reproach to conscience. That it [this question] has not been passed upon hitherto, means nothing; or rather, it means that it has never been questioned, any more than the right of the physician to charge his patient with the drugs he has purchased, or the nurse he has hired for him, when drugs and nursing were indispensable to his recovery.

As to the value of the plaintiffs' services, the court thought there had been an account stated. The defendant had admitted, in letters to "Dr. Tobey," that he had received a bill from a collection agency and that the sum stated therein was justly due and owing. He had made a payment on account with a promise to pay the bill in full. Where an account is rendered, said the court, the person receiving it is bound to examine it, and, if he admits it to be correct, it becomes an account stated and binding on both parties. It is conclusive unless fraud and mistake or other equitable considerations are shown which make its enforcement improper.

The court accordingly entered a judgment in favor of the plaintiff physicians.—*Tobey v. Nelson (N. Y.)*, 270 N. Y. S. 201.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

28: 473-628 (Oct.) 1934

- Endometrial Findings in Functional Menstrual Disorders. B. M. Anspach and J. Hoffman, Philadelphia.—p. 473.
Further Studies on Pelvic Architecture. W. E. Caldwell, H. C. Moley and D. A. D'Esopo, New York.—p. 482.
*New Measurement (Clinical) for Estimating Depth of True Pelvis: Preliminary Communication. W. Schuman, Baltimore.—p. 497.
*Survey of One Thousand Gonococcus Complement Fixation Tests Performed with Serum of Female Patients in an Outpatient Clinic. W. M. Brunet and B. S. Levine, Chicago.—p. 501.
Treatment of Trichomonas Vaginalis Vaginitis with Sodium Perborate and Quinine. I. W. Kahn, New York.—p. 511.
Treatment of Diseases of Cervix by Electrosurgical Unit, with Especial Reference to Cervicitis. M. L. Stadium, New Orleans.—p. 514.
Cancer and Prolapse of Uterus. F. V. Emmert and J. B. Taussig, St. Louis.—p. 521.
Kidney Function in Pregnancy: III. Water Diuresis in Toxemias of Pregnancy. Mary A. McManus, Gertrude A. Riley and J. C. Janney, Boston.—p. 524.
*Sedimentation Rate and Schilling Index in Pregnancy. R. J. Griffin, Philadelphia.—p. 532.
Macrocytic Hyperchromic Anemia in Pregnancy: Report of Case and Review of Literature. W. E. Studdiford, New York.—p. 539.
Relation of Anemia of Pregnancy to Hydremia and Its Treatment with Aqueous Equine Liver Extract and Glycerated Iron. O. Richter, A. E. Meyer and J. P. Bennett, Chicago.—p. 543.
Study of Seventy-Nine Patients Delivered by Litzko Extraperitoneal Cesarean Section. H. T. Burns, New York.—p. 552.
Analysis of One Hundred and Fifty-Seven Cases of Cesarean Section. G. A. Palmer, Akron, Ohio.—p. 557.
Pregnancy Complicated by Fibroids. J. R. Eisaman, Pittsburgh.—p. 561.
Accidental Injection of Iodized Oil into Uterine Veins. S. R. Meaker, Boston.—p. 568.
Embedding of Ovary in Tubal Pregnancy: Review. H. C. Falk, New York.—p. 572.
Effect of Shape of Pregnant Uterus on Mechanism of Labor. J. M. Laferty, Philadelphia.—p. 582.
Another Method of Anesthesia in Obstetrics. C. W. Schumacher, St. Louis.—p. 587.
Bleeding Time and Coagulation Time in the New-Born. M. Weiner and C. E. Bailey, Denver.—p. 593.
Granulosa Cell Tumor of Ovary in Child with Precocity. P. B. Bland and L. Goldstein, Philadelphia.—p. 596.
Krukenberg Tumor of Ovaries. A. Saccone and Sarah Gordon, New York.—p. 601.
Enormous Ovarian Cyst. W. F. Gemmill, York, Pa.—p. 603.
Practical Obstetric Manikin. J. B. Jacobs, Washington, D. C.—p. 605.
Combined Inlet and Outlet Pelvimeter. S. Hanson, Stockton, Calif.—p. 608.
Postpartum Paralysis: Report of Unusual Case. A. Cline, Dayton, Ohio.—p. 611.
Bicornate Uterus with Pregnancy in Each Horn. A. B. Barrett, Nashville, Tenn.—p. 612.
Simultaneous Gangrenous Twisted Ovarian Cyst and Acute Gangrenous Appendicitis. L. P. Kasman, Brooklyn.—p. 614.

Measurement of Depth of True Pelvis.—Schuman calls attention to the use of a new external measurement, based on the suggestions of Caldwell and Moley, and intended to estimate the depth of the true pelvis. The perpendicular distance from the tuberosity of the ischium to the iliopectineal line is measured easily by using the ordinary pelvimeter. It should be taken immediately after the intertuberous diameter has been measured, and, with one end of the pelvimeter still on the tuberosity, the other end is swung round until at a point on the upper border of the superior ramus of the pubis directly perpendicular to the tuberosity. The author has found that this distance averages 11.5 cm. Allowance must be made for pubic and gluteal fat; in the patient of normal build, 1 cm. should be allowed for soft parts, and in obese patients, 2 cm. He calls this diameter the "right or left pubotuberous."

Gonococcus Complement Fixation Tests.—Brunet and Levine performed routine gonococcus complement fixation tests

with the blood serum of 1,000 female patients in order to establish with the aid of clinical study the practical value of this laboratory procedure. They conclude that in routine clinical work gonococcus complement fixation results should be considered specific only after certain factors have been taken into consideration. In the early stages of a suspected new infection, the persistence of a positive reaction, regardless of its intensity, is of importance and points to the specificity of the reaction. The fact that a large proportion of the cases known to have gonococcal activity give negative results is due entirely to the use of a strongly lytic complement unit, which renders negative otherwise weakly positive results. The method by which gonococcus antigen is at present prepared generally makes the use of a high complement unit imperative. Positive complement fixation results are obtained rarely in the instance of old cured patients, for the gonococcus antibody persists only from one to six weeks following the disappearance of the organisms. Therefore in the absence of a seropositive syphilis, a persistently positive gonococcus complement fixation test establishes active gonorrhea. If a new infection is excluded definitely, the existence of a chronic activity is diagnosed. Complicated cases of gonococcal infection in the female do not react any more strongly than do simple infections, except so far as they are, as a rule, of longer standing. The time factor influences the reaction. In cases of salpingitis, especially of the chronic type, complement fixation offers possibly a means for the differentiation of gonococcal from nongonococcal salpingitis. To lessen the frequency of the occurrence of nonspecific results, and possibly to eliminate them, a complement dose of high lytic potency should be used, as was suggested by Kolmer. With such a procedure of gonococcus complement fixation many of the early and weak reactions are rendered negative, but the procedure as a whole is placed on a safe level of reactivity.

Sedimentation Rate in Pregnancy.—Griffin states that the sedimentation rate of the erythrocytes increases progressively with each month of normal pregnancy. The rate in the ninth month is approximately five times that given for the average normal nonpregnant woman. There is a return practically to normal by the fourth week after delivery. A group of patients with toxic symptoms showed more rapid sedimentation rates than the average for normal pregnant women in the same month of gestation. The average readings were from 10 to 15 points higher by the percentage method of recording. There is a mild regenerative type of activity of the bone marrow during pregnancy, as shown by the Schilling index.

American Journal of Physiology, Baltimore

109: 593-738 (Oct. 1) 1934

- Reflex Activity Within Sympathetic Nervous System. H. G. Schwartz, Boston.—p. 593.
Differentiation Between Photosensitized and Ultraviolet Effects on Frogs. H. F. Blum and C. R. Speakman, Berkeley, Calif.—p. 605.
Passage of Fluid and Certain Dissolved Substances Through Intestinal Mucosa as Influenced by Changes in Hydrostatic Pressure. E. S. Nasset and A. A. Parry, Rochester, N. Y.—p. 614.
Respiratory Adaptation to Anoxemia. A. Hurtado, N. Kaltreider and W. S. McCann, Rochester, N. Y.—p. 626.
Effect of Hydrogen Ion Concentration on Absorption of Sugars. E. Gellhorn and L. F. Moldavsky, Chicago.—p. 638.
Effect of Fluorine on Calcium and Phosphorus Metabolism in Albino Rats. Edith M. Lantz and Margaret Cammack Smith, Tucson, Ariz.—p. 645.
Interactions of Gonad Stimulating Hormones in Ovarian Development. H. L. Fevold and F. L. Hisaw, Madison, Wis.—p. 655.
Cardiac Output in Man: Adaptation of Katharometer for Rapid Determination of Ethyl Iodide in Estimations of Cardiac Output by Ethyl Iodide Method: Study of Effect of Posture on Cardiac Output and Other Circulatory and Respiratory Measurements. J. S. Donal Jr., C. J. Gamble and R. Shaw, Philadelphia.—p. 666.
Measurement of Oxygen Consumption of Immature Rats. J. E. Davis and A. B. Hastings, Chicago.—p. 683.
Continuous Measurement of Velocity of Venous Blood Flow in Arm During Exercise and Change of Posture. S. H. Proger and L. Dexter, Boston.—p. 688.
Interaction of Cortical and Labyrinthine Impulses to Ocular Muscular Movements. E. A. Spiegel and L. Aronson, Philadelphia.—p. 693.
Persistence of Cochlear Electrical Disturbance on Auditory Stimulation in Presence of Cochlear Ganglion Degeneration. J. Guttman and S. E. Barrera, New York.—p. 704.
Respiratory Effect of Prolonged Anoxemia in Normal Dogs Before and After Denervation of Carotid Sinuses. C. L. Gemmill, E. M. K. Geiling and D. L. Reeves, Baltimore.—p. 709.

American Journal of Tropical Medicine, Baltimore

14: 363-496 (Sept.) 1934

- Length of Life and Rate of Loss of Hookworms, *Ancylostoma Duodenale* and *Necator Americanus*. J. F. Kendrick, New York.—p. 363.
- Third Year's Observation in Panama, with Especial Reference to Control with Atabrine. W. H. W. Komp and H. C. Clark, Panama, Republic of Panama.—p. 381.
- Flight Range of Anopheles in the Philippines: Second Experiment with Stained Mosquitoes. P. F. Russell, New York, and D. Santiago, Manila, P. I.—p. 407.
- Feeding Habits of Some Venezuelan Anopheles. Rolla B. Hill, Paris, France.—p. 425.
- *Susceptibility of Red Cells to Malaria: Preliminary Note. P. Eaton, Jacksonville, Fla.—p. 431.
- Retention of Endamoeba Histolytica Cysts Under Fingernails. J. Andrews, Baltimore.—p. 439.
- Further Studies on Effect of Amebicidal Drugs on Tissue Culture Cells (Arsenious Trithio Salicylic Acid, Carbarsone, Kurchi, Bismuth Iodide, Proparsamide, Vioform). M. J. Hogue, Philadelphia.—p. 443.
- Some Observations on Effects of Tropical Climate Under Experimental Conditions. E. B. McKinley, Washington, D. C., and Trinita Rivera, San Juan, Puerto Rico.—p. 457.
- Anthelmintic Properties of Certain Alkyl Phenols. P. D. Lamson, H. W. Brown and P. D. Harwood, Nashville, Tenn.—p. 467.
- Relapsing Fever in Texas: IV. *Ornithodoros Turicata* Duges: Vector of Disease. H. A. Kemp, W. H. Moursund and H. E. Wright, Dallas, Texas.—p. 479.
- Improved Technique for Mounting Mosquito Larvae. J. F. Buckner, Panama, Republic of Panama.—p. 489.

Susceptibility of Red Cells to Malaria.—Eaton proposes the following hypothesis: The red cell is susceptible to infection with malaria only when it is in the reticulocyte stage. Schizonts that do not infect promptly are phagocytized. Anything that increases the actual number of reticulocytes favors the progress of the disease. The rate of production of schizonts follows a fairly regular curve, which can be worked out easily. The rate of production of red cells follows a curve that is not worked out so easily. If a crest in the schizont curve meets a crest in the red cell curve, the conditions for extension of the disease are present. If on the other hand a crest in the schizont curve meets a trough in the red cell curve, the conditions for regression or even spontaneous cure of the disease are present. The conditions are subject to such enormous variation that they probably would defy mathematical analysis.

Archives of Internal Medicine, Chicago

54: 483-658 (Oct.) 1934

- Acute Diffuse Glomerular Nephritis: Study of Ninety-Four Cases, with Especial Consideration of Stage of Transition into Chronic Form. F. D. Murphy, J. Grill and Gail F. Moxon, Milwaukee.—p. 483.
- *Effect of Cardiac Infarction on Tolerance of Dogs to Digitalis: Experimental Study. S. Bellet, C. G. Johnston and A. Schechter, Philadelphia.—p. 509.
- Relationship Between Oxygen Consumption and Nitrogen Metabolism: IV. Experiments on Animals. C. W. Baldrige, Iowa City.—p. 517.
- Hepatic Function: I. Noncalculous and Calculous Cholecystitis. A. Cantarow, Philadelphia.—p. 540.
- *Putrid Empyema, with Especial Reference to Anaerobic Streptococci. A. M. Fisher, Baltimore, and T. J. Abernethy, New York.—p. 552.
- Unilateral and Bilateral Resection of Major and Minor Splanchnic Nerves: Its Effects in Cases of Essential Hypertension. W. M. Craig and G. E. Brown, Rochester, Minn.—p. 577.
- Allergic Death: VII. Protracted Shock. G. L. Waldbott, Detroit.—p. 597.
- *Lymphedema of Extremities: Classification, Etiology and Differential Diagnosis: Study of Three Hundred Cases. E. V. Allen, Rochester, Minn.—p. 606.
- *Carcinomatous Endarteritis of Pulmonary Vessels Resulting in Failure of Right Ventricle. E. B. Greenspan, New York.—p. 625.
- Acute Essential Hypertension Precipitated by Mediastinal Abscess. C. A. McKinlay, T. J. Kinsella and R. B. Radl, Minneapolis.—p. 645.

Cardiac Infarction and Tolerance of Dogs to Digitalis.—Bellet and his associates determined the tolerance of dogs to digitalis at various intervals after ligation of the coronary artery: half an hour after ligation of the coronary artery, four days later (during the stage of acute and subacute infarction) and from six weeks to six months later (during the stage of chronic infarction). The tolerance of these animals was compared with that of animals in a normal control series. Dogs standardized within half an hour after ligation showed no diminution in tolerance to digitalis as compared with those in a control group. During the stage from acute to subacute infarction there was a diminished tolerance to digitalis, which averaged from about 20 to 30 per cent below the average of the figures for the normal controls. In the animals with chronic infarction, in which the area of infarction was considerably smaller than in the acute or subacute stage (standardized from

six weeks to six months after ligation of the coronary artery), the tolerance was less than that of the normal animals but higher than that of the group with the subacute infarctions. The diminution in tolerance after ligation of the coronary artery depends apparently on the presence of infarction and probably also on the extent and stage of the infarcted area. The observations lend support to the clinical impression that digitalis in massive doses may be dangerous during the stage of subacute and chronic infarction and that it should be used with caution in such cases.

Empyema and Anaerobic Streptococci.—Fisher and Abernethy report seven cases of severe purulent infections, four of which presented putrid empyema, two pulmonary abscess and one multiple hepatic abscesses. In the four cases the empyema developed suddenly and was not a complication of a preceding chronic pulmonary infection. The studies indicated that the pleural infection was associated with intrapulmonary infection. This relationship was proved at necropsy in two of the cases. Anaerobic streptococci were present in each case, although the associated organism, which constituted the flora, was not consistently of one type. That the method of laboratory cultivation is of special importance is demonstrated by the fact that streptococci were recovered chiefly under anaerobic conditions, when the usual aerobic methods failed. Of the four strains of streptococci, two were viridans, one non-hemolytic and one hemolytic. In biologic and cultural characteristics they resemble in some ways the *Streptococcus putridus* of Schottmüller and the *Streptococcus intermedius* of Prévot. The latter organism was found in pulmonary conditions, but both these types are described as strict anaerobes, whereas those in the authors' cases were facultative anaerobes. Their studies indicate that the anaerobic streptococcus was the chief etiologic agent in the four cases of putrid empyema, in one of which it invaded the blood stream, produced multiple metastatic abscesses and endocarditis and was obviously the cause of death. Surgical drainage seems to offer the best chance of cure. Intravenous injections of nearsphenamine are probably of value in cases in which spirochetes are found, especially if they are in the sputum also. Extensive cellulitis of the thoracic wall, with the formation of gas, may follow surgical drainage or aspiration, owing to the leakage of the organisms along the path of the needle or the incision. A therapeutic procedure that may offer additional help in dealing with such effusions is the replacement of the empyema by air. Anaerobic streptococci were found to be the predominant organisms in the two cases of pulmonary abscess in which cultures were made directly from the pus at operation. In the case of pyophlebitis with multiple hepatic abscesses due to an anaerobic streptococcus an attempt was made to identify the streptococci with the various types reported in the literature. They do not fulfil completely the characteristics of any one group. Cultures of one strain were capable of producing empyema in rabbits when injected intrapleurally. Other strains gave varying results under similar conditions. Evidence is presented to indicate that these streptococci may often be pathogenic for man and for animals.

Lymphedema of Extremities.—Allen believes that the confusion regarding lymphedema is due to its relative rarity, to an inadequate knowledge of its etiology, bacteriology and pathology, and to the absence of a comprehensive classification. He feels that the pertinent data from the records of 300 cases observed at the Mayo Clinic offer an opportunity to fill many of the gaps. He reviews the important facts regarding lymph vessels and lymph, presents a classification of lymphedema, gives descriptions of the various types of lymphedema, discusses the mechanism of production, and considers the differential diagnosis of lymphatic edema and other types of edema. He points out some of the gaps in the knowledge of lymphedema in order to stress the need for further investigation and in order to explain why it is impossible to present a completed picture of the disease. He feels that the shortcomings noted should encourage rather than discourage the investigator of lymphedema; the problems that remain unanswered are so important that any progress will be worthy of note.

Carcinomatous Endarteritis of Pulmonary Vessels Resulting in Failure of Right Ventricle.—Greenspan presents four cases of carcinomatous lymphangitis. Three were secondary to scirrhous adenocarcinoma of the stomach and one

to adenocarcinoma of the sigmoid. In all four, the physical signs of the pulmonary involvement were inconspicuous and yet the clinical picture was characterized by an initial cough and by rapidly increasing dyspnea and deepening cyanosis. Two of the patients died with evidences of rapidly progressive failure of the right side of the heart. The roentgen diagnosis of carcinomatous lymphangitis of the lungs was confirmed by necropsy in two cases. In the three cases of scirrhous adenocarcinoma of the stomach, necropsy revealed a widespread obliterative endarteritis of the smaller pulmonary vessels. In two of these cases the vascular changes were sufficiently extensive to explain the failure of the right side of the heart. This obliterative endarteritis is due mainly to the influence of the plugging of the neighboring perivascular lymphatic channels by carcinoma, so-called carcinomatous lymphangitis. The vascular occlusions result to a minor degree from carcinoma cell emboli that have entered the pulmonary circulation by way of the thoracic duct and the superior vena cava. A few carcinoma cell emboli were found that had accumulated blood platelet thrombi in their passage through the blood stream and subsequently had undergone rapid organization after they had come to lodge in small branches of the pulmonary arteries. In cases of right ventricular cardiac failure presenting no significant pulmonary or cardiac involvement, the possibility of a diffuse secondary carcinomatous lymphangitis of the lungs with accompanying obliterative endarteritis of the pulmonary vessels should be considered.

Archives of Neurology and Psychiatry, Chicago

32: 681-914 (Oct.) 1934

- Postoperative States of Excitement. W. Muncie, Baltimore.—p. 681.
*Heat Production and Heat Control in Schizophrenic Reaction. D. E. Cameron, Brandon, Manit.—p. 704.
Cardiovascular System in Schizophrenia Studied by the Schneider Method. J. M. Linton, M. H. Hamelink and R. G. Hoskins, Worcester, Mass.—p. 712.
Mental State of the Epileptic Patient. E. M. Bridge, Baltimore.—p. 723.
*Facial and Meningeal Angiomatosis Associated with Calcifications of Brain Cortex: Clinical and Anatomopathologic Contribution. K. H. Krabbe, Copenhagen, Denmark.—p. 737.
*Changes in Cutaneous Localization in Pedicle Flap. Beverly Douglas and L. H. Lanier, Nashville, Tenn.—p. 756.
Histopathology of External Geniculate Body. A. T. Steegmann, Cleveland.—p. 763.
Experimental Lesions of Pyramidal Tract. C. Marshall, New Haven, Conn.—p. 778.

Heat in Schizophrenic Reaction.—Cameron bases the following observations on approximately 10,000 temperature readings in fifty schizophrenic and fifty control subjects: 1. The internal temperature in the schizophrenic group was throughout the day slightly lower than that in the nonschizophrenic psychotic group, both groups being at room temperature. 2. There is evidence to show that at room temperature the mechanism of heat control in the schizophrenic group is more active than in the nonschizophrenic group. 3. Observations on exposure to extreme cold suggest that the mechanism of heat control acts more sharply and more strongly in the schizophrenic than in the nonschizophrenic group. 4. Exposure to extreme heat reveals no weakness in the mechanism of heat control in the schizophrenic group. 5. The response to the ingestion of food is more marked but less well sustained in the schizophrenic than in the nonschizophrenic group. 6. These observations are not consistently true for the individual subject, but only for the group. It is doubtful whether it would be wise to accept the suggestion afforded by any one of the experiments alone, but the fact that all tend to reveal the same condition, together with the large number of observations, makes the author feel justified in according a fair degree of probability to the contentions that (1) heat production in the schizophrenic is lower than in the nonschizophrenic group and (2) heat control in the schizophrenic group is more active than in the nonschizophrenic group, this being apparently in the nature of a compensation for the decreased output of heat.

Facial and Meningeal Angiomatosis Associated with Calcifications of Brain Cortex.—Krabbe reports six cases that present a characteristic clinical picture, nearly all showing a combination of epileptic fits and angiomas of the face. To these, the most prominent symptoms, may be added, as frequent symptoms, mental debility and a slight spastic hemi-

plegia on the side opposite to the angioma of the face. Furthermore, the patients are sometimes rather fat. If roentgen examination is made, a characteristic shadow appears inside the skull: a distinct sinuous shadow, presenting exactly the shape of the surface of the brain, showing both gyri and sulci, often with double contours. Generally, this shadow is localized in the occipital lobe. Histologic examination of the brain shows that the shadow is due to calcification of the outer layers of the cortex, not of the pia mater. This presents in some parts an abundant vascularization but not a true angioma. The calcification consists of numerous small, mostly microscopic, granules of lime salts, localized in the second and third layers of the cortex. In these layers the nerve tissue is in great part destroyed and replaced by fibrillar neuroglia. In the case described the occipital lobe, in which the processes were localized, had shrunk and was sclerotic. Otherwise the brain seemed fairly normal; only in places were the same modifications seen to a slight degree. The changes in the brain probably are not secondary to angiomas of the pia mater. The syndrome must be related to a more generalized malformation of the organism (as in tubercous sclerosis), consisting in the formation of angiomas of the face, slight angiomatous modifications of the pia mater, aplasia of the occipital lobe of the brain with (probably secondary) sclerosis and calcification of the aplastic part. The malformations probably originate in fetal life. The calcifications are related not to a tumor but to a congenital defect and malformation. Hence, operation is not indicated. Roentgen treatment may perhaps be administered to please the patient. No striking results are to be expected from treatment, however, since regeneration of aplastic brain tissue is not possible. Symptomatic treatment for the epileptic fits and mental hygienic treatment for the mental defects must be considered as the only therapy.

Cutaneous Localization in Pedicle Flap.—Douglas and Lanier cite a case in which a pedicle flap from the right nasolabial region was substituted for the right four fifths of the lower lip. The dissection of the flap resulted in denervation of the outer fourth (roughly) of its free end, but the original nerve supply entering from the pedicle was left intact and sensations from this sensitive portion were referred mainly to the upper lip and cheek. Results of localization tests carried out on the sensitive part of the flap revealed a progressive shift of "local sign" from the upper lip and cheek to the lower lip. The development of reorientation required several months. A transitional stage was observed, involving considerable confusion and a tendency to localize sensations in an area intermediate between the old and the new locations of the flap. This tendency was interpreted as a resolution of the conflict arising between the old and the new orientation habits. No reference was observed on return of sensitivity to the denervated portion of the pedicled flap. The ability to localize sensations within this area began to return within six weeks and was apparently coincident with the ingress of nerve fibers from the edges of the chin and lip to which the flap was attached. The results indicate that "local sign" depends mainly on habit formation, involving the association of cutaneous impulses with the kinesthetic impulses.

California and Western Medicine, San Francisco

41: 217-288 (Oct.) 1934

- Chronic Arthritis: Its Treatment. R. L. Cecil, New York.—p. 217.
Acute Intestinal Obstruction. L. Brooks, San Francisco.—p. 219.
Burns: Their Treatment. D. Weaver, Oakland.—p. 222.
Hypertension: Role of Infections Therein: Part II. J. T. King, Jr., Baltimore.—p. 226.
Roentgenotherapy of Superficial Malignancies. H. J. Ullmann, Santa Barbara.—p. 230.
Undulant Fever. J. C. Ruddock, Los Angeles.—p. 233.
Chronic Cicatrizing Enteritis. H. G. Bell, San Francisco.—p. 239.
Induction of Labor: Using Quinine, Castor Oil, Rupture of Membranes and Nasal Pituirrin. O. M. Holmes, San Mateo.—p. 241.
Lobar Pneumonia: Attempt to Evaluate Various Methods of Treatment. W. E. R. Schottstaedt, Fresno.—p. 244.
Some Contributions by Animals to Human Health. A. C. Ivy, Chicago.—p. 247.
Specific Gravity in Spinal Anesthesia. E. M. Bingham, Riverside.—p. 251.
Problems of Obesity. A. E. Koehler, Santa Barbara.—p. 253.
Craniofacial Injuries: Their Management. C. W. Rand, Los Angeles.—p. 257.
Compulsory Health Insurance: Part VII. F. L. Hoffman, Philadelphia.—p. 262.

Illinois Medical Journal, Chicago

66: 301-400 (Oct.) 1934

- Ten Years of Progress in Treatment of Fractures. F. J. Cotton, Boston—p. 317.
- Fractures of Elbow. S. H. Easton, Peoria—p. 324.
- Obstetrics Is a Surgical Specialty. Four Illustrative Case Reports J. J. Gill, Chicago—p. 329.
- *Treatment of Verrucae by Local Injections of Bismuth. H. Shellow, Chicago—p. 332.
- Gastro Intestinal Obstruction Simulating Malignancy F. Deneen, Bloomington—p. 336.
- Present Typhoid Fever Situation in Illinois B. K. Richardson, Springfield—p. 340.
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- Pancreatic Dysfunction B. Markowitz, Bloomington—p. 380.
- Value of Roentgenology in Urinary Disorders of Infancy and Childhood. J. R. Vonachen, Peoria—p. 383.
- Value of Symptoms. R. F. Herndon, Springfield—p. 386.
- Bone Metastases from Malignant Conditions of Prostate: Roentgen Study of Various Types H. Olin, Chicago—p. 388.

Treatment of Verrucae by Bismuth Sodium Tartrate.

—Shellow employed an aqueous 15 per cent solution of bismuth sodium tartrate in the treatment of ninety-seven lesions of various types of verruca occurring in seventy-three patients. The skin about the lesion is prepared by washing with soap and water; then iodine and alcohol are applied. A fine hypodermic needle is used to pierce the skin just outside the zone of hyperkeratosis and directed downward and inward toward the base of the verruca at the most active point, the end of the needle remaining just above the corium. From a half to 2 minims (0.03 to 0.14 cc) of the bismuth sodium tartrate solution is injected, according to the size of the lesion. In from one to three days after the injection a dark hemorrhagic area appears, visible through the keratotic surface. This denotes that the drug has taken effect. In the markedly keratotic hard type of ordinary verruca vulgaris this phenomenon may not always be seen. In most cases, from one to three days after the first injection there has been either cessation of growth or a marked diminution of pain. The latter is the case so often accompanies the painful verruca. In the papillomatous type two to seven days. All papillomatous types decidedly after the first injection, and in the papillomatous types the surface becomes smoother. If within fifteen to twenty days following the appearance of the hemorrhagic top of the verruca has not come off or if it has not fallen out, the keratotic tissue may determine whether any activity is still present. In some instances, after a lapse of from fourteen to twenty days following the initial injection the removal of this keratotic center reveals an underlying normal appearing dermis. If after two weeks of further observation verrucous tissue is seen, the lesion may be reinjected. In ninety-seven lesions, most of them having been treated previously by other measures, eighty-nine were cured, five and three showed no improvement. Sixty-seven lesions of the painful palmar or plantar variety, and eighteen of the verruca vulgaris type occurring on the dorsum of the feet.

Journal of Bone and Joint Surgery, Boston

16: 761-1024 (Oct.) 1934

- Endothelial Myeloma: Analysis of Cases. W. C. Campbell, Memphis, Tenn.—p. 761.
- Coxa Plana and Related Conditions at the Hip A. B. Ferguson and M. B. Howorth, New York—p. 781.
- Discoid External Semilunar Cartilage. Cause of Internal Derangement of Knee Joint J. G. Finder, Iowa City—p. 804.
- Intrapelvic Protrusion of Acetabulum. C. Schaap, Arnhem, Holland—p. 811.
- Role of Bone Marrow and Endosteum in Bone Regeneration: Experimental Study of Bone Marrow and Endosteal Transplants. W. H. McGaw and M. Harbin, Cleveland—p. 816.
- Treatment of Fractures of Carpal Scaphoid R. Soto-Hall and K. O. Haldeman, San Francisco—p. 822.
- Autogenous Bone Grafting for Epiphysitis of Tibial Tubercle. D. M. Bosworth, New York—p. 829.
- *Tuberculous Rheumatism. Resumé. E. A. Brav, Philadelphia, and P. S. Hench, Rochester, Minn—p. 839.
- Posterior Luxations of Lumbosacral Joint. R. W. Johnson Jr., Baltimore—p. 867.
- Posterior Displacement of Fifth Lumbar Vertebra. A. D. Smith, New York—p. 877.
- Thoughts on Relief of Sciatic Pain. C. H. Heyman, Cleveland—p. 889.
- *New Attempt at Treatment of Chronic Osteomyelitis. E. J. Bozsan, New York—p. 895.
- Congenital Dislocation of Hip Stretched by A. B. Gill, T. E. Orr and P. N. Jepson, New York—p. 905.
- Arthritis. Treatment with Sulphur by Injection, Washington, D. C.—p. 905.
- Operative Treatment of Extreme Flexion of Hip. L. C. Waite, New York—p. 914.
- Large Bile Cyst. L. C. Waite, New York—p. 919.
- *New Treatment of Union or Non-Union of Fracture. L. M. L. M., New York—p. 925.
- Congenital Dislocation of Hip. L. M. L., New York—p. 925.
- Correction of Deformity. L. M. L., New York—p. 925.
- *New Operation for Fracture of Femur. L. M. L., New York—p. 925.
- Surgical Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Osteomyelitis of Femur. L. M. L., New York—p. 925.
- Acute Osteomyelitis of Femur. L. M. L., New York—p. 925.
- Giant Cell Tumor of Femur. L. M. L., New York—p. 925.
- Rupture of Femur. L. M. L., New York—p. 925.
- Method of Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Corrective Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Improved Method of Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Device for Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Splints for Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Osteitis of Femur. L. M. L., New York—p. 925.
- Prompt Treatment of Fracture of Femur. L. M. L., New York—p. 925.
- Attache Plaster for Fracture of Femur. L. M. L., New York—p. 925.
- Little Device for Treatment of Fracture of Femur. L. M. L., New York—p. 925.

Indiana State Medical Assn. Journal, Indianapolis

27: 425-504 (Oct. 1) 1934

- Granulocytopenia: Report of Two Cases. O. R. Spigler and J. F. Spigler, Terre Haute—p. 425.
- Salivary Calculus. S. Reiser, Indianapolis—p. 429.
- Hemorrhoidectomy Versus Office Treatments E. L. Cartwright, Fort Wayne—p. 431.
- Definition, Description and Logic in Medicine. J. K. Berman, Indianapolis—p. 434.
- Bedside Observations on Prognosis E. O. Asher, New Augusta—p. 438.

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experimental or laboratory evidence in its favor that is not highly controversial, and no consistent demonstration of any characteristic microscopic pathology. A statistical study of a series of 150 cases of acute rheumatic fever and 250 cases of chronic atrophic polyarthritis has revealed no significantly higher incidence of familial tuberculosis or associated visceral tuberculosis than that found in a group of 250 control cases. Of a series of seventy-five cases in which a diagnosis of chronic atrophic polyarthritis had been made and in which the pathologic characteristics of a single joint were determined by microscopic examination of tissue or inoculation of guinea-pigs, eight patients were found to be definitely tuberculous. In each of these the tuberculous identity of the joint was suspected prior to the examination of the tissue or inoculation of guinea-pigs, but the association with multiple arthritis was confusing.

Treatment of Chronic Osteomyelitis.—Bozsán believes that an area of aseptic bone necrosis anywhere in the skeletal system may be treated advantageously by connecting the necrotic segment with an adjacent living segment of bone by means of drill channels. He feels that the formulation of this working principle is fairly justified by the satisfactory results obtained after its application in cases of Legg-Calvé-Perthes disease, osteochondritis dissecans, Osgood-Schlatter disease, intracapsular fractures of the neck of the femur, and slipping and slipped upper femoral epiphyses; in all these conditions aseptic bone necrosis is the main pathologic feature. The spontaneous healing process of aseptic bone necrosis, brought about by any cause, is the substitution of living bone in the place of necrotic bone, effected by the slow penetration of tissue elements and capillaries of the adjacent living bone. The drilling of channels into the necrotic area presents nothing but the breaking of broad avenues to facilitate this invasion by new vessels. While attempting to compare the characteristic features of aseptic bone necrosis and necrosis in the wake of septic processes, such as suppurative osteomyelitis, the author has come to the conclusion that, in spite of the seemingly great discrepancies, in the last analysis no difference exists. The clinical and experimental observations of Bancroft on hematogenic osteomyelitis demonstrated that the substitution process is just as active in the recovery of these septic necroses as in the aseptic necroses. This circumstance, rather than the supposed attenuation of the infection, is the reason, in the author's opinion, for the good results obtained from the simple drill hole evacuation of chronic bone abscesses recommended by Brickner. Since the natural healing process in both aseptic and septic necrosis appeared to be analogous, it seemed possible that septic necrosis might respond favorably to the treatment that was found effective in aseptic necrosis. Therefore the author induced substitution and revitalization of necrotic areas of bone in chronic osteomyelitis by connecting these areas with living bone segments by means of saw cuts and drill channels. The procedure in the first two cases—observed one and three-fourths years and one year after operation, respectively—proved successful.

Operation for Delayed Union in Fractures.—Carter describes an operation for delayed union or nonunion in fractures which is based on the principle of drill holes proposed by Beck of Kiel. The procedure consists of boring a number of small holes through the fragment ends, across the line of fracture. This gives rise to a certain amount of hemorrhage, allows the penetration of new blood vessels and furnishes fresh bone pulp, thus creating a stimulus to new bone formation. The author has employed the method in five cases: one of fracture of the shaft of the femur, two of fracture of the tibia and two of fracture of the forearm. It is his opinion that, in those fracture cases with delayed union or nonunion for which no cause can be found which would indicate definitely some other form of treatment, the simplicity and harmlessness of this procedure warrant giving it a trial before resorting to open operation. When the drilling is properly done, the risk of infection is negligible and prolonged hospital confinement is unnecessary. If the treatment is successful, roentgenographic evidence of callus formation will be seen in from three to five weeks; if not, open operation can be performed then. The

only contraindication to the performance of the drilling is an open, infected fracture.

Treatment for Fracture of Olecranon.—Rombold presents a technic for suture of a fracture of the olecranon. The skin incision extends from 2 inches distal to the olecranon to 5 inches proximally, and it is curved either laterally or medially to avoid the olecranon. The skin and subcutaneous tissue are reflected widely, exposing the ulna, the fracture, the olecranon and the triceps tendon. The old clot is cleaned from the fracture. The shaft of the ulna is drilled one-half inch distal to the fracture and well in front of the posterior cortex. Two strips of triceps tendon one-fourth inch wide and 3 inches long are used for the suture of the fracture. The proximal ends, the edges and the muscle-apposed surfaces are freed, and their insertions at the lateral and medial surfaces of the olecranon are left intact. The lateral strip is passed through the drill hole from the lateral to the medial surface and the medial strip is passed from the medial to the lateral surface. They are then tied to each other and sutured through the knot after the fractured fragments have been fixed snugly in position. The wound is closed in layers. The arm is carried in a sling for a week to ten days. Use up to the point of pain is encouraged after four or five days. Four patients have been operated on with perfect functional results.

Journal of Urology, Baltimore

32: 321-416 (Oct.) 1934

Some Dysfunctions Caused by Neoplasm, Especially of Adrenal Gland. W. C. Quinby, Boston.—p. 321.

Effects on Upper Urinary Tract in Dogs, of an Incompetent Uretrovesical Valve. V. Vermooten and C. H. Nenswanger, New Haven, Conn.—p. 330.

Gonococcic Pyonephrosis: Report of Case with Review of Literature. C. A. W. Uhle, Philadelphia.—p. 335.

Cancer Mortality, Bladder, Kidney and Prostate 1917 to 1928. J. Duff, New York.—p. 346.

Distribution of Blood to Prostatic Urethra: Demonstration. H. C. Bumpus Jr., Pasadena, Calif., and W. Antopol, Bayonne, N. J.—p. 354.

Malignant Growths in Undescended Testicle: Review of Literature and Report of Two Cases. D. W. MacKenzie and M. Ratner, Montreal.—p. 359.

Calcified Hematocoele of Tunica Vaginalis Testicle, with Spontaneous Rupture: Case Report, Discussion of Diagnosis and Etiology. H. M. Weyrauch Jr., Philadelphia.—p. 370.

*Some Unusual Cases of Filariasis of Scrotum and Groin. H. H. Young, Baltimore.—p. 383.

Filariasis of Scrotum and Groin.—Young reports five cases, four of which are quite similar and one an ordinary case of chronic epididymitis, which occurred following cystoscopy. This patient came from the same locality in Colombia, South America, but presented entirely different lesions. In the first three cases and the fifth the disease started as a peritesticular or periepididymal disease. It was characterized by the ultimate formation of a dense mass of tissue, which in two cases has enveloped completely and compressed the epididymis without involving the tissues of the epididymis. The disease has traveled upward outside the spermatic cord more or less loosely attached to the external fascia of the cord, in some instances forming large globular masses and in others very fine lines, suggesting lymphatic canals with small, bead-like enlargements along the course of the canal. The inguinal glands were enlarged. Ordinary bacterial inflammation, tuberculosis, syphilis or malignant disease has not been observed. The pathologic process is characterized particularly by the deposit or growth of large numbers of round cells, which have ultimately gone on to the formation of a marked fibrous sheath or covering. The tunica vaginalis in some instances has been involved extensively with adhesions to the testicle, but the testicle itself has been free from disease, although compressed and distorted by the fibrous tissue in one case. The intra-scrotal cord produced by the disease has been characterized also by the presence of much vascularity, and round the walls of the blood vessels are numerous areas of round cell infiltration. There are spaces that may be lymph nodes, but they contain no material in the stained sections, and nothing suggesting either a large or a small worm or larvae, or detritus resulting from the presence of a dead worm, has been found. Nevertheless, it seems evident to the author that the disease is filarial in origin.

Illinois Medical Journal, Chicago

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- Value of Symptoms. R. F. Herndon, Springfield.—p. 386.
- Bone Metastases from Malignant Conditions of Prostate: Roentgen Study of Various Types. H. Olin, Chicago.—p. 388.

Treatment of Verrucae by Bismuth Sodium Tartrate.—Shellow employed an aqueous 15 per cent solution of bismuth sodium tartrate in the treatment of ninety-seven lesions of various types of verruca occurring in seventy-three patients. The skin about the lesion is prepared by washing with soap and water; then iodine and alcohol are applied. A fine hypodermic needle is used to pierce the skin just outside the zone of hyperkeratosis and directed downward and inward toward the base of the verruca at the most active point, the end of the needle remaining just above the corium. From a half to 2 minims (0.03 to 0.14 cc.) of the bismuth sodium tartrate solution is injected, according to the size of the lesion. In from one to three days after the injection a dark hemorrhagic area appears, visible through the keratotic surface. This denotes that the drug has taken effect. In the markedly keratotic hard type of ordinary verruca vulgaris this phenomenon may not always be seen. In most cases, from one to three days after the first injection there has been either a complete cessation or a marked diminution of pain. The peripheral redness that so often accompanies the painful verruca disappears in from two to seven days. All papillomatous lesions flatten out decidedly after the first injection, and in the plantar or palmar types the surface becomes smoother. If within seven to fourteen days following the appearance of the hemorrhagic center the top of the verruca has not come off or the central portion has not fallen out, the keratotic tissue may be removed to determine whether any activity is still present. In most instances, after a lapse of from fourteen to seventeen days following the initial injection the removal of this hemorrhagic keratotic center reveals an underlying normal appearing epidermis. If after two weeks of further observation an active verrucous tissue is seen, the lesion may be reinjected. Of the ninety-seven lesions, most of them having been treated previously by other measures, eighty-nine were cured, five improved and three showed no improvement. Sixty-seven lesions were of the painful palmar or plantar variety, and eighteen were of the verruca vulgaris type occurring on the dorsum of the hands or feet.

Indiana State Medical Assn. Journal, Indianapolis

27: 425-504 (Oct. 1) 1934

- Granulocytopenia: Report of Two Cases. O. R. Spigler and J. F. Spigler, Terre Haute.—p. 425.
- Salivary Calculus. S. Reister, Indianapolis.—p. 429.
- Hemorrhoidectomy Versus Office Treatments. E. L. Cartwright, Fort Wayne.—p. 431.
- Definition, Description and Logic in Medicine. J. K. Berman, Indianapolis.—p. 434.
- Bedside Observations on Prognosis. E. O. Asher, New Augusta.—p. 438.

Journal of Bone and Joint Surgery, Boston

16: 761-1024 (Oct.) 1934

- Endothelial Myeloma: Analysis of Cases. W. C. Campbell, Memphis, Tenn.—p. 761.
- Coxa Plana and Related Conditions at the Hip. A. B. Ferguson and M. B. Howarth, New York.—p. 781.
- Discoid External Semilunar Cartilage: Cause of Internal Derangement of Knee Joint. J. G. Finder, Iowa City.—p. 804.
- Intrapelvic Protrusion of Acetabulum. C. Schaap, Arnhem, Holland.—p. 811.
- Role of Bone Marrow and Endosteum in Bone Regeneration: Experimental Study of Bone Marrow and Endosteal Transplants. W. H. McGaw and M. Harbin, Cleveland.—p. 816.
- Treatment of Fractures of Carpal Scaphoid. R. Soto-Hall and K. O. Haldeman, San Francisco.—p. 822.
- Autogenous Bone Pegging for Epiphysitis of Tibial Tubercle. D. M. Bosworth, New York.—p. 829.
- *Tuberculous Rheumatism: Résumé. E. A. Brav, Philadelphia, and P. S. Hench, Rochester, Minn.—p. 839.
- Posterior Luxations of Lumbosacral Joint. R. W. Johnson Jr., Baltimore.—p. 867.
- Posterior Displacement of Fifth Lumbar Vertebra. A. D. Smith, New York.—p. 877.
- Thoughts on Relief of Sciatic Pain. C. H. Heyman, Cleveland.—p. 889.
- *New Attempt at Treatment of Chronic Osteomyelitis. E. J. Rozsán, New York.—p. 895.
- Congenital Dislocation of Hip Stretched by Means of Turnbuckle Cast. A. B. Gill, T. E. Orr and P. N. Jepson, Philadelphia.—p. 903.
- Arthritis: Treatment with Sulphur by Intravenous and Intramuscular Injection. W. P. Argy, Washington, D. C.—p. 909.
- Operative Correction of Extreme Flexion Contracture of Great Toe. L. C. Wagner, New York.—p. 914.
- Large Bilecular Synovial Bursa in Plantaris of Man. B. M. Black, Stanford University, Calif.—p. 919.
- *New Treatment for Delayed Union or Nonunion in Fractures. R. M. Carter, Green Bay, Wis.—p. 925.
- Congenital Fusion of Spine. L. M. Overton and R. K. Ghormley, Rochester, Minn.—p. 929.
- Correction of Knee-Flexion Deformity, After Poliomyelitis, by Wedging Plasters. R. E. Hughes and J. C. Risser, New York.—p. 935.
- *New Operative Treatment for Fracture of Olecranon. C. Rembold, Wichita, Kan.—p. 947.
- Surgical Approach to Obturator Foramen. S. Selig, New York.—p. 950.
- Osteogenesis Imperfecta: Report of Two Cases. S. Kleinberg, New York.—p. 953.
- Acute Osteomyelitis (Osteitis) of Patella: Case Report. J. Sagel, Gary, Ind.—p. 959.
- Giant Cell Sarcoma of Patella: Case Report. M. O. Henry, Minneapolis.—p. 964.
- Rupture of Biceps Tendon. G. I. Bauman, Cleveland.—p. 966.
- Method of Maintaining Tension in Skeletal Traction Wires. E. N. Reed, Santa Monica, Calif.—p. 968.
- Corrective Cast for Flexion Contracture Deformity of Knee. V. L. Hart, Minneapolis.—p. 970.
- Improved Methods in Applying the Kirschner Pin by Hand or Electric Power. R. E. Niedringhaus, St. Louis.—p. 972.
- Device to Aid in Maintaining Proper Alignment in Patients in Russell's or Luck's Extension. H. S. Epstein, Brooklyn.—p. 974.
- Sphinx Combining Skeletal Traction and Countertraction. G. W. Hawley, Bridgeport, Conn.—p. 976.
- Osteitis Deformans, "Paget's Disease," with Fracture of Femur and Prompt Union: Report of Case. F. G. Murphy, Chicago.—p. 981.
- Attachment for Fracture Tables: Designed to Facilitate Application of Plaster Casts to Maintain Hyperextension of Spine. W. V. Newman, Little Rock, Ark.—p. 986.

Tuberculous Rheumatism.—Brav and Hench review the literature. As described by its proponents, this condition is a form of polyarthritis, simulating in some cases acute rheumatic fever or in other cases chronic atrophic arthritis but bearing some suggestion of tuberculous etiology. Familial tuberculosis, associated visceral tuberculosis, demonstration of Koch's bacilli in the synovial fluid and in the blood stream, positive results of inoculations of guinea-pigs with joint fluid and in some cases the presence of a typical tuberculous joint before, coincident with or subsequent to the development of polyarthritis have been considered evidence for the diagnosis of tuberculous rheumatism. The condition is thought to be due to a tuberculous toxin from some distant focus, a filtrable virus, an attenuated form of bacilli of tuberculosis or an allergic reaction. Formation of true tubercles, therefore, is not the expected finding and, when such pathologic change is present, a superimposed tuberculous arthritis, rather than the condition of tuberculous rheumatism, is thought to exist. Against the acceptance of the syndrome of tuberculous rheumatism have been arrayed a large number of competent investigators who have argued that there is no adequate clinical method of identifying it, no consistently characteristic roentgen evidence, no

experimental or laboratory evidence in its favor that is not highly controversial, and no consistent demonstration of any characteristic microscopic pathology. A statistical study of a series of 150 cases of acute rheumatic fever and 250 cases of chronic atrophic polyarthritis has revealed no significantly higher incidence of familial tuberculosis or associated visceral tuberculosis than that found in a group of 250 control cases. Of a series of seventy-five cases in which a diagnosis of chronic atrophic polyarthritis had been made and in which the pathologic characteristics of a single joint were determined by microscopic examination of tissue or inoculation of guinea-pigs, eight patients were found to be definitely tuberculous. In each of these the tuberculous identity of the joint was suspected prior to the examination of the tissue or inoculation of guinea-pigs, but the association with multiple arthritis was confusing.

Treatment of Chronic Osteomyelitis.—Bozsán believes that an area of aseptic bone necrosis anywhere in the skeletal system may be treated advantageously by connecting the necrotic segment with an adjacent living segment of bone by means of drill channels. He feels that the formulation of this working principle is fairly justified by the satisfactory results obtained after its application in cases of Legg-Calvé-Perthes disease, osteochondritis dissecans, Osgood-Schlatter disease, intracapsular fractures of the neck of the femur, and slipping and slipped upper femoral epiphyses; in all these conditions aseptic bone necrosis is the main pathologic feature. The spontaneous healing process of aseptic bone necrosis, brought about by any cause, is the substitution of living bone in the place of necrotic bone, effected by the slow penetration of tissue elements and capillaries of the adjacent living bone. The drilling of channels into the necrotic area presents nothing but the breaking of broad avenues to facilitate this invasion by new vessels. While attempting to compare the characteristic features of aseptic bone necrosis and necrosis in the wake of septic processes, such as suppurative osteomyelitis, the author has come to the conclusion that, in spite of the seemingly great discrepancies, in the last analysis no difference exists. The clinical and experimental observations of Bancroft on hematogenous osteomyelitis demonstrated that the substitution process is just as active in the recovery of these septic necroses as in the aseptic necroses. This circumstance, rather than the supposed attenuation of the infection, is the reason, in the author's opinion, for the good results obtained from the simple drill hole evacuation of chronic bone abscesses recommended by Brickner. Since the natural healing process in both aseptic and septic necrosis appeared to be analogous, it seemed possible that septic necrosis might respond favorably to the treatment that was found effective in aseptic necrosis. Therefore the author induced substitution and revitalization of necrotic areas of bone in chronic osteomyelitis by connecting these areas with living bone segments by means of saw cuts and drill channels. The procedure in the first two cases—observed one and three-fourths years and one year after operation, respectively—proved successful.

Operation for Delayed Union in Fractures.—Carter describes an operation for delayed union or nonunion in fractures which is based on the principle of drill holes proposed by Beck of Kiel. The procedure consists of boring a number of small holes through the fragment ends, across the line of fracture. This gives rise to a certain amount of hemorrhage, allows the penetration of new blood vessels and furnishes fresh bone pulp, thus creating a stimulus to new bone formation. The author has employed the method in five cases: one of fracture of the shaft of the femur, two of fracture of the tibia and two of fracture of the forearm. It is his opinion that, in those fracture cases with delayed union or nonunion for which no cause can be found which would indicate definitely some other form of treatment, the simplicity and harmlessness of this procedure warrant giving it a trial before resorting to open operation. When the drilling is properly done, the risk of infection is negligible and prolonged hospital confinement is unnecessary. If the treatment is successful, roentgenographic evidence of callus formation will be seen in from three to five weeks; if not, open operation can be performed then. The

only contraindication to the performance of the drilling is an open, infected fracture.

Treatment for Fracture of Olecranon.—Rombold presents a technic for suture of a fracture of the olecranon. The skin incision extends from 2 inches distal to the olecranon to 5 inches proximally, and it is curved either laterally or medially to avoid the olecranon. The skin and subcutaneous tissue are reflected widely, exposing the ulna, the fracture, the olecranon and the triceps tendon. The old clot is cleaned from the fracture. The shaft of the ulna is drilled one-half inch distal to the fracture and well in front of the posterior cortex. Two strips of triceps tendon one-fourth inch wide and 3 inches long are used for the suture of the fracture. The proximal ends, the edges and the muscle-apposed surfaces are freed, and their insertions at the lateral and medial surfaces of the olecranon are left intact. The lateral strip is passed through the drill hole from the lateral to the medial surface and the medial strip is passed from the medial to the lateral surface. They are then tied to each other and sutured through the knot after the fractured fragments have been fixed snugly in position. The wound is closed in layers. The arm is carried in a sling for a week to ten days. Use up to the point of pain is encouraged after four or five days. Four patients have been operated on with perfect functional results.

Journal of Urology, Baltimore

32: 321-416 (Oct.) 1934

- Some Dysfunctions Caused by Neoplasm, Especially of Adrenal Gland. W. C. Quinby, Boston.—p. 321.
- Effects, on Upper Urinary Tract in Dogs, of an Incompetent Uretrovesical Valve. V. Vermooten and C. H. Neuswanger, New Haven, Conn.—p. 330.
- Gonococcal Pyonephrosis: Report of Case with Review of Literature. C. A. W. Uhle, Philadelphia.—p. 335.
- Cancer Mortality, Bladder, Kidney and Prostate 1917 to 1928. J. Duff, New York.—p. 346.
- Distribution of Blood to Prostatic Urethra: Demonstration. H. C. Bumpus Jr., Pasadena, Calif., and W. Antopol, Bayonne, N. J.—p. 354.
- Malignant Growths in Undescended Testicle: Review of Literature and Report of Two Cases. D. W. MacKenzie and M. Ratner, Montreal.—p. 359.
- Calicified Hematocele of Tunica Vaginalis Testicle, with Spontaneous Rupture: Case Report, Discussion of Diagnosis and Etiology. H. M. Weyrauch Jr., Philadelphia.—p. 370.
- *Some Unusual Cases of Filariasis of Scrotum and Groin. H. H. Young, Baltimore.—p. 383.

Filariasis of Scrotum and Groin.—Young reports five cases, four of which are quite similar and one an ordinary case of chronic epididymitis, which occurred following cystoscopy. This patient came from the same locality in Colombia, South America, but presented entirely different lesions. In the first three cases and the fifth the disease started as a peritesticular or periepididymal disease. It was characterized by the ultimate formation of a dense mass of tissue, which in two cases has enveloped completely and compressed the epididymis without involving the tissues of the epididymis. The disease has traveled upward outside the spermatic cord more or less loosely attached to the external fascia of the cord, in some instances forming large globular masses and in others very fine lines, suggesting lymphatic canals with small, bead-like enlargements along the course of the canal. The inguinal glands were enlarged. Ordinary bacterial inflammation, tuberculosis, syphilis or malignant disease has not been observed. The pathologic process is characterized particularly by the deposit or growth of large numbers of round cells, which have ultimately gone on to the formation of a marked fibrous sheath or covering. The tunica vaginalis in some instances has been involved extensively with adhesions to the testicle, but the testicle itself has been free from disease, although compressed and distorted by the fibrous tissue in one case. The intrascrotal cord produced by the disease has been characterized also by the presence of much vascularity, and round the walls of the blood vessels are numerous areas of round cell infiltration. There are spaces that may be lymph nodes, but they contain no material in the stained sections, and nothing suggesting either a large or a small worm or larvae, or detritus resulting from the presence of a dead worm, has been found. Nevertheless, it seems evident to the author that the disease is filarial in origin.

Minnesota Medicine, St. Paul

17: 563 616 (Oct.) 1934

- Some Comments on Mortality and Morbidity Trends H W Cook, Minneapolis—p 563
 The Rise of Clinical Thermometry in the United States C D Freeman, St Paul—p 572
 The Gangrenous Gallbladder E S Judd and G W Waldron, Rochester—p 576
 Diet in Treatment of Gallbladder Disease A A Wohlrabe, Minneapolis—p 578
 Primary Tuberculosis of Gallbladder W Walters and G T Church, Rochester—p 580
 Sinusitis and Asthma C E Connor, St Paul—p 582
 Carcinoma of Large Bowel E C Bartels, Springfield, Ill—p 586
 Practical Experiments in What Actually Constitutes a Good Clinical Record H L Dunn, Minneapolis—p 589
 Obstetric Analgesia S B Solhaug, Minneapolis—p 595

New Orleans Medical and Surgical Journal

87: 205 280 (Oct.) 1934

- Pathology Basis of Scientific Medicine A A Herold, Shreveport, La—p 205
 *Paresis Laboratory Findings, Treatment and Results E M Robards and Hermine Tate, Jackson La—p 209
 Ureteral Stricture Diagnostic Problem R H Brumfield, McComb, Miss—p 213
 Major Facts Concerning Appendicitis D C McBride, Alexandria, La—p 215
 Compression Therapy in Treatment of Pulmonary Tuberculosis Peachy R Gilmer, Shreveport, La—p 220
 Hypotension in Relation to Toxemias in Pregnancy G A Mayer, New Orleans—p 228
 Early Diagnosis of Diseases Involving Hip Joint H A Durham, Shreveport, La—p 230
 The Handicapped Child B S Waller, Silver Creek, Miss—p 235
 Importance of Epidemiologic Investigation A L Gray, Jackson, Miss—p 239

Dementia Paralytica.—Robards and Tate believe that all cases of constitutional syphilis that do not respond to treatment within six months should be regarded as potential dementia paralytica cases, and, as soon as any involvement of the nervous system is noted the cerebrospinal fluid should be examined. The cerebrospinal fluid should be examined eighteen months after treatment, though it may be negative at that time. It should be examined again six months later. The fact that in dementia paralytica the globulin never disappears and the gold curve seldom regains a normal level indicates the necessity of periodic examinations of the spinal fluid. In syphilitic infected patients of the authors' hospital, dementia paralytica occurs most frequently in Negro men, white women, white men and Negro women in the order named, showing a pronounced increase in the Negro male. Tryparsamide with mercury and bismuth compounds is in all probability the most satisfactory form of therapy. Approximately twenty-five injections of tryparsamide produce clinical improvement. Serologically the effect on the cell count is rapid, frequently reaching normal after twenty injections. Induction of tertian malaria by direct injection of the blood from an infected person is probably the most satisfactory form of fever therapy. It should be used only in institutions. Diathermy and other physical methods of inducing fever are producing encouraging results in some institutions. The authors consider the use of sulphur the most practical method for the induction of fever in instances in which patients are not hospitalized. In patients that do not respond to treatment its continuance hastens death.

Pennsylvania Medical Journal, Harrisburg

38: 1 58 (Oct.) 1934

- The Emergency Abdomen Some Observations of Its Incidence in Persons Older Than Age Fifty B Lipshutz and C S Schafer, Philadelphia—p 5
 Glucose, with Especial Reference to Its Intravenous Administration W N Long, York—p 9
 Prevention of Blindness During Middle and Advanced Age A Brav, Philadelphia—p 12
 The Abused Cervix J W Kennedy, Philadelphia—p 14
 Etiology of Long Continued Fevers B I Comroe, Philadelphia—p 16
 Echinococcus Cyst in Subcutaneous Tissues of Thigh J Speese and J B Mason, Philadelphia—p 18
 Treatment of Cancer of Breast G W Grier, Pittsburgh—p 19
 Tularemia H L Baer, Pittsburgh—p 24
 Autograft Report of Case F Bushong and C R Elicker, Pottstown, Pa—p 28
 Cutaneous Photopigmentation and Cosmetics, with Especial Reference to Berlock Dermatitis S S Greenbaum, Philadelphia—p 28
 Commissary Fed Children in Eight Pennsylvania Communities I of Studies Mary Riggs Noble, Harrisburg—p 31

Public Health Reports, Washington, D. C.

49: 1169 1200 (Oct. 5) 1934

- Experimental Studies of Natural Purification in Polluted Waters No IX Nitrification in Sewage Mixtures E J Theriault and P D McNamee—p 1169
 Actual Causes of Dermatitis Attributed to Socks L Schwartz—p 1176

Southern Medical Journal, Birmingham, Ala.

27: 825 890 (Oct.) 1934

- Consideration of Ureter in Serial Pyelograms T D Moore, Memphis Tenn—p 825
 New Method for Localization of Intra Ocular Foreign Bodies with Outline of Their Management M E Brown, New Orleans—p 833
 Pathology of Sickle Cell Anemia L W Diggs and R E Chung, Memphis, Tenn—p 839
 *Patch Tests in Determination of Arsphenamine Sensitization H M Robinson, Baltimore—p 845
 Thrombophlebitis Migrans Report of Two Fatal Cases with Autopsies One Also Showing Primary Carcinoma of Liver N S Stern, Memphis, Tenn—p 849
 Diagnosis of Bacterial Allergy G T Brown, Washington, D C—p 856
 Trauma of Ureter G R Livermore, Memphis, Tenn—p 861
 Practice in Peroral Endoscopy T R Gaines, Anderson, S C—p 863
 Health Centers in Rural Public Health Service T P Haney Jr, McComb, Miss—p 865
 District Health Program in Rural Areas I B Krause and W F Lunsford, Jefferson City, Mo—p 869
 Twenty Years of County Health Work in North Carolina J H Hamilton and D F. Milam, Raleigh, N C—p 875
 New Instruments and Apparatus S R Terhune, Birmingham, Ala—p 881

Patch Tests in Arsphenamine Sensitization.—Robinson made patch tests with the arsphenamines in 163 persons, twenty-two of whom were nonsyphilitic controls, fifty-four were syphilitic patients, all of whom had received or were receiving arsphenamine treatment without reaction, eighteen were syphilitic patients who had developed a previous postarsphenamine jaundice, and sixty-nine who had had a previous postarsphenamine dermatitis. Tests were made with a 30 per cent solution of neoarsphenamine. Tests were also made with two other arsenical drugs now under investigation as to their therapeutic activity in syphilis. Pieces of old sterile linen about 2 cm square were soaked in the various solutions and applied to the skin while wet, and each was covered with a piece of cellophane. This in turn was sealed at the margins with narrow strips of adhesive tape. Most of the tests were observed twenty-four hours later. All patients were instructed to report any reactions occurring before or after the regular observation time. Results were read as negative when the skin underlying the square of linen was normal or only slightly reddened, as moderately positive if there was erythema and swelling with an occasional papule, vesicle or both, and as strongly positive if there was an acute dermatitis with marked erythema, swelling and vesiculation. Of the twenty-two normal individuals used as controls, patch tests were negative in fourteen, moderately positive in five and strongly positive in three. Two of the three latter persons were tested a second time nine months later, with negative results in both. Of the fifty-four syphilitic patients, forty-three were completely negative, and eight showed moderately positive and three strongly positive reactions. The eighteen patients who had had a previous postarsphenamine jaundice without dermatitis were tested as a further control measure, in all the results were negative. In the sixty-nine patients who, during the course of arsphenamine therapy, had reacted with mild, moderate or severe exfoliative dermatitis, fifty-five were negative and fourteen gave a positive test, but only eleven of these were strongly positive. To four members of this group who reacted with strongly positive patch tests from 0.1 to 0.2 Gm of neoarsphenamine was purposely administered intravenously. All developed a mild to moderate generalized dermatitis. From these observations the author concludes that in a patient who is known to be sensitive to arsphenamine a positive patch test with neoarsphenamine is of no practical value for the determination of persistence of sensitization, since it is sometimes negative in the continuation of treatment.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

18: 497-560 (Sept.) 1934

- *Irradiation Cataract. J. G. Milner.—p. 497.
Some Remarks on Pilocarpine. J. A. van Heuven.—p. 511.
Orbital Tumor: Report of Unusual Case. W. H. Gow.—p. 520.
Trachoma in Indians of Western Canada. J. J. Wall.—p. 524.
Ophthalmoplegia Associated with Bony Changes in Region of Sphenoidal Fissure. C. B. V. Tait.—p. 532.

Irradiation Cataract.—Milner states that exposure of the eyes to the effects of x-rays or radium is likely to result in the formation of cataract. This cataract has a typical appearance, its characteristics being the formation of vacuoles, cloudy areas and later a plaque. It also has a constant situation—the posterior cortex of the lens. There is always a latent period between exposure and cataract formation, and this can be said to be at least two years. It may be many years. One course of high voltage x-rays is sufficient to cause cataract. Too few cases of cataract due to radium have been seen to dogmatize, but it may be said (1) that beta rays, applied at short intervals for short periods, are effective in treatment and harmless to the lens and (2) that gamma radiation is likely to produce cataract. Protection of the eyes during treatment is impracticable, but efforts should be made to devise some method of screening the lens without jeopardizing the effect of the radiation.

British Journal of Urology, London

3: 207-312 (Sept.) 1934

- Study of Craftsmanship of the Harris Technic for Prostatectomy. A. C. Morson and J. E. Semple.—p. 207.
The Isolated Specimen of Urine. F. Temple Grey.—p. 220.
Decompression of Bladder. H. Bailey.—p. 225.
*Observations on Carcinoma of Prostate. T. G. I. James and N. M. Matheson.—p. 235.
*Bacillus *Alcaligenes-Faecalis* as Organic Nucleus in Renal Calculus. G. Stuart, W. E. Thompson and K. S. Krikorian.—p. 243.

Carcinoma of Prostate.—James and Matheson discuss unusual manifestations encountered during an investigation of fifty cases of carcinoma of the prostate: 1. In a case of prostatic carcinoma with perineal involvement, in view of the previous history of periurethral abscess it is probable that an alteration in the tissue planes predisposed to this peculiar feature. General metastases apart from the involvement of the regional lymph nodes was absent. The diagnosis of the perineal node presented no difficulty. It is conceivable that a periurethral abscess might give rise to somewhat similar appearances. 2. In one case, six months after admission, several nodules appeared in the skin over the lower half of the abdomen and one nodule in the skin of the left side of the forehead. Histologic examination of sections of these nodules revealed the typical appearances of carcinoma of the prostate. Tissue predilection in all probability accounts for the rarity of skin involvement. The wide separation of the skin metastases in the case would indicate that they were of hemic origin. 3. Involvement of lymph nodes was illustrated by one case, in a man 61 years of age, who, on admission, was found to have involvement of each inguinal group. Urinary symptoms had been in existence for eighteen months. The left cervical group of glands became palpable three weeks after admission, and six weeks later those in the left axilla became affected. Within a month the glands in the right axilla were enlarged, and later the epitrochlear glands and those in the right supraclavicular region. In the meantime all the glands in the groin had become involved, and a secondary deposit in the left orbit had produced a marked proptosis. Necropsy revealed involvement of all internal groups of glands with diffuse carcinosis of the thoracic duct. 4. Bone metastasis was revealed in a man of 72 who was admitted for a fluctuating swelling the size of a small orange in the middle of the shaft of the right tibia. The radiating spicules in a roentgenogram, together with the evidence of bone destruction and the short history of two months, led to a diagnosis of osteogenic sarcoma. The prostate was small, indurated and nodular. Difficulty and occasional retention of urine with frequency had been present for a few weeks. Section revealed a hemorrhagic cystic tumor

involving the medulla and cortex of the bone, and histologic examination presented the features of a prostatic cancer. This was confirmed at necropsy. No other bones were involved.

***Alcaligenes Faecalis* as Organic Nucleus in Renal Calculus.**—Stuart and his associates report a case of renal calculus with *Alcaligenes faecalis* occurring in the urine and acting in the capacity of an organic nucleus. The organism was proved on intraperitoneal inoculation to be nonpathogenic to white mice and to guinea-pigs. It was inactive as a urica splitter and failed to support Rovsing's theory of stone formation. Autovaccine accelerated the healing of the operative wound, and the authors believe that it shortened the period of convalescence.

British Medical Journal, London

2: 539-578 (Sept. 22) 1934

- Acute Osteomyelitis. J. Fraser.—p. 539.
Fungus Infection of Feet: Prophylaxis and Treatment. A. M. H. Gray.—p. 541.
Mucopurulent Tubotympanic Infections. T. R. Rodger.—p. 544.
Electrocoagulation of Prostate: Immediate and Late Results. H. Williams.—p. 549.
Residual Infection of Jaws. R. S. Taylor.—p. 552.

2: 579-618 (Sept. 29) 1934

- Value of Antiseptics in Control of Bacterial Infections. C. H. Brown.—p. 579.
Use of Radium in Carcinoma of Bladder. A. J. D. Smith.—p. 584.
Allergic Factors in Rhinorrhea and Nasal Catarrh. T. Just.—p. 587.
Advantages of Intravenous (Evipan) Anesthesia in Ophthalmic Surgery. T. K. Lyle and F. G. Fenton.—p. 589.
*Chorionic Carcinoma: Report of Case Following Ruptured Tubal Gestation. R. C. Thomas.—p. 590.
Epidural Spinal Abscess: Case. J. Mintzman.—p. 593.

Chorionic Carcinoma.—Thomas reports a case in which a ruptured tubal pregnancy, removed by operation, was followed within a short time by malignant disease of the chorion. Three months after operation the growth had become palpable above the pelvic brim and was found at the second operation to have involved the whole of the right broad ligament, the right pole of the uterus, the bladder and the pouch of Douglas. The symptoms were pain of the lower part of the abdomen, cachexia and a tumor in the right iliac fossa. There was no uterine bleeding or discharge. Two massive doses of high voltage roentgen therapy resulted in definite retrogression of the tumor, considerable lessening of pain and improvement in the general condition of the patient. The author believes that there are three possible ways in which the case can be explained. In considering them he keeps in mind that he is dealing with a gestation sac that had ruptured into the peritoneal cavity. The possibilities are as follows: 1. During the rupture chorionic elements may have been sprayed over the surrounding parts, especially the right broad ligament and the pouch of Douglas. These underwent malignant degeneration later. 2. Chorionic carcinoma may have begun to develop before the actual rupture took place, with the result that malignant cells were directly spread over the broad ligament and the pouch of Douglas. 3. This type of growth extends by way of the veins. Although scattering of malignant cells may not have taken place, the veins of the broad ligament may nevertheless have been packed with syncytial and Langhans' cells spreading in all directions. These would have gone on proliferating after the removal of the ruptured ectopic gestation. An earlier stage of this condition would appear to have been present in Hartz's case.

Irish Journal of Medical Science, Dublin

No. 105: 495-542 (Sept.) 1934

- Differences in Effect of Various Impulses on Structure of Central Nervous System. C. U. A. Kappers.—p. 495.
Trend of Diphtheria Mortality in the Irish Free State. J. C. Saunders.—p. 520.
*Nutritional Anemia of Infancy: Comparison with Chronic Microcytic Anemia of Women During Child-Bearing Period. R. E. Steen.—p. 527.
What Is the Hyoid Apparatus? H. C. Wilson.—p. 535.

Nutritional Anemia of Infancy.—Steen compares the nutritional anemia of infancy with the chronic microcytic anemia of women during the child-bearing period. Nutritional anemia of infancy tends in certain infants to develop about the sixth or seventh month of postnatal life and may persist into the second year. One factor in its development is that milk, whether

human or cow's, is deficient in iron. As a result of this deficiency the store of iron is insufficient to carry the infant through the period until a mixed diet with foods containing iron are added. He demonstrates that etiologically the two anemias have fundamental points in common. An anemia due to a deficiency of iron (i. e., of the hypochromic type) may arise when the iron store in the body is depleted either by direct reduction, e. g. from hemorrhage and infection, or by insufficient ingestion of iron, either as a result of a deficiency in the diet or as a result of defective absorption from the intestine. If idiopathic hypochromic anemia is considered first on these lines, the first etiologic factor in its production must be depletion of the iron reserves from the constant repeated hemorrhages of menstruation and childbirth. No other view can explain why the disease is almost confined to the female sex, to the child-bearing period of that sex, and to the latter half of this period. The hemorrhagic factor in women, however, is liable to be overlooked because it is physiologic. The second etiologic factor must be the dietetic one: a deficiency of iron in the ingested food. The third etiologic factor may be achlorhydria. If the nutritional anemia of infancy is considered on similar lines, the first of the same three etiologic factors is not so obvious at first sight. Reduction of the iron reserves of the infant may occur in a number of ways, which are for the most part antenatal and hence result in a nondevelopment of the iron store of the fetus rather than in its depletion from hemorrhage, as in the case of idiopathic hypochromic anemia. The second etiologic factor is a deficiency of iron in the ingested food, since breast milk contains small amounts of iron and cow's milk still less. This factor will act most strongly in infants who have been kept too long on a milk diet exclusively. The third etiologic factor from the analogy with idiopathic hypochromic anemia might be ascribed to achlorhydria, but Parsons has shown that achlorhydria is not necessarily present in cases of nutritional anemia in infancy; it plays no part in its treatment, when iron alone is specific, and therefore is unlikely to play any important part in its etiology. This maintains the analogy with idiopathic hypochromic anemia, in which achlorhydria is probably of minor importance. The author suggests that, if this view of the synergic action in the production of idiopathic hypochromic anemia in adults and the nutritional anemia of infancy is accepted, and the deduction that fundamentally they are the same, it should help toward a clearer conception of the deficiency anemias as a whole. Furthermore, it would suggest that the present terminology of these anemias might be reviewed. Therefore the author submits the term idiopathic hypochromic anemia and suggests that it be reserved for a disease peculiar to women, just as the term nutritional anemia of infancy is reserved for a disease peculiar to infancy or early childhood, and that such diagnosis should be made only when all other possible organic causes have been excluded.

Journal of State Medicine, London

42: 497-558 (Sept.) 1934

- Our Difficulties in the Conflict Against Tuberculosis. F. W. Burton-Fanning.—p. 497.
Arrangement of Institutions in Public Tuberculosis Schemes. S. V. Pearson.—p. 513.
Institutions for Tuberculous Children. D. A. Powell.—p. 519.
Present Position of Diphtheria Immunization. E. H. T. Nash.—p. 522.
Some Aspects of Vaccination of Cattle Against Tuberculosis. J. B. Buxton.—p. 527.
Noise and Public Health. D. McKenzie.—p. 542.
Public Health Service in Relation to Industry and the Industrial Worker. A. Massey.—p. 552.

Presse Médicale, Paris

42: 1441-1456 (Sept. 15) 1934

- *Difficulty in Diagnosis of Certain Abnormal Forms of Diabetic Coma. M. Labbé and R. Boulin.—p. 1441.
Primary Tuberculosis of Cervix with Ulcerative Form Simulating Cancer. J. Veyrassat.—p. 1442.
Pulmonary Silicosis of Miner. R. Cassou and C. Blancardi.—p. 1443.

Diagnosis of Diabetic Coma.—The diagnosis of diabetic coma ordinarily involves no difficulty, but there are cases with some of the signs missing or with complicated phenomena that interfere with the diagnosis. Labbé and Boulin mention two cases that showed the typical symptoms and signs of diabetic coma except for negative diacetic acid reactions (Gerhardt's

test) at the moment of coma. The test became positive after insulin treatment had been applied and finally disappeared after sufficient insulin had been administered. They report another case in which a young diabetic patient without previous evidence of renal disease fell suddenly into coma. The first impression was that this was a diabetic coma, but although the urine showed sugar, it contained no acetone or diacetic acid. Combined with the absence of air hunger and the presence of a myosis, the question of a uremic coma arose. The alkali reserve was extremely low and the blood urea confirmed the existence of uremia. Up to this point it was possible to say only that there was an acidotic coma, but whether of renal or diabetic origin was unknown. In spite of the administration of 920 units of insulin the patient remained in coma and this fact apparently confirmed the absence of diabetic coma.

42: 1481-1496 (Sept. 22) 1934

- *Immediate Treatment of Postoperative Phlebitis by Procaine Hydrochloride Infiltration of Lumbar Sympathetic. R. Leriche and J. Kunlin.—p. 1481.
*Pathogenesis of So-Called Bright's Retinitis and Its Disappearance by Repeated Cerebrospinal Decompressions. A. Magitot and A. Dubois.—p. 1482.
Pathogenesis and Treatment of So-Called Menopausal Hemorrhages. C. Béchère.—p. 1485.
Ganglionic Connections of Lymphatics of Uterus. C. Lazaro.—p. 1487.
Surgical Treatment of Benign Inguinal Lymphogranulomatosis (Nicholas Favre Disease). G. Rousseau and C. Adamesteanu.—p. 1489.

Treatment of Phlebitis by Infiltration of Sympathetic.—Leriche and Kunlin report three cases of phlebitis treated by injection of procaine hydrochloride into the lumbar sympathetic. The needle is inserted 3 cm. from the spinal line and must pass under or over the transverse apophysis coming against the vertebral body. The needle is then drawn back 1 cm. and inclined at such an angle that the point loses contact with the bone. It is then reintroduced 2 cm. at a less oblique angle until a new bony contact is established. At this point, 10 cc. of a 1 per cent solution of procaine hydrochloride is injected. Usually this injection is painless. If the right location has been found, the patient soon states that there is a warmth of the corresponding leg. Objectively, this warmth may be corroborated. In the three cases of phlebitis thus treated there was a rapid disappearance of the painful sensations and there seemed to be a definite shortening of the duration of the phlebitis. It is necessary to repeat the injection daily as long as there is fever, pain or progressive edema.

Pathogenesis of Albuminuric Retinitis.—Magitot and Dubois discuss the known factors of the pathogenesis of albuminuric retinitis. These are grouped around two pathogenic theories, the toxic and the vascular. They believe it is probable that, when one decreases the volume of interstitial fluid by repeated removals of cerebrospinal fluid, the transudation of the capillaries is reduced at the same time as the reduction of the venous stasis. The authors conclude that the retinitis of generalized hypertension is not of renal origin. Generalized arterial hypertension itself is solely the result of a vascular disease affecting all the vessels. This hydrostatic element can of itself engender ocular lesions. The intracranial hypertension plays an important but not unique part. It seems necessary to postulate a combination of retinal arteriolar lesions, local arterial hypertension and intracranial hypertension in order to realize retinal lesions—edema, hemorrhages, exudates. Although these conclusions result from the observed facts, it is nevertheless necessary to reserve complete evaluation of the pathogenic mechanism.

Schweizerische medizinische Wochenschrift, Basel

64: 869-888 (Sept. 22) 1934

- What is Nervousness? H. Binder.—p. 869.
Technic of Goiter Operations. O. Häuptli.—p. 875.
*Metastasizing Goiter with Solitary Metastasis in Retroperitoneal Lymph Node. J. Doepfner.—p. 878.
*Blatomycosis of Lungs and Pleura: Case. A. Spreng.—p. 879.
Evolution of the Conception of Gonorrhea. A. Franck.—p. 881.

Goiter with Solitary Metastasis in Retroperitoneal Lymph Node.—Doepfner relates observations that were made during the course of the necropsy held on a diabetic woman, aged 44, who died following mastoidectomy. He describes the condition of the thyroid, the brain, and a cystic nodule found in the retroperitoneal connective tissue. At first it was assumed

that the retroperitoneal nodule was a cystic lymphangioma, but histologic examination disclosed a struma nodosa colloides. Thus it was assumed that it was a metastasis of an adenoma of the thyroid. However, neither the macroscopic nor the microscopic examination of the thyroid disclosed a primary tumor, but the author suggests that the primary tumor may have been so small that it was overlooked. The localization of the solitary metastasis was unusual, for the adenomas of the thyroid usually metastasize by way of the blood stream. If metastatization does take place by way of the lymph vessels, the metastases are usually in the cervical, mediastinal and bronchial lymph nodes. The author believes that in the reported case the fact that the patient had had diabetes and her age were of some significance. He points out that an adenoma of the thyroid metastasizes rarely in younger persons but that the incidence of such metastases increases greatly during the fifth decade of life.

Blastomycosis of Lungs and Pleura.—Spreng relates a case of pneumomycosis in a woman, aged 53, who had nursed her daughter, who died of acute miliary tuberculosis. Soon after the death of the daughter the patient exhibited a number of symptoms indicative of tuberculosis and her disorder was at first diagnosed as such. However, the sputum, after standing for awhile, had a yeast odor, and in dextrose cultures the yeasts soon overgrew all other micro-organisms, and the case was now diagnosed as blastomycosis of the lung. The sputum contained a few streptococci but no tubercle bacilli. Later a pleural exudate developed. The chest was punctured and the punctate contained yeasts, and thus the diagnosis of blastomycosis of the lungs and pleura was corroborated. Since medication with potassium iodide and roentgenotherapy of the lungs did not produce the desired therapeutic effects, the daily administration of increasing doses of quinine was instituted. Later an autovaccine was prepared and the patient was given intracutaneous injections of from 0.2 to 0.3 cc. of this vaccine at intervals of from two to three days. Under the influence of this treatment the patient recovered. A source of infection could not be determined. The pathogenic agent belonged to the genus of *Saccharomyces*, but exact identification did not succeed. The author points out that the pathogenic yeasts are generally found among the wild yeasts, of which there exist approximately 500 different types. Buschke's classification of pathogenic yeasts differentiates three groups: (1) true yeasts (*Saccharomyces*) the originators of the European blastomycoses, (2) yeastlike micro-organisms, the originators of American blastomycoses, and (3) *Endomyces*, the causes of thrush. In discussing the port of entry the author points out that in a large percentage of cases the primary disease is in the lungs. The presence of diabetes favors development, and in some diseases the yeasts cause superinfections.

Riforma Medica, Naples

50: 1297-1332 (Aug. 25) 1934

- *First Clinical Observations on Ascoli's Serum Reactions in Neoplasms. C. Vercesi and F. Guercio.—p. 1299.
- Isolated Tuberculosis of Cranium. L. Docimo.—p. 1303.
- *New Reaction for Diagnosis of Tuberculosis. M. Lenzi.—p. 1306.
- Pleuropericardial Artery Originating from Common Right Carotid Artery of Neck: Accessory Tracheal Thyroid. F. Bellelli.—p. 1312.

Ascoli's Serum Reactions in Neoplasms.—Vercesi and Guercio studied the effects of three tumor serum tests proposed by Ascoli in ninety-seven cases presenting benign and malignant tumors and normal and pathologic pregnancies: 1. In the first test, 1 cc. of clear serum taken from a fasting patient is placed in a tube and to this is added 1 mg. of bilirubin. The mixture is left to stand for an hour and then vigorously shaken. It is centrifugated for fifteen minutes at 300 revolutions per minute. The serum turns yellow, while in the bottom of the tube there remains some bilirubin in excess; the supernatant fluid is poured into another tube containing 1 cc. of ether and the mixture is shaken twenty times and left standing for two hours. If the reaction is positive, the ether turns yellow and there is jellification of the underlying serum (++ reaction); sometimes the ether becomes yellowish and the underlying serum is still fluid (+ reaction). 2. For the acidimetric determination of the ethereal extract of serum and ricinoleic acid, 1 cc. of serum is put in a tube in which 0.2 cc. of an alcoholic solution of ricinoleic acid in the proportion of two per thousand has been

previously allowed to evaporate and it is left standing for a few hours. The serum dried at room temperature on filter paper is extracted in sulphuric ether for twenty-four hours; the ether is decanted and evaporated in a hot water bath. The residue is dissolved in 10 cc. of 99 degree alcohol and titrated with hundredth normal solution of sodium hydroxide. 3. For the glycolytic test *in vitro*, the erythrocytes are washed in a physiologic solution two or three times and 0.4 cc. of erythrocytes is placed in a tube. To this is added 1.6 cc. of Ringer's dextrose solution; after three or four hours of contact, the mixture is centrifugated and the amount of lactic acid in 1 cc. of Ringer's solution is estimated. In these three tests applied by the authors, 80 per cent of the serums derived from malignant tumors gave positive reactions; the bilirubin test by itself was positive in 90 per cent. In serums derived from benign tumors, especially from fibromyomas, the bilirubin test was positive in 50 per cent, while the acidimetric and glycolytic tests were constantly negative. Cases of pregnancy always gave a negative reaction to the acidimetric and glycolytic tests. Of twenty cases, there was only one positive reaction to the bilirubin test, in a case presenting early pregnancy complicated by compensated cardiopathy.

Reaction for Diagnosis of Tuberculosis.—Lenzi advocates the following technic for the diagnosis of pulmonary tuberculosis: Four tenths cubic centimeter of a freshly prepared solution of 3.8 per cent sodium citrate in distilled water is placed in a syringe. With the same syringe, 1.6 cc. of blood is aspirated from the median vein of the arm. The mixture in the syringe is shaken and twenty drops of it is placed in one watch glass and twenty drops in another. One drop of a 1:10,000 sterilized solution of tuberculin is added to the second glass. The contents of each glass are poured in separate tubes, which are placed in a stand. The stand is put in an incubator kept at body temperature, and the millimetric readings of the erythrocytic sedimentation speed are made every ten minutes. The period of observation may be from less than one to two hours. The first tube acts as a control for the second, in which the reaction takes place. In twenty healthy persons the reaction was positive in two, doubtful in one and negative in seventeen. Of thirty-six nontuberculous patients having such diseases as tumors, arthropathies, malaria, exophthalmic goiter and other acute infections, three showed positive, two doubtful and thirty-one negative reactions. Of fifty-eight patients having pulmonary tuberculosis in various stages, fifty gave positive and six negative reactions. The author concludes that his reaction is of great value for the diagnosis of pulmonary tuberculosis, that it may indicate the degree of organic reactivity and of defense, and that in the future it may prove to be an aid to the serologic diagnosis of diseases other than tuberculosis.

Klinische Wochenschrift, Berlin

13: 1297-1344 (Sept. 15) 1934. Partial Index

- Differential Diagnosis Between Malignant and Benign Organic Gastric Diseases. H. Dresen.—p. 1300.
- Osteopikoliosis of Cranium. H. Erbsen.—p. 1306.
- *Paralysis After Repeated Serum Injections. E. Hahn.—p. 1309.
- Functional Tests of Cardiopulmonary System. E. Krauss and A. Pätzold.—p. 1310.
- Two Fatalities in Thoracocautery. C. Kröber.—p. 1312.
- Foreign Bodies in Gastro-Intestinal Tract. P. N. Lauxen.—p. 1314.
- Significance of Exogenous Factors in Pathogenesis of Schizophrenia. R. Leppien.—p. 1314.
- *Replacement of External Malleolus by Free Tibial Transplant According to Lexer. W. Noetzel.—p. 1318.
- Spontaneous Pneumothorax in Early Childhood as Complication of Pneumonia and Its Accompanying Disorders. L. Schall.—p. 1324.
- Significance of Takata Reaction for Diagnosis of Liver Diseases in Its Relation to Galactose and Bilirubin Tolerance Test. L. Schindler and E. Barth.—p. 1329.

Paralysis After Repeated Serum Injection.—According to Hahn, paralysis has been observed after a single injection of serum, but repeated injections, particularly of prophylactic tetanus antitoxin, are the most frequent cause of anaphylactic reactions. He gives the history of a man, aged 38, who, in a motorcycle accident, sustained a wound of the supra-orbital rim. He stated that he had not received a serum injection before. He was given an injection of tetanus antitoxin. During the following night he suddenly felt a burning pain under both scapulas, his chest felt constricted, and he had dyspnea, vomited and developed a wheal exanthem over the entire body. After medication with calcium, the manifestations disappeared withi

the next two days, but six days later he again had burning pains under both scapulas and in the right supraclavicular cavity and he complained of nausea and dyspnea. On the following day he lost consciousness, the wheal exanthem reappeared, he was no longer capable of lifting his arms sideways, and the movement of the head toward the right side was difficult. Examination at a later date revealed hyperesthesia of the right supraclavicular fossa, impairment of the abduction and of the lateral elevation of the right arm, protrusion of the right scapula, and atrophy of the deltoid muscles. Roentgenoscopy revealed elevation of the diaphragm on the right side. The patient had a paralysis of the anterior serratus, of the deltoid muscle and of the right half of the diaphragm. The related nerves, the long thoracic, the axillary and phrenic nerves, originate in the cervical and brachial plexus. The author maintains that this is the most frequent localization of the paralysis following serum injection. The paralysis is usually dissociated in that not all muscles innervated by the same root are equally involved, and the sensory fibers are likewise hardly ever involved. A new careful anamnesis revealed that the patient had received an injection of tetanus antitoxin while wounded during the war. Four years after that he was in a mine accident and was again given a tetanus antitoxin injection. At this time he developed painfulness in the scapulas and impairment of the movement of the arms, which persisted for several months. The attack of paralysis that has been described developed thirteen years after the mine accident. Thus it was the second and third injections of tetanus antitoxin that caused a polyneuritic paralysis.

Replacement of External Malleolus by Free Tibial Transplant.—Noetzel points out that, as a rule, the free tibial transplant is used for the bridging of bone defects, in the form of a rivet or a splint, so that both ends of the transplant are again connected with bone tissue. Rarely does the transplant serve as a substitute for the termination of a bone. The author describes two operations in which the free tibial transplant was used in this manner. In the first case the malleolus and about 4 cm of the fibula had to be removed on account of a myxochondroma. This piece of bone was replaced by a free tibial transplant, 9 cm long and 3 cm wide. The tip of the transplant was forced into the medullary cavity of the fibula in such a manner that the periosteal surface was on the outside. Thus the transplant was securely fastened and the tendons of the peroneus were secured in the proper position behind the transplant by means of catgut threads. Following suture of the wounds, the extremity was put into a plaster-of-paris cast, which was left on for four weeks. Roentgenoscopy after six months revealed that the bone connection was tight and that the transplant had become considerably thicker. The function was satisfactory. The anterior deviation of the transplant caused no disturbances. The case is interesting from the biologic point of view because of the preservation and the independent growth of a transplanted piece of bone, which is connected with the normal bone only at one point and which at the periosteal surface is covered only with skin. The author stresses that whenever possible he takes the transplant from the same leg on which the operation is performed. In the second case the second metacarpal of the right hand had to be removed on account of an enchondroma. It was replaced by a free transplant from the right tibia, 5 cm long and 1 cm wide. Here again the functional results were satisfactory.

13:1345 1376 (Sept 22) 1934 Partial Index

- Role of Stomach in Formation of Blood K. Hitzberger—p 1345
- *Iodine and Cholesterol Content of Blood in Its Relation to Essential Hypertension M. Burger and W. Mobius—p 1349
- Measurement of Temperature in Cardiac Chambers and in Central Vessels D. Laszlo and M. Wachstein—p 1352
- *Influence of Vitamin C (Cevitamic Acid) on Dopa Reaction T. Gruneberg and H. Schade—p 1353
- Significance of Vitamin C in Pigment Metabolism W. von Drigalski—p 1354
- *Significance of Takata Reaction for Diagnosis of Liver Diseases in Its Relation to Galactose and Bilirubin Tolerance Test L. Schindel and E. Barth—p 1355

Iodine and Cholesterol Content of Blood and Its Relation to Essential Hypertension.—Burger and Mobius found that the age of a person seems to have an influence on the iodine content of the blood. In women it shows a certain

increase after the fifth decade of life. Patients with hypertension as a rule have a greater quantity of iodine in the blood. Increase in the basal metabolism and hyperiodemia, together with the clinical aspects of hypertension, indicate a causal connection between increased thyroid activity and essential hypertension (disturbance in the correlation of excretory organs). The cholesterol content of the blood of patients with hypertension is not increased. The values detected by the authors were generally within normal limits, and they think that the occasional appearance of high cholesterol values in patients with hypertension is of no causal significance.

Influence of Vitamin C on Dopa Reaction.—Gruneberg and Schade call attention to Schroeder's report on the inhibition of the dopa reaction by vitamin C, *Klinische Wochenschrift* (13:553 [April 14] 1934, abstr. *THE JOURNAL*, June 9, 1934, p 1902) and then describe their own studies. Tests on tissue sections revealed that vitamin C (cevitamic acid, or ascorbic acid) inhibits the dopa reaction. They assumed, however, that the cevitamic acid does not attack the dopa oxydase in the tissue sections but merely causes chemical transformations in the dihydroxyphenylalanine and thus makes it unsuitable for one reaction. They were able to prove this in another series of tests, in which tissue sections were exposed to the influence of vitamin C for thirty minutes, then the vitamin C was completely removed by repeated washings, and after that the sections were exposed to dopa solution in the same manner as several control sections. The reactions were the same, that is, there was no inhibition of the dopa melanin formation. They admit that test tube experiments can be employed for the clarification of biologic problems only to a limited extent, but they nevertheless believe that their experiments are not without value in the investigation of the relations between vitamin C and pigment formation, and they think that their observations justify the conclusion that, if vitamin C influences pathologic pigmentations of the skin, it is not the dopa-oxydase that is the point of attack.

Takata Reaction in Liver Diseases.—Schindel and Barth performed the Takata test in 687 cases. Of this number, fifty-nine gave a positive, twelve a weakly positive and 616 a negative reaction. They believe that the positive Takata reaction is characteristic for cirrhosis of the liver, for it was positive in 83.8 per cent of the cases. When the liver was impaired as the result of a circulatory disturbance, the Takata reaction was positive in 18 per cent of the cases. A similar percentage of positivity of the Takata reaction was found in the disorders that are grouped under the heading of hepatopathies. In cholestopathies and in cholangiopathies the percentage of positivity was still smaller. Patients with tumor metastases in the liver had a positive reaction rather frequently. In other diseases the Takata reaction is only occasionally positive, and, if it is, an involvement of the liver may be assumed. The authors show that the outcome of the Takata reaction is caused neither by a shifting in the albumin-globulin quotient nor by a change in the total albumin content of the serum and that there is no parallelism to the sedimentation speed of the erythrocytes. The positive Takata reaction indicates a disappearance of the hepatic parenchyma, and it is thus an indication of morphologic changes. It has not been determined what degree of parenchymal damage is necessary to make the reaction positive. It is likewise still unknown in what manner the liver effects a change in the flocculation behavior of the serum. The authors are inclined to believe that the appearance of the lower forms of the fatty acids plays an important part. The outcome of the Takata test gives no information about the functional condition of the remaining parenchyma, and for this reason the tolerance tests of the liver cannot be dispensed with. When the tolerance tests are carried out it is necessary to give attention to the previous diet, for the authors believe that disregard of this factor is the cause of many divergences in the estimation of the tolerance tests. There is rarely a parallelism either between the Takata reaction and the tolerance tests or between the different tolerance tests. The authors' own experiences with the galactose and bilirubin tolerance tests did not make them less pessimistic about the value of the tolerance tests, but they gained the impression that at least the Takata reaction presents a valuable addition to the diagnostic armamentarium, although only a small proportion of liver diseases can be definitely detected with it.

Wiener klinische Wochenschrift, Vienna

47: 1081 1104 (Sept 7) 1934 Partial Index

So Called Precancerosis C Sternberg—p 1081

Physicochemical Methods in Examinations of Medicines L Fuchs—p 1083

Rare Cerebellar Disease Presenting Aspects of Cerebral Tumor B Kecht—p 1087

Ventriculography and Encephalography in Diagnosis and Therapy of Nervous Disturbances H Urban—p 1090

Tuberculous "Early Exanthem" D von Moritz—p 1091

Clinical Aspects and Diagnosis of Thrombosis of Coronary Arteries E Friedländer—p 1093

Obstacles to Delivery and Their Treatment L Kraul—p 1096

Value of Ventriculography and Encephalography.—

Urban applies the term ventriculography to that form of roentgenography of the brain in which the air is introduced directly into the ventricles, and he designates as encephalography that form in which the air is introduced by suboccipital or lumbar injection. He concludes that they are the most valuable of the physical aids for the diagnosis of cerebral tumors. Since the filling of the ventricles is of vital importance for a correct diagnosis, ventriculography is sometimes effective in cases in which encephalography fails. The introduction of air has therapeutic value, particularly in genuine and traumatic epilepsy. The author asserts that improvement or cure is effected in about 55 per cent of the cases of genuine and traumatic epilepsy in which air inflation is combined with medication by means of bromine derivatives or phenobarbital.

47: 1105 1128 (Sept 14) 1934

Radical and Palliative Surgery in Gastric and Intestinal Diseases J Schutlzler—p 1105

Intermittent Dilatation of Abdominal Aorta F Hogler—p 1111

Adhesive Pleurisy A V Frisch and M Vita—p 1115

Phrenic Pressure Point as Differential Diagnostic Sign in Diseases of Gallbladder R Bayer—p 1117

Infection Index of Patients with Cancer P Engel—p 1118

Poisoning with Potassium Ferrocyanide with Impairment of Kidney L Popper—p 1119

Local Application of Diathermy in Essential Hypertension Trolow, Malkova Riabowa and Altmann Pargmanik—p 1121

Intermittent Dilatation of Abdominal Aorta.—Hogler

points out that intermittent dilatation of the abdominal aorta is often overlooked or mistaken for other abdominal disorders, such as gastric or duodenal ulcer, cholelithiasis, chronic appendicitis or various vascular disturbances (atherosclerosis, aneurysm, or Pail's abdominal vascular crisis). Rosenbach was the first to give a detailed description of the disorder (1894), but later several other authors described it. Rosenbach gave the following description of the clinical aspects. Without apparent reason, and occasionally in a state of complete well being, a brisk pulsation appears in the epigastric region, accompanied by more or less severe pains. The patients state that it feels as if they had a second heart in the abdomen, the pulsation of which causes a burning and piercing pain. This pain frequently radiates to the back and rarely also to the thighs. In addition to this there develop colic-like gastro-intestinal disorders accompanied by heartburn, nausea and urge to defecation and occasionally constipation and flatulence. Frequently the patients complain of severe hunger, palpitation of the heart and profuse sweating. The attacks of pain may last several hours and they usually appear at intervals of several weeks. Palpation reveals a whirring sound over the abdominal aorta. The vessel is noticeably dilated and usually sensitive to pressure. On auscultation over the pulsating abdominal aorta the examiner hears a long drawn out blowing sound, which is loudest to the left of the median line between the edge of the liver and the umbilicus. As the pulsation and the pains subside, the objective manifestations disappear likewise. It is assumed that these peculiar symptoms are the result of the dilatation of the abdominal aorta and the dragging on the adjoining organs, particularly the ganglions and the nervous plexus. Moreover, the intense pulsations influence also the adjoining sections of the gastro-intestinal tract. The underlying cause is presumably a vagus neurosis, which by reflex action reduces the tonus of the abdominal aorta and is followed by a dilatation of the vessel. The author presents the clinical histories of several patients with intermittent dilatation of the abdominal aorta. Periods of latency alternate with attacks. During the latent periods the author was able to produce attacks by means of the subcutaneous injection of from 0.5 to 1 mg of epinephrine. Tests

on normal persons revealed that in these the symptoms of dilatation of the abdominal aorta remained absent following epinephrine injection. Thus epinephrine injection may prove valuable in differentiating dilatation of the abdominal aorta from other abdominal disorders.

Phrenic Pressure Point in Diseases of Gallbladder.—

Bayer calls attention to a sign that, although described before, has been given little attention. The sign is helpful in the differentiation of disorders of the gallbladder and liver from ulcers of the stomach and the duodenum, the latter frequently presenting symptoms similar to those of hepatobiliary disorders. The sensitive point on the phrenic nerve is between the sternocleidomastoid muscle and the anterior scalenus on the right side of the neck. If disease of the diaphragm and of the thoracic cavity can be excluded, the painfulness of that point to pressure indicates disease of the gallbladder, but absence of sensitivity does not necessarily prove the absence of gallbladder disease.

Diathermy in Hypertension.—Trolow and his associates

are of the opinion that disturbances in the endocrine-sympathetic systems with subsequent regulatory disturbances of the entire vascular system and with vascular spasms of the abdominal organs play an important part in the pathogenesis of essential hypertension. They decided to apply diathermy to the celiac plexus and to the suprarenals. The position of the kidneys was determined and marked on the skin. Two electrodes, each 150 sq cm in surface, were fixed in such a manner that one half of each electrode was applied over the marked region and the other half reached beyond it into the region of the suprarenals. In addition to these two electrodes a third, of 300 sq cm, was applied in the center of the epigastric region, immediately below the xiphoid process. In some cases this third electrode was replaced by two, each of them having half the surface and being placed over the lateral epigastric regions, below the costal arch. The treatments were given with a current strength of from 0.5 to 2 amperes. The patients were lying down when the diathermy was applied. The treatments lasted from five to ten minutes, and they were given daily or every second day. The total number was from fifteen to thirty, depending on the results. After each treatment the patients had to rest for about thirty minutes. The blood pressure, the pulse, the respiration and the general condition were determined before, during and after each treatment. Of the twenty-five patients treated in this manner four were not influenced, one showed a slight increase in pressure, but the other showed a reduction of the maximal pressure. The minimal pressure was reduced in fifteen cases. The reduction of the pressure that had been obtained by means of the diathermy persisted in some instances for from eight to ten months, while in others a relapse occurred after about two months. In two patients the blood pressure was higher three or four months after the treatment than it had been before. The frequency of pulsation and respiration remained generally about the same. The authors conclude that in the majority of cases the results were favorable and think that the treatment deserves further attention.

Zentralblatt für Gynäkologie, Leipzig

58: 2225 2288 (Sept 22) 1934

Multiple Urethroceles in Women A Baidin—p 2225

Clinical Aspects of Emphysematous Cystitis T Antoine—p 2230

Operation for Vesicovaginal Fistulas and for Urethrocele W Stoekel—p 2235

Vesicovaginal Fistulas G Frommolt and A Stamatiades—p 2242

Implantation or Anastomosis of Ureter B S ten Berge—p 2251

**"Pyelitis Granularis" as Cause of Severe Hemorrhage from Renal Pelvis B Ottow and J Pahl—p 2256

*Interruption of Pregnancy on Account of Pregnancy Pyelitis Really on Account of Pyelonephritis F von Mikulicz Radecki—p 2264

"Pyelitis Granularis" as Cause of Hemorrhage from Renal Pelvis.—Ottow and Pahl say that although granular pyelitis has been known for a long time, the number of cases that have been observed is small. Aside from cases accidentally discovered at necropsy, granular pyelitis is usually detected in the course of renal surgery for severe renal hemorrhages. They give the history of a woman, aged 34, who had had hematuria of changing severity for ten weeks. Cystoscopy revealed that the bladder and ureters were free from pathologic changes. Pyelography showed certain abnormalities that made

the existence of a neoplasm possible, and surgery was resorted to. The kidneys were practically normal, but the wall of the renal pelvis was thickened and there were several ridge-like protrusions. On palpation the mucous membrane was rough, and examination through the magnifying glass disclosed that it was stippled. In the connective tissue there were bloody streaks and spots, some of them being overfilled vessels and some being extravasations. Microscopic inspection of the capsule revealed funnel-like inflammatory foci, which were old interstitial inflammations. The uriniferous and the vascular apparatus of the kidney was largely intact. The severest changes were in the connective tissue of the renal pelvis. Underneath the epithelial layers of the mucous membrane there were leukocytic and lymphocytic infiltrations and lymph follicles. In some places the epithelial layers were lifted up, particularly above the follicles, but also occasionally above the infiltrations. The chronic inflammatory process led to ruptures of the vessels in the region of the renal pelvis and perhaps also in the kidney and thus led to prolonged hematuria, which in turn resulted in anemia. The authors think that decapsulation of the kidney is not likely to arrest hemorrhages caused by granular pyelitis and that extirpation will generally become necessary.

Interruption of Pregnancy on Account of Pyelitis.—In cases of pyelitis of pregnancy in which the renal parenchyma becomes involved, that is, in pyelonephritis, von Mikulicz-Radecki considers interruption of the pregnancy advisable. On the basis of statistics, these cases amount to from 1 to 3 per cent of the total material. He thinks that in pyelitis limited to the renal pelvis conservative measures usually produce improvement and cure. The danger begins when the renal parenchyma becomes involved, particularly when the involvement is bilateral, when the accumulation of pus in the renal pelvis has become so great that it acts like an abscess and when the upper portion of the ureter has become involved to such an extent that as a result of the fixation of the ureteral bent the discharge of urine and pus is obstructed. The author thinks that the danger is especially great for women with an infantile or asthenic habitus. He recommends a trial with conservative measures, particularly ureteral catheterization, irrigation of the renal pelvis and continued drainage of the ureter. However, if these measures do not improve the condition soon, the pregnancy should be interrupted. Interruption is indicated (1) when fever and pains persist for longer periods and when chills and accelerated pulsation become manifest, (2) if toxic and septic symptoms develop (icterus, vomiting and loss of weight), (3) if the conservative measures fail, and (4) if the albumin content of the urine exceeds the content in leukocytes and when casts are present. In discussing the technic of the interruption of pregnancy he states that some authors have advised against the vaginal route because of the danger of infection by colon bacilli. He believes that this danger has been exaggerated. He advises the vaginal method as long as the fetus is not yet viable and recommends prompt evacuation of the uterus by anterior hysterotomy, so that there is no time for the micro-organisms to travel upward. However, if the fetus is already viable, the author considers delivery by abdominal section the best method.

Acta Chirurgica Scandinavica, Stockholm

75: 273-467 (Sept. 26) 1934

*Clinical Contribution to Knowledge of Osteochondritis Dissecans. J. Hellström and K. Östling.—p. 273.

Total Gastrectomy for Cancer with After-Examinations of Absorptive Capacity of Intestine. P. Bull and J. Stang.—p. 319.

Acute Tuberculous Epididymitis and Epididymo-Orchitis. T. Sjöstrand.—p. 329.

*Acute Pancreatitis. O. Mikkelsen.—p. 373.

Healing of Fractures of Neck of Femur After Osteosynthesis with Stainless Steel Nail. I. Palmer.—p. 416.

Endothelioma of Stomach: Casuistic Report. L. Dahlgren.—p. 451.

Osteochondritis Dissecans.—Hellström and Östling report seventy-three cases of osteochondritis dissecans, of which forty-six were of the knee joint, twenty-four of the capitulum humeri, and one each of the talus, the second metatarsal head and the second metacarpal head. The last mentioned localization has not been described in the literature. Bilateral disturbances were present four times in the knee joint and twice in the elbow joint. Patients with osteochondritis dissecans of the capitulum

humeri, the patella and the lateral femoral condyle were, as a rule, of younger age than those having osteochondritis dissecans of the internal femoral condyle. Most patients belonged to the working class. The symptomatology has not differed from the ordinary one. It is noteworthy that locking may occur without free bodies being present. The diagnosis was confirmed by roentgen examination. This may show typical osteochondritis dissecans in which no such condition can be discovered by arthrotomy. The differential diagnosis is concerned with specific and septic osteochondritis, spontaneous traumatic separations, chondromalacia and so-called aseptic bone necrosis. In considering the course of the disease, one has to pay attention to the origin and subsequent development of the osteochondritic focus, the loose bodies and secondary articular changes, especially arthritis deformans. The authors show that osteochondritis dissecans may arise as a direct sequel of a single trauma and they are on the whole advocates of a traumatic etiology without, however, underrating the constitutional and hereditary factors. Osteochondritis dissecans may conceivably be concerned with two forms, the purely traumatic and the spontaneous form, the true cause of which is still unknown. As to the frequency of osteochondritis dissecans of the elbow joint, the authors have examined the roentgenograms of 1,500 elbows and roentgenologically both elbow joints of 206 male subjects who did not present any symptoms. Osteochondritis dissecans of the elbow joint has occurred much less frequently in their material from Stockholm than in Nielsen's material drawn from the rural districts of Jutland.

Acute Pancreatitis.—Mikkelsen deals with severe acute pancreatitis. A review of the literature shows that its treatment still remains almost exclusively operative and that the results of such treatment still show an average mortality of 50 per cent. The operative treatment involves an attack either on the pancreas (incision into the capsule and drainage) or on the bile ducts. The author points out that there is no anatomic basis for an operative attack on the pancreas. The pancreas has no true capsule in the anatomic sense of the term. The structure that is divided on incision into the pancreas in the peritoneum covering the organ, and an incision through this peritoneal covering cannot relieve its secretory tension. The pancreas is made up of many small lobules that are separated by thin septums of connective tissue each enclosing an individual lobule. In order to relieve the pressure tension in the pancreas it would be necessary to divide the thin layer of connective tissue covering each lobule and that would not be feasible. Besides, these interlobular connective tissue septums are intimately connected with the glandular tissue, which is always affected at the same time. An operation of this kind is thus apt to cause an increase rather than a reduction in the necrosis and intoxication; besides, it implies a not inconsiderable risk of hemorrhage and fistula formation. The theoretical basis for an operation on the bile ducts is more logical, but the systematic employment of such operative measures in recent years has not lowered the case mortality decidedly, no doubt because these patients are in such a poor condition that they are not able to stand any operative treatment whatever. Recently a few surgeons have turned to a more conservative treatment, some of them postponing the operation till the "shock stage" is passed, others waiting until all acute symptoms have subsided, after which an operation is performed for gallstones when such are found to constitute the underlying cause of the acute pancreatitis. Operation is also performed, of course, if the process goes on to abscess or cyst formation. During the last eight years they have treated conservatively thirty-nine patients with severe acute disorders of the pancreas. Twenty of these were extremely ill, their general condition being very poor (shock). Three of the twenty patients died, and the remaining nineteen were gravely ill but not actually shocked. The diastase value was most often 3,000, 4,000, 6,000 and 12,000. In but two cases was the diastase value under 2,000. Operation was performed only in cases in which gallstones were ascertained and not until from one to three weeks after the acute symptoms had subsided. The treatment adopted by the authors consisted of a supply of fluid by mouth, skin and vein, and the use of stimulants and peristaltics. The mortality with this conservative treatment was 7.5 per cent.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 22

CHICAGO, ILLINOIS

DECEMBER 1, 1934

THE OCCURRENCE AND TREATMENT OF NEUROLOGIC CHANGES IN PERNICIOUS ANEMIA

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In recent years with the advent of a potent medication for the treatment of the anemia of pernicious anemia, a great deal of consideration has been given to the effect of liver and desiccated stomach therapy on the associated lesions of the spinal cord and brain in this disease. Innumerable workers have reported, with considerable diversity of opinion,¹ the results of their investigation concerning the progression and prevention of nervous system involvement. Our purpose in this paper is to present a study of a comparatively large group of patients, extending over a period of seven years, concerning the occurrence of neurologic and mental manifestations in pernicious anemia and to determine the effect of various types of antianemic therapy on them.

The group consisted of 461 patients with pernicious anemia observed at the Simpson Memorial Institute between the years 1927 and 1934. Comprising this group were 261 men (56.6 per cent) and 200 women (43.4 per cent), ranging in age from 20 to 80 years. Of this total, 408 (88.5 per cent) patients are still alive and fifty-three patients (11.5 per cent) are dead. Table 1 lists the age and sex distribution of those patients who are still living. The general admission ratio between all men and women at the University of

Michigan Hospital is, however, approximately the same as that of the pernicious anemia group, and this may account for the difference in the latter group.

Regardless of the age group, nervous system involvement has been noted in 364 of the 408 patients (89.2 per cent). Of this group, 43.2 per cent had the symptoms of cord changes at the onset of the disease, and in the remainder (46 per cent) the changes developed at some period during the course of the illness, but before the patient came under our observation. Posterior column manifestations, including numbness and tingling of the hands and feet, were present in 89.2 per cent of the patients. Evidence of involvement of the lateral column was noted in 41.6 per cent and combined degeneration in 40.7 per cent. In a series of fifty of these patients, especially studied by Dr. George Hammond of our clinic, cerebral symptoms occurred in 64 per cent.

In table 2 are listed the relationship between the age, the sex, the clinical manifestations of pathologic changes of the cord, and the red blood cell count when the patients were first observed by us. Apparently the occurrence of cord manifestations is independent of the state of the blood and may occur at any age. Furthermore, from table 3, it is obvious that the earliest evidence of the disease may be an alteration of the nervous system that precedes the development of the anemia. Also, it is apparent that a severe anemia may be present without evidence of spinal cord changes. It is suggestive, moreover, from this table, that there is a slightly greater tendency for cord changes to develop at the onset of the disease in women than in men, as this occurred in 48.8 per cent of the former and 37.6 per cent of the latter.

A series of fifty cases was selected at random and studied intensively in order to determine the occurrence of various individual neurologic symptoms and signs (table 4), which might indicate involvement of the nervous system. These observations were made by various members of the staff during routine examinations. The importance of the frequency of such symptoms and signs as numbness, tingling, ataxia, impaired vibratory sensation, hyperactive reflexes, irritability and bladder disturbances is most evident.

A second series of fifty cases was selected by Dr. George Hammond with the specific idea of determining the frequency of all the possible neurologic manifestations listed by Tilney and Riley (table 5). The striking features in this group are the wide variety of manifestations of disease of the spinal cord and the frequency of mental changes,² which have not received

From the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan.

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

¹ These include:

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- Farquharson, R. F., and Grabam, Duncan. Liver Therapy in the Treatment of Subacute Combined Degeneration of the Cord, *Canad. M. J.* 23: 237 (Aug.) 1930.
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- Baker, B. M. Jr., Bordley, James III., and Longcope, W. T. The Effect of Liver Therapy on the Neurologic Manifestations of Pernicious Anemia, *Am. J. M. Sc.* 184: 1 (July) 1932.

2. Camp, C. D. Pernicious Anemia Causing Spinal Cord Changes and a Mental State Resembling Paresis, *M. Rec.*, Jan. 27, 1912.
- Voltman, H. W.: Brain Changes Associated with Pernicious Anemia, *Arch. Int. Med.* 21: 791 (June) 1918.
- Lurie, L. A. Pernicious Anemia with Mental Symptoms, *Arch. Neurol. & Psychiat.* 2: 67 (July) 1919.
- McAlpine, Douglas. A Review of the Nervous and Mental Aspects of Pernicious Anemia, *Lancet* 2: 643 (Sept. 28) 1929.
- Piney, A. Mental Changes Associated with Pernicious Anemia, *J. Neurol. & Psychopath.* 13: 127 (Oct.) 1932.

as much emphasis in the literature. Evidence of cerebral involvement was noted in 64 per cent of the cases. This varied from very mild irritability to severe mania. Cerebral manifestations may be present alone or in association with cord disturbances, they may be present with or without any evidence of anemia, and they may present themselves as the earliest and only manifestation of pernicious anemia.

To determine progression of cord changes with treatment in pernicious anemia, three factors may be

TABLE 1—Age and Sex Distribution of the Pernicious Anemia Patients Studied in this Group

Age Groups	Male	Female	Total
20-29	7	4	11
30-39	12	16	28
40-49	44	41	85
50-59	78	57	135
60-69	70	48	118
70-79	20	11	31
Total	211	177	388

considered. First, the majority of patients have at least slight evidence of cerebral involvement; therefore evaluation of subjective information is often difficult, and some doubt must be cast on a statistical study based solely on data of this character. Second, only exaggerated variations from the normal can be listed in an arbitrary manner, as there is no exact method by which subjective information may be recorded. For example, as shown by Piercy,³ Gray⁴ and others, the threshold value of vibratory sensation varies in individuals. Various test points have different values; the vibratory sensation is less pronounced as one grows older, although never entirely absent, and the results depend

been instituted. This finding has been explained by many investigators as being due to the fact that symptoms and signs of central nervous system involvement may exist without the presence of demonstrable pathologic changes of the cord. These facts must be given serious consideration when conclusions are drawn regarding the benefits derived from the various types of therapy. Furthermore, it must be emphasized, as Ahrens¹ and other observers have noted, that there may be spontaneous variations in the intensity of the neurologic manifestations, and thus all conclusions regarding the effect of treatment must be made with caution.

For the purpose of classification, a level of 4 million red blood cells per cubic millimeter has been selected arbitrarily as the dividing line between those patients who had received a reasonable amount of treatment and those in whom treatment had been obviously inadequate. Included in the latter group are: (1) those who took too little treatment or none at all, and (2) those who did not respond to the usual dosage of antianemia therapy, which would have been sufficient for most patients.

The average duration of the disease in the entire group of patients before admission was about two years. Although the general clinical impression has been that there is a definite correlation between the duration of illness before treatment and the prognosis, our observations do not support this view conclusively. Of 126 adequately treated patients in the male group, when first observed by us, eleven had no demonstrable cord lesions, sixty-one had posterior column involvement, one had lateral tract degeneration and fifty-three had combined degeneration (table 6). Of the

TABLE 2—Relationship Between Age, Sex, Clinical Manifestations of the Spinal Cord Lesion, and Red Blood Cell Count Per Cubic Millimeter, on Admission

Age, Years		Red Blood Cells, Millions per Cu. Mm.																					
		0009			1019			2029			3039			4049			5059			6069			
		P	L.	PL.	P	L	PL	P	L	PL	P	L	PL	P.	L.	PL.	P.	L.	PL.	P.	L.	PL	
Males	20-29	1			1			2	1	1	1	1	1	..	..	..	..	..	..	..	..	..
	30-39				3			1			4	3	3	1	..	..	..	..	..	..	..	..
	40-49	2			16	7	7	12	6	6	7	3	3	3	1	1	1	1	1	1	..	..
	50-59	9	3	3	18	6	5	20	17	17	15	3	3	7	4	4	3	2	2	..	..	..
	60-69	7	4	4	20	7	7	18	8	8	16	10	10	4	2	2	1	..	..	..	..	..
	70-79	1			3	3	3	6	2	2	3	1	1	..	..	..	..	..	..	..	..	..
Total		20	7	7	63	28	22	60	32	32	44	21	21	15	7	7	5	3	3	1	..	..
Females	20-29	2	1	1	1	1	1	5	2	2	1	1	1	1	..	..	..	..	..	..	..	..
	30-39										3	3	3	1	..	..	..	..	..	..	..	..
	40-49	2	1	1	14	7	7	9	4	3	11	7	7	4	2	2	..	..	..	..	..	..
	50-59	3	1	1	22	8	8	11	6	6	12	8	8	1	1	1	2	2	1	..	..	..
	60-69	3	2	2	11	3	3	15	10	10	6	4	3	6	2	2	..	..	..	..	..	..
	70-79				3	1	1	3			2	..	..	2	..	..	1	..	..	..	..	..
Total		10	5	5	51	20	20	43	22	21	35	23	22	15	5	5	3	2	1	..	..	..
		Number						Per Cent															
		Posterior Column Manifestations		Lateral Column Manifestations		Posterolateral Column Manifestations		Posterior Column Manifestations		Lateral Column Manifestations		Posterolateral Column Manifestations											
Males		207		93		92		89		39.8		39.5											
Females		157		77		74		89		43.5		41.8											

somewhat on the touch and pressure of the observer and the degree of cooperation, fatigue of the patient and the amount of edema and paresthesia present. Lastly, it is well known that the examiner may note positive evidence on one occasion and negative on another in spite of the fact that no treatment has

been instituted. This finding has been explained by many investigators as being due to the fact that symptoms and signs of central nervous system involvement may exist without the presence of demonstrable pathologic changes of the cord. These facts must be given serious consideration when conclusions are drawn regarding the benefits derived from the various types of therapy. Furthermore, it must be emphasized, as Ahrens¹ and other observers have noted, that there may be spontaneous variations in the intensity of the neurologic manifestations, and thus all conclusions regarding the effect of treatment must be made with caution.

3. Piercy, H. D. Quantitative Measurement of the Vibration Sensation, Ohio State M. J. 19: 572 (Aug.) 1923.
4. Gray, R. C. A Quantitative Study of Vibratory Sense in Normal and Pernicious Anemia Cases, Minnesota Med. 15: 674 (Oct.) 1932.

severe and in six patients the physical signs progressed. It was not possible to make observations on four of the patients after treatment had been instituted. Only one case was noted with lateral column involvement alone, but unfortunately it was not possible to obtain further observations on this patient. Of fifty-three patients with combined degeneration, the symptoms

spinal cord involvement, thirty-nine had posterior column degeneration and thirty-five had combined degeneration. The condition of four of the seven patients without spinal cord involvement remained unchanged following treatment; in two neurologic manifestations developed and in one patient no further data were obtained. Of thirty-nine patients with pos-

TABLE 3.—*Relationship Between Age, Sex, and Clinical Manifestations of Spinal Cord Pathology at Onset of Disease*

Red Blood Cells per Cu. Mm. in Millions on Admission															
		0.0-0.9		1.0-1.9		2.0-2.9		3.0-3.9		4.0-4.9		5.0-5.9		6.0-6.9	
Age, Years		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Males	20-29.....	..	1	1	2	..	2	..	1	..	..	..	..	..	..
	30-39.....	..	..	2	2	..	3	2	2	..	1	..	..	..	..
	40-49.....	1	2	6	13	5	7	4	2	1	2	1	..	..	..
	50-59.....	2	7	7	13	5	16	10	7	3	4	2	1	..	1
	60-69.....	2	5	5	18	12	8	8	7	2	2	1	..	..	..
	70-79.....	..	1	1	9	2	4	2	1	..	..	..	..	..	..
	Total.....	5	16	22	57	24	40	26	20	6	9	4	1	..	1
Total yes, 87, 37.6%; total no, 144, 62.4%															
Females	20-29.....	..	..	..	2	..	..	1	..	1	..	..	..	..	..
	30-39.....	2	1	1	1	2	3	2	2	1	1	..	..	..	..
	40-49.....	1	1	6	8	4	7	8	3	3	2	..	..	..	..
	50-59.....	2	1	8	14	4	10	10	2	1	..	1	2	..	..
	60-69.....	2	1	4	9	10	5	4	7	3	2	..	..	..	..
	70-79.....	..	..	1	2	1	2	2	..	1	1	..	1	..	..
	Total.....	7	4	20	36	21	27	27	14	10	6	1	3	..	..
Total yes, 86, 48.5%; total no, 90, 51.2%															

were improved in twenty-three following treatment, they were unchanged in twenty-three and accentuated in five. In no instance were the signs improved; in forty-two they remained the same, and they progressed in five. In two patients no further observations were made following treatment.

Of a total of sixty-nine cases inadequately treated among the males, (table 6), thirteen presented no evidence of spinal cord changes when first observed. Eleven of these developed neurologic manifestations during the course of this inadequate therapy and two

TABLE 4.—*Incidence of Neurologic Manifestations in Fifty Cases of Pernicious Anemia (Routine Examination)*

	Present, per Cent	Absent, per Cent	Question- able, per Cent	Unre- corded, per Cent
A. Posterior Column Manifestations				
1. Numbness	88	10	..	2
2. Tingling	82	12	..	6
3. Impaired vibratory sense.....	28	40	26	6
4. Loss of position.....	12	58	16	14
5. Ataxia in locomotion.....	54	23	..	18
6. Biceps jerks, decreased or lost..	0	82	2	16
7. Triceps jerks, decreased or lost	0	78	2	20
8. Knee jerks, decreased or lost...	4	60	25	10
9. Ankle jerks, decreased or lost...	6	60	18	16
10. Bladder disturbances	22	72	..	6
B. Lateral Column Manifestations				
1. Biceps jerks, increased.....	18	64	..	18
2. Triceps jerks, increased.....	18	62	..	20
3. Knee jerks, increased.....	32	53	..	10
4. Ankle jerks, increased.....	30	54	..	16

did not. Of thirty-eight cases of posterior column degeneration, the symptoms improved in five, remained the same in twenty-one and were progressive in twelve. In the same group of cases, the signs regressed in one instance, remained unchanged in twenty-one and progressed in fifteen. In the eighteen instances with combined degeneration, the symptoms improved in two, remained unchanged in eleven and became worse in five. The signs did not improve in any of the cases of this group; they were unchanged in eleven and progressed in five.

In the group of eighty-one female patients who were adequately treated (table 6), seven had no evidence of

terior column degeneration, the symptoms improved in twenty-one, remained unchanged in seventeen and became worse in one. In the same group the signs

TABLE 5.—*Incidence of Neurologic and Cerebral Manifestations in Fifty Cases of Pernicious Anemia (Special Examination)*

	Present, per Cent	Absent, per Cent	Question- able, per Cent	Unre- corded, per Cent
A. Posterior Column Manifestations				
Numbness	90	10	..	..
Tingling	84	16	..	..
Coldness	76	24	..	..
Band sensations	26	74	..	..
Sharp shooting pain.....	8	92	..	..
Loss of position sense.....	42	44	14	..
Decreased or lost vibratory sense...	48	24	28	..
Astereognosis	26	60	8	6
Loss of finer coordination of fingers	64	36	..	..
Ataxia in locomotion.....	74	26	..	..
Rombergism	62	26	6	6
Cutaneous hyperesthesia	8	92	..	..
Anesthesia to touch.....	8	92	34	6
Anesthesia to temperature.....	6	46	42	6
Anesthesia to pain.....	8	56	30	6
Bladder disturbances	46	54	..	..
Muscular atrophy	24	76	..	..
Biceps reflex, decreased or lost.....	2	88	10	..
Triceps reflex, decreased or lost.....	2	88	10	..
Knee jerks, decreased or absent....	18	60	22	..
Ankle jerks, decreased or absent....	24	56	20	..
B. Lateral Column Manifestations				
Stiffness	42	58	..	..
Spastic paralysis of legs.....	6	94	..	..
Knee jerks, increased.....	38	62	..	..
Ankle jerks, increased.....	28	72	..	..
Ankle clonus	6	90	4	..
Babinski reflex	56	44	..	..
Biceps jerk, increased.....	14	86	..	..
Triceps jerk, increased.....	14	86	..	..
C. Cerebral Manifestations				
Mild depression	58	42	..	..
Violent maniacal outbursts.....	2	98	..	..
Indifference or apathy.....	6	94	..	..
Irritability	64	36	..	..
Delusions	18	82	..	..
Hallucinations	16	84	..	..
Memory disturbances	60	40	..	..
Coma	18	82	..	..

improved in none, were constant in eighteen and progressed in two. In thirty-five patients with combined degeneration, the symptoms improved in fifteen, were constant in nineteen and were worse in one. In the

same group the signs improved in none, remained stationary in thirty and were progressive in one.

In a group of fifty-seven female patients inadequately treated, cord changes developed in one during the period of observation and did not develop in three; no further data were obtained. Thirty of these patients had posterior column degeneration. Of these, the symptoms improved in three, remained unchanged in fourteen, and became worse in eleven. In two cases, no further data were available. In the same group

patients. One other fact worthy of mention is that the lower extremities are affected more often than the upper ones, and improvement is less common in them. This fact may possibly be related to the relatively greater length of the tracts supplying the legs as compared to those leading to the arms.

Table 8 shows the prognostic relationship between cord lesions and the various types of antianemic therapy given in adequate and inadequate amounts. It appears that fresh liver and intravenous liver extract

TABLE 6.—*The Effect of Adequate and Inadequate Therapy on the Spinal Cord Lesions in the Male and Female Series*

Type of Central Nervous System Pathology	No. of Cases	Result of Treatment—Male Series							
		Improvement		No Improvement		Worse		Developed Cord Pathology	Therapy
		Symptoms	Signs	Symptoms	Signs	Symptoms	Signs		
Posterior column degeneration . . .	61	25	4	29	33	3	6	..	Adequate
Lateral column degeneration . . .	1	..	..	..	..	..	..	..
Combined system degeneration . . .	53	23	..	23	42	5	5	..	
None	11	..	..	..	..	..	..	6
Posterior degeneration	38	5	1	21	21	12	15	..	Inadequate
Combined degeneration	18	2	..	11	11	5	5	..	
None	13	..	..	..	..	11	11	11
Result of Treatment—Female Series									
Posterior column degeneration . . .	39	21	..	17	18	1	2	..	Adequate
Combined column degeneration . . .	35	15	..	19	30	1	1	..	
None	7	..	..	..	..	..	..	2
Posterior column degeneration . . .	30	3	..	14	17	11	12	..	Inadequate
Lateral column degeneration . . .	2	..	..	1	1	..	..	..
Combined column degeneration . . .	19	2	..	12	15	3	3	..	
None	6	..	..	..	..	..	..	1

there was no improvement in the signs; in seventeen cases they remained unaltered, and in twelve the signs progressed. Of nineteen patients with combined column degeneration the symptoms improved in two, remained unchanged in twelve and became worse in three. In none of these cases did the signs improve; in fifteen they remained stationary and in three they progressed. These observations suggest that there is a better prognosis when only the posterior tracts are involved than when combined tract degeneration is present and that improvement can be expected more often in symptoms than signs resulting from the spinal cord lesions.

In table 7 are listed the total number of patients (males and females) in the various age groups with cord signs and symptoms and their status following adequate and inadequate therapy. With adequate therapy the symptoms improved in 49 per cent, remained the same in 39 per cent and became worse in 12 per cent. The signs improved in 2 per cent, remained the same in 83 per cent and became worse in 15 per cent. With inadequate therapy, improvement of symptoms occurred in only 16 per cent, remained the same in 49 per cent and became worse in 35 per cent. The signs improved in 2 per cent, remained stationary in 59 per cent and became worse in 39 per cent. A comparison of the two groups in table 7 demonstrates most satisfactorily the advisability of giving adequate therapy for the blood, because of its secondary effect on the central nervous system. It cannot also be stated, however, that the antianemic treatment has a specific curative effect on the spinal cord degeneration but rather aids in the general feeling of the well-being of the patient. In this indirect way, at least, antianemic treatment contributes to the improvement in the manifestations in the central nervous system. Further, our observations would suggest that with adequate therapy there is a more favorable outlook for improvement in the neurologic involvement in younger

are somewhat superior to desiccated stomach and liver extract orally, in the treatment of the neurologic manifestations, but the number of cases is entirely too few to form a basis for definite conclusions. These figures again serve to illustrate the value of giving sufficient treatment for the anemia and its secondary effect on the spinal cord lesions.

Of the total of 461 patients, 11.5 per cent have died, of whom thirty were men and twenty-three women.

TABLE 7.—*The Effect of Adequate and Inadequate Therapy on the Spinal Cord Lesions in the Male and Female Series in the Various Age Groups*

Age, Years	Occurrence of Neurologic Manifestations, No. of Cases		Results of Treatment with Adequate Therapy							
			Improvement, per Cent		No Improvement, per Cent		Worse, per Cent		Symptoms	Signs
	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs		
20-29	3	4	66	..	..	75	34	25		
30-39	7	6	57	..	26	80	15	20		
40-49	36	25	58	..	36	87	6	13		
50-59	76	61	47	1	49	90	4	9		
60-69	49	43	35	5	59	84	6	11		
70-79	17	15	30	7	60	80	10	13		
Total	188	134	Av. 49	2.0	39	83	12	15		
Results of Treatment with Inadequate Therapy										
20-29	3	3	..	..	33	33	67	67		
30-39	11	10	26	10	44	60	23	30		
40-49	20	20	10	..	45	50	45	50		
50-59	28	25	14	..	61	75	25	25		
60-69	38	44	9	..	71	85	14	15		
70-79	4	4	33	..	33	50	33	50		
Total	94	109	Av. 16	2.0	49	59	35	39		

The age limit of the group was 30 to 80 years. At the time of admission, the red blood cell counts ranged from less than one million to five million per cubic millimeter. Twenty-four of these patients, or approximately 45 per cent of the group who have died, had cord symptoms at the onset of the disease, and in an additional twenty-two, or 41 per cent, they developed before entrance to the hospital. Of this entire group,

56 per cent followed treatment as prescribed. Eleven patients died in the hospital and necropsies were performed on ten of them. All but one showed widespread combined degeneration of the spinal cord, and this patient had, in addition to pernicious anemia, carcinoma of the gallbladder, with no evidence of spinal cord involvement either clinically or at necropsy. As far as could be determined by correspondence, the cause of death could not be ascertained in fourteen cases. Of the remaining twenty-eight patients, seven-

2. Clinical evidence of spinal cord changes has been noted in 89.2 per cent of the cases and cerebral symptoms in 64 per cent.

3. Regardless of the type of adequate antianemic therapy, improvement in symptoms of the central nervous system was observed in less than 50 per cent of the cases, and improvement in signs in about 2 per cent of the cases.

4. Antianemic therapy, when given in sufficient amounts, does not have a specific curative effect on

TABLE 8.—*The Effects of Various Types of Antianemic Therapy on the Spinal Cord Manifestations When Given in Adequate and in Inadequate Amounts*

Type of Therapy	Results of Treatment with Adequate Therapy											
	Number of Cases						Percentage					
	Improvement		No Improvement		Worse		Improvement		No Improvement		Worse	
	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs	Symptoms	Signs
Liver.....	4	1	2	3	..	..	66	25	34	75	..	..
Liver extract by mouth.....	3	..	5	8	..	..	38	..	62	100	..	..
Desiccated stomach.....	15	2	24	27	4	4	35	6	55	82	10	12
Intravenous liver extract.....	22	..	10	26	1	4	66	..	30	87	4	13
Mixed.....	41	1	37	61	7	8	48	2	44	87	8	11
Results of Treatment with Inadequate Therapy												
Liver.....	1	..	3	4	3	3	14	..	43	57	43	43
Liver extract by mouth.....	..	..	2	2	2	2	..	..	50	50	50	50
Desiccated stomach.....	2	..	8	9	6	6	12	..	50	60	38	40
Intravenous liver extract.....	2	..	8	9	3	4	15	..	62	70	23	30
Mixed.....	8	..	37	40	18	21	13	1	50	65	28	34

teen were known to have been confined to bed before death because of progressive cord changes. The others died as the result of pneumonia, cardiac failure, nephritis and accidents (table 9).

The importance of complications in pernicious anemia cannot be overemphasized because of their unfavorable influence on the prognosis. The most common complications are trophic ulcers, lung infections and genito-urinary infections. Of the ten cases in which necropsies were performed, 73 per cent showed genito-urinary involvement clinically and 82 per cent at necropsy. Over 70 per cent of patients coming to postmortem examination had multiple gangrenous areas over the buttocks and heels. The presence of these complications is nearly always indicative of a terminal stage of the disease.

We have evaded the question of peripheral neuritis⁵ occurring in pernicious anemia, as neuropathologists are not in agreement as to its existence. If it does occur, its presence in relapse and its disappearance with treatment may well account for the subjective improvement that is so frequently noted.

SUMMARY AND CONCLUSIONS

1. A series of 461 cases of pernicious anemia have been studied to determine the occurrence of neurologic manifestations and to observe the effect of various types of antianemic therapy on them.

5. In addition to Ahrens,¹ Baker, Bordley and Longcope,² these include:

- Greenfield, J. G., and O'Flynn, Elizabeth: Subacute Combined Degeneration and Pernicious Anemia, *Lancet* 2: 62 (July 8) 1933.
- Skog, A. L.: Neurologic Manifestations in Pernicious Anemia, *J. A. M. A.* 87: 1957 (Dec. 11) 1926.
- Starr, Paul: The Prevention of Spinal Cord Degeneration in Pernicious Anemia, *J. A. M. A.* 96: 1219 (April 11) 1931.
- Suzman, M. M.: Effects of Liver Therapy in 100 Cases of Subacute Combined Degeneration of the Cord, reprinted from *Tr. Am. Neurol. A.* 57: 339, 1931.
- Ungley, C. C., and Suzman, M. M.: Subacute Combined Degeneration of the Cord: Symptomatology and Effects of Liver Therapy, *Brain* 52: 271 (Sept.) 1929.
- Ungley, C. C.: Effect of Brain Diet in Pernicious Anemia, *Lancet* 2: 63 (July 11) 1931.
- Ungley, C. C.: Effect of Brain Diet in Subacute Combined Degeneration of the Cord, *Lancet* 1: 227 (Jan. 30) 1932.

spinal cord degeneration but contributes only indirectly to the improvement of the manifestations of the central nervous system.

5. Whereas younger individuals appear to have a better prognosis, sex and duration of the disease do not appear to be significant factors. Great individual variation is noted in the progress of the disease in dif-

TABLE 9.—*Causes of Death in Fifty-Three Cases of Pernicious Anemia*

	At Hospital		At Home No Autopsy
	Autopsy	No Autopsy	
Disseminated spinal cord degeneration..	9	..	17
Pneumonia.....	..	1	2
Malignant condition.....	1	..	..
Unknown.....	..	..	14
Cardiac.....	..	..	5
Nephritis.....	..	..	2
Accident.....	..	..	2
Total.....	10	1	42

ferent individuals, and clinically there are slow and rapid types.

6. Such complications as genito-urinary infection, trophic ulcers and pneumonia, when present in association with marked central nervous system degeneration, are usually indicative of a poor prognosis.

Urologic Triumphs.—I might go on indefinitely through a long list of urological triumphs: the cystoscopic destruction of bladder tumors, the cystoscopic removal of ureteral calculi, the early recognition and cure of kidney cancer, conservative kidney surgery. The recognition of the nature of many vague abdominal syndromes which have been variously treated and mistreated until such time as a careful urological survey has demonstrated the underlying factors and removed them. However, the only point which I wish to make with this very sketchy review is that medicine and surgery have kept step with the rapid onward progress made in other lines and that urology, in spite of its youth, has contributed its full quota.—Rathbun, N. P.: Urology: Retrospect and Prospect, *J. Urol.* 32:417 (Nov.) 1934.

THE TREATMENT OF CHRONIC HEMOLYTIC JAUNDICE WITH LIVER EXTRACT

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AND

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While chronic hemolytic jaundice is an interesting clinical entity, medical textbooks contain little detailed information concerning the disease and consequently many physicians are not thoroughly familiar with the condition. Some authors mention that chronic hemolytic jaundice is a rare disease, while others state that it is relatively common; in fact, Lee¹ makes the statement that the increasing literature indicates that it is actually more common than pernicious anemia, and it is possible that this startling declaration is true when one considers that mild atypical types of chronic hemolytic jaundice exist.

Two types of the disease are generally described, the congenital and the acquired. The former is more generally diagnosed, whereas the acquired type more frequently escapes recognition. Failure to diagnose the acquired type of the disease may be attributed to the unfamiliarity of physicians with the condition. Some authorities claim that there is a definite acquired type of chronic hemolytic jaundice, while others, especially Gänsslen,² dispute the point and maintain that the manifestations which appear in later life are but expressions in a case with an inherited constitutional hemolytic defect. Whether or not the latter is an adequate explanation, the term "acquired hemolytic jaundice" is justifiable if it but suggests to the observer the necessity for detailed studies of the blood and careful search for etiologic factors in jaundiced patients. In chronic hemolytic jaundice, such studies may reveal an increased icteric index, urobilinuria, a variable degree of anemia (possibly of a microcytic type), reticulocytosis, increased fragility of the erythrocytes to hypotonic sodium chloride solution, indirect van den Bergh reaction, notable absence of bile in the urine, and clay colored stools. In our experience we have observed such instances even in the absence of splenomegaly. Enlargement of the spleen, although difficult at times to detect, is not invariably demonstrable and unfortunately certain observers have refused to consider chronic hemolytic jaundice unless this abnormal finding is present. In our opinion the milder types of the disease may fail to show splenomegaly, and we feel that the failure to demonstrate it should not adversely influence the opinion when laboratory evidence indicative of dissociated jaundice is obtained. We have seen such instances in which there was an elevated icteric index, urobilinuria, microcytic anemia and increased fragility of the red cells without evidence of splenomegaly and in which no cause for the condition could be ascertained. It is probable that many such mild cases exist in which satisfactory explanation as to cause is lacking and many observers, particularly Krumbhaar,³ have pointed out

that the exciting cause in the acquired types cannot always be determined.

With regard to the treatment of the condition, splenectomy has long been considered to be the most successful accepted therapeutic procedure and in the majority of instances the results have been most gratifying. It is generally agreed that, although marked clinical improvement usually follows splenectomy, the resistance of the erythrocytes to hypotonic sodium chloride solution remains disturbed. Another point of interest is that following splenectomy occasional cases have been reported in which the hemolytic crises have recurred. The occasional therapeutic failures after splenectomy have been cited as arguments against the concept that the spleen is the primary cause of the disease. Because of these failures and because patients rarely die from the disease and, as one author states, "they are more jaundiced than sick," many clinicians have adopted a conservative attitude and have felt that splenectomy should not be done if the patient is not incapacitated by the disease. The mortality with splenectomy is reported to be about 3 per cent.

In certain instances this may influence the opinion against surgery, or conditions may be present which

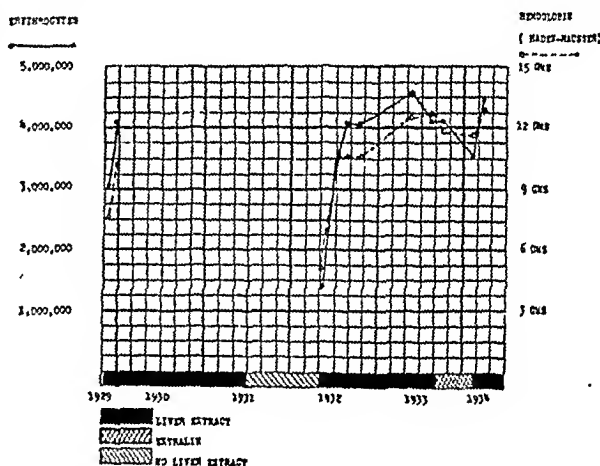


Chart 1 (case 1).—Erythrocyte and hemoglobin determinations from 1929 to 1934 during intervals of liver extract therapy, Extralin therapy and when no liver extract was given.

might make surgery inadvisable so that other methods of treatment may be necessary. In November 1929 one of us (E. C. R.) advised the use of liver extract for a patient having an acute crisis of chronic hemolytic jaundice because of the similarity of chronic hemolytic jaundice to pernicious anemia in relapse. The patient improved markedly in strength and appearance and at that time a surgeon advised against splenectomy. The patient, therefore, continued to take liver extract without medical supervision. In 1928, Ordway and Gorham,⁴ giving the same reasons for using it, first successfully used liver extract in the treatment of chronic hemolytic jaundice and stated that the idea was original with them. However, they declared that Minot⁵ in 1928 used liver extract in a case resembling acquired hemolytic jaundice and that following treatment the reticulocytes decreased rather rapidly and the red blood cell count returned to normal. In 1929 Lepehne⁶ suggested the administration of liver (from 200 to 250 Gm.)

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Lee, R. I., in Blumer, George: *Bedside Diagnosis*, Philadelphia, W. B. Saunders Company, 11: 713, 1928.

2. Gänsslen, M.: *Deutsches Arch. f. klin. Med.* 140: 210, 1922. Gänsslen, M.; Zipperlin, E., and Schütz, E.: 146: 1 (Jan.) 1925. Gänsslen, M.: *Klin. Wchnschr.* 6: 929 (May 14) 1927.

3. Krumbhaar, E. B., in Cecil, R. L.: *Textbook of Medicine*, ed. 3, Philadelphia, W. B. Saunders Company, 1933, p. 1886.

4. Ordway, T., and Gorham, L. D.: *Oxford Monographs on Diagnosis and Treatment (Disease of the Blood)* 9: 164, 1930.

5. Minot, G. R.; Murphy, W. P., and Stetson, R. P.: *The Response of the Reticulocytes to Liver Therapy, Particularly Pernicious Anemia*. *Am. J. M. Sc.* 175: 581 (May) 1928.

6. Lepehne, G.: *München. med. Wchnschr.* 76: 716 (April 26) 1929.

daily or liver extract in the less severe cases without marked crisis or anemia. In 1931 Neuburger⁷ reported two cases in which liver extract was used and in which there followed no improvement in the anemia; hemolysis was not diverted, and the jaundice did not decrease. In the same year Jedlička and Várodí⁸ used liver extract in three similar cases without good effect—either subjectively or objectively—and in one case, during treatment, increasing jaundice and more obvious splenomegaly developed.

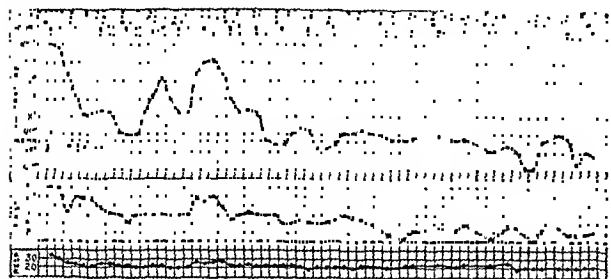


Chart 2 (case 1).—Temperature, pulse and respiration rate when no treatment other than liver extract was given.

The conflicting evidence in the literature justifies further studies as to the value of liver therapy in chronic hemolytic jaundice. Therefore we present the summary of our experience with this form of therapy in three such cases.

REPORT OF CASES

CASE 1.—A. M., a boy, aged 14, seen by E. C. R. in consultation with Dr. Adelbert Marsh, Nov. 2, 1929, complained chiefly of weakness, vertigo, fulness in the left upper quadrant of the abdomen, jaundice, and fever of three days' duration.

The patient's mother was well. The father had had recurrent attacks of jaundice since childhood and at the present time has gallstones and his erythrocytes show an increased fragility to hypotonic sodium chloride solution. His sister had had recurrent attacks of jaundice since childhood. A recent test for the reaction of her erythrocytes to hypotonic sodium chloride solution revealed normal results.

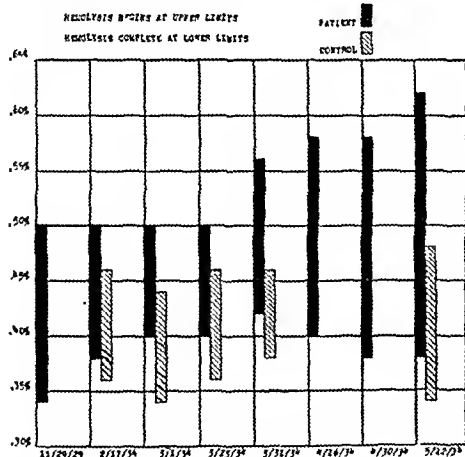


Chart 3 (case 1).—Fragility of erythrocytes to hypotonic sodium chloride solution.

In childhood the patient had mumps, measles and at 7 years of age pneumonia with otitis media. The tonsils were removed at 9 years of age. Since 6 years of age he had had recurrent attacks of fever and jaundice with vomiting without abdominal pain. These attacks would occur every two to three months and be of about one week's duration.

The present illness began, Oct. 31, 1929, with vertigo and weakness. His parents noted a peculiar yellow of his skin. The temperature was elevated to 104.5 F. He did not vomit. There was neither sore throat nor coughing. The urine and stools were dark. The temperature remained elevated, between 101 and 103, and when I saw him two days later it was 102 F. At that time he complained of a peculiar, full, pulling sensation along the left costal margin.

Physical examination revealed jaundice, pallor of the mucous membrane of the mouth and tongue, and an enlarged tender spleen extending to the umbilicus. At the University Hospital the following studies were made: hemoglobin 8.5 Gm., erythrocytes 3,150,000, white cell count 5,050 (chart 1). The differential count was normal. There was a variation in the size of the red cells. Free hydrochloric acid was found in the gastric secretion. The urine was strongly positive for urobilin. The icteric index was increased. There was increased fragility of the erythrocytes to hypotonic sodium chloride solution. The initial hemolysis began at 0.52 per cent and was complete at 0.38 per cent (chart 3), and the diagnosis of chronic hemolytic jaundice was made. Because of the similarity of pernicious anemia, one vial of liver extract-Lilly was prescribed orally, three times a day. This therapy was followed by definite improvement, so that at the end of a month the patient felt stronger, the red blood count had risen to 4,150,000, and the hemoglobin to 10.5 Gm. (chart 1). A surgical consultant at that time advised against surgery. The patient continued to take three vials of liver extract daily without medical supervision for eighteen months and felt well, having had no attacks during the latter period. Liver was then discontinued and later he consulted an osteopath because of a recurrence of symptoms.

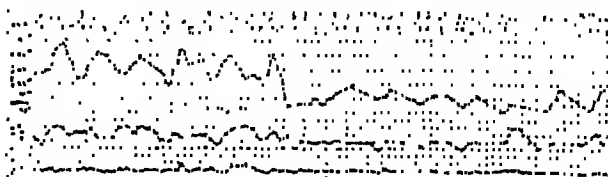


Chart 4.—Temperature, pulse and respiration rate in case 2.

May 18, 1932, ten months after the liver had been discontinued, he was readmitted to the University Hospital because of mental confusion, prostration and fever. Three days prior to admission he was suddenly seized with vomiting. He became markedly jaundiced, had a temperature of 104 F. and was seen by Dr. Marsh, who referred him to the hospital. There was marked evidence of dehydration, definite jaundice and a temperature of 104 F. The spleen was very tender and extended to the umbilicus and nearly to the crest of the ilium. The examination of the blood at that time revealed erythrocytes 1,415,000, hemoglobin 5 Gm. (Haden-Hausser) (chart 1), white blood count 2,475, volume index 0.922, volume per cent 11.5, icteric index 18. The urine was strongly positive for urobilin. No bile was found in the urine. The stools were dark brown. The blood Wassermann reaction was negative. Three cubic centimeters of solution liver extract-Lilly (derived from 15 Gm. of liver) was given intramuscularly daily for ten days and then one vial of liver extract-Lilly powder given orally three times a day. At the end of a month the blood count was as follows: erythrocytes 3,545,000, hemoglobin 10.5 Gm. (Haden-Hausser) (chart 1), white cell count 7,000, the differential count normal. The patient's strength returned and he has been free from complaints from that time until the present. He has continued to take liver extract-Lilly by mouth and has had no recurrence of the attack. However, during the fall of 1933, on the advice of a friend, he began to take four capsules of Extralin three times a day instead of one vial of the powdered liver extract three times a day. In February 1934 his parents noted that his color was not as good as formerly. Examination of the blood at that time revealed erythrocytes 3,510,000, hemoglobin 11.5 Gm. (Haden-Hausser) (chart 1), white blood count 8,700, volume index 1.022, volume per cent 31.5, icteric index 30, differential count normal, and reticulocytes 5.0 per cent. In the fragility test hemolysis began at 0.50 per cent and ended at 0.38 per cent (chart 3). Three

7. Neuburger, J.: *Deutsche med. Wchnschr.* 57: 969 (June 5) 1931.

8. Jedlička, V., and Várodí, S.: *Ztschr. f. klin. Med.* 118: 286, 1931.

cubic centimeters of Lederle solution liver extract parenteral refined and concentrated (derived from 100 Gm. of liver) was given at weekly intervals, with a definite improvement in the patient's appearance and strength. The red blood count and hemoglobin have improved. The indirect van den Bergh reaction, the icteric index, and the size of the spleen have remained unchanged. Repeated studies of the erythrocytes for evidence

of increased fragility to hypotonic sodium chloride solution have revealed a persistent diminished resistance of the cells. There was no agglutination of the patient's cells by his serum with the Widal, Abrami and Brulé test.

The serum cholesterol was 67 mg.

CASE 2.^o—Mrs. R., aged 31, an Italian housewife, admitted to the medical service of the University Hospital, Sept. 5, 1933, complained of severe epigastric pain, radiating

urine for urobilinogen and bile after institution of liver therapy were negative. Fragility tests, September 27, showed the initial hemolysis at 0.48 per cent and complete at 0.37 per cent (chart 5). October 20, the icteric index was 12 and the indirect van den Bergh test showed a faint positive reaction. November 6 the blood cholesterol was 160 mg. and the icteric index 8. November 13 the following observations were made: red cell count, 5,240,000; hemoglobin, 16 Gm.; white cell count, 5,950; normal differential count; reticulocytes, 1.2 per cent. The spleen was palpable two fingerbreadths below the costal margin; the liver was not palpable. There was no jaundice.

She was discharged from the hospital November 19 and readmitted Jan. 30, 1934, complaining of nervousness and pain in the left upper part of the abdomen. One week before she had had tonsillitis and had had no liver extract for two weeks. On examination the patient was suffering acutely from severe pain in the upper part of the abdomen, the throat was slightly reddened, the temperature was 101.8 F., the pulse 110 and the respiration rate 32; there was no apparent icterus, and the spleen was palpable and tender. The red cell count was 4,100,000, the hemoglobin 78 per cent (Sahli), white cell count 9,300, with a normal differential count. The urine was positive for urobilin in a dilution of more than 1 to 20; there was no bile. Liver extract (3 cc. concentrated) was given February 1 and thereafter once a week. Subsequent to one injection of liver extract, urobilinuria disappeared and on February 7 the red cell count was 4,510,000, the hemoglobin 12 Gm. February 20, a mild attack of complicating obstructive jaundice developed; the icteric index rose to 19, bile was present in the urine, the van den Bergh test showed a faint immediate direct reaction. There was no agglutination of the patient's cells by her serum with the Widal, Abrami and Brulé test. The patient was discharged from the hospital, March 14, feeling well; the icteric index was 9. Intramuscular liver extract (3 cc. concentrated) was prescribed to be given once a week at home. On May 20 the patient reported that she had had none of her former symptoms since her discharge from the hospital, two months before, and that she was better than she had been for a year.

CASE 3.—Mrs. K., aged 41, Polish, admitted to the University Hospital Jan. 13, 1934, complained of pain in the upper part of the abdomen of six months' duration.

The family history and marital history were irrelevant. The patient was born in Poland and had come to this country one year before. Dec. 8, 1933, she was admitted to the University Hospital because of vague pain in the upper part of the abdomen and obstipation. At that time the physical examination was negative except for a firm tender mass in the left

upper quadrant, considered to be spleen. She was given an edema, felt relieved and signed her release before adequate studies could be made. No parasites or ova were found in the stool.

The present illness began in July 1933, at which time she first noted epigastric distress, made worse by eating. Occasionally during the past two or three months she had had a "yellow color," frequently had noted chills and passed dark colored urine.

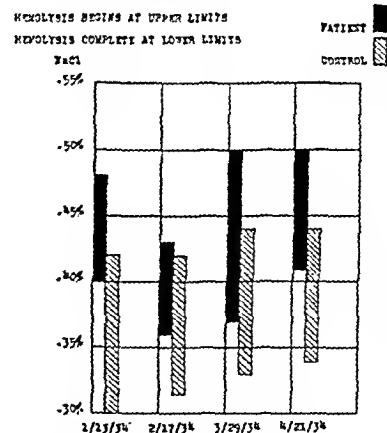


Chart 6 (case 3).—Fragility of erythrocytes to hypotonic sodium chloride solution.

slight icterus. The edge of the liver could be palpated and the spleen was definitely enlarged, firm and tender.

Laboratory examination revealed the red cell count 3,775,000, white cell count 7,300, normal differential, volume per cent 30, hemoglobin 11.9 Gm., volume index 0.90, icteric index 20. The van den Bergh test showed a positive indirect reaction. The

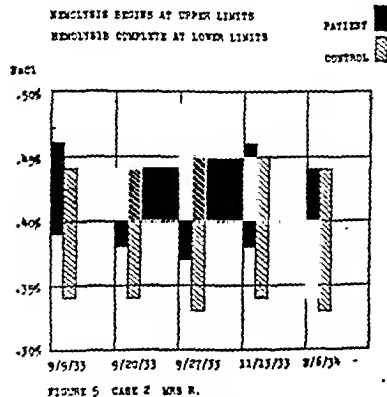


Chart 5 (case 2).—Fragility of erythrocytes to hypotonic sodium chloride solution.

to both quadrants of the upper part of the abdomen, of ten days' duration.

The family history was unimportant. The patient was born in Italy, was married at the age of 14 and had given birth to five normal children. Her general health had been good except for the following: In October 1931, at the University Hospital, the gallbladder was removed for chronic cholecystitis and cholelithiasis. At that time no anemia was found, the icteric index was 50 and urobilin and bile were found in the urine. Pain in the upper part of the abdomen continued and she returned to the hospital, July 11, 1932, complaining of nervousness, weakness, pain in the left upper quadrant, and nausea.

Physical examination at that time revealed a palpable, tender spleen. The icteric index was 35, the red blood count 3,740,000, hemoglobin 72 (Sahli), reticulocytes 0.5 per cent, and white blood count 6,250, with a normal differential. Sedimentation time was one hour and seven minutes. Fragility tests of the erythrocytes failed to show any definite abnormality. Other laboratory studies, including blood and spinal Wassermann tests, urine, gastric analysis, cystoscopic examinations, pyelograms and gastro-intestinal roentgenograms, gave negative information.

She improved on a liberal diet, iron and rest in bed. She refused an exploratory examination and was discharged after six weeks with no anemia, an icteric index of 15 and a palpable spleen. The diagnosis of hemolytic jaundice was considered but not definitely proved.

For ten days prior to this entry the patient had noted severe epigastric pain radiating to both upper quadrants of the abdomen, nausea, belching of gas and, on one occasion, vomiting.

Physical examination showed temperature 101 F., pulse 90, respiration rate 22 and definite icterus. There was marked tenderness without spasm over the epigastrium, the spleen was palpable three fingerbreadths below the left costal margin.

Laboratory examination showed: red cell count 4,540,000, volume per cent 38.5, volume index 0.96, icteric index 15, reticulocytes 1.7 per cent, white cell count 8,000, differential normal, indirect van den Bergh reaction positive, blood cholesterol 90 mg. The urine showed urobilinogen in a dilution of 1 to 30. Initial hemolysis of the erythrocytes began at 0.46 per cent and was complete at 0.39 per cent (chart 5).

Liver extract, 2 cc. (derived from 10 Gm.) daily, was given intramuscularly from September 16 until October 21; thereafter, 3 cc. (derived from 100 Gm.) of concentrated liver extract was given once a week until her discharge, November 27. The temperature approached normal, September 17, and was normal thereafter (chart 4). Sixteen examinations of the

9. The studies in cases 2 and 3 were aided by a grant from the Hendrick's Research Fund of the Syracuse University College of Medicine.

stained blood films showed the red cells to be well filled, presenting, however, a diffuse microcytosis. Fragility tests showed the initial hemolysis at 0.48 per cent and complete at 0.40 per cent (chart 6). The urine was negative except for an increase of urobilinogen. The Ewald test meal revealed normal acid values. No abnormal changes were noted in repeated stool examinations. The blood chemistry was normal except for a cholesterol of 111 mg. The Wassermann and Kahn reactions of the blood serum were negative. There was no agglutination of the patient's cells by her serum with the Widal, Abrami and Brulé test.

The patient was given 3 cc. of concentrated liver extract intramuscularly (derived from 100 Gm. of liver) on February 12 and weekly thereafter. February 17, fragility tests showed initial hemolysis at 0.43 per cent and complete at 0.36 per cent. She improved steadily and was discharged, March 14, without symptoms, although the spleen was still palpable; the icteric index was 7. Twelve days later (March 26) she was readmitted to the hospital, complaining of epigastric pain and vomiting of three days' duration. While at home she had failed to receive one of the weekly injections of liver extract. Examination showed definite icterus; the temperature was normal on admission, rose to 100.6 F. (rectal) on the second day and then returned to normal. The liver and spleen were palpable and tender. The red cell count was 3,592,500, hemoglobin 10.2 Gm., white cell count 8,200, volume per cent 30, volume index 0.94, reticulocytes 4.5 per cent, and icteric index 64. The van den Bergh test gave a strongly positive immediate direct reaction. Smears did not appear remarkable, although occasional microcytes were noted. The urine showed a strongly positive reaction for bile and urobilin. Intramuscular liver extract (3 cc. concentrated) once a week was resumed. A diagnosis of complicating obstructive jaundice was made. March 30 there was no pain or vomiting; the icterus was decreased. No clay colored stools were noted. The icteric index was 23. The van den Bergh test showed a faint immediate direct reaction. The urine gave a faint positive reaction for bile. The fragility test showed initial hemolysis at 0.50 per cent and complete at 0.37 per cent (chart 6). Urobilinogen was strongly positive. Fragility tests, April 20, showed initial hemolysis at 0.50 per cent and complete at 0.41 per cent (chart 6). May 10, the blood counts were as follows: red cell count, 4,800,000; hemoglobin, 13.5 Gm.; white cell count, 10,900.

COMMENT

Three patients with chronic hemolytic jaundice were treated with liver extract. In one case, prior to liver therapy, which was instituted in 1929, an acute hemolytic crisis occurred every two to three months. Since then no crises have occurred except one which happened during a period when liver therapy had been discontinued. While there has been an improvement in the patient's strength, appearance and the anemia, nevertheless the increased icteric index, urobilinuria and increased fragility of the red cells to hypotonic sodium chloride solution have persisted.

In the two other cases an improvement in the patient's strength and appearance was noted and the laboratory studies revealed a disappearance of a mild anemia, urobilinuria and clinical jaundice; the increased fragility of the erythrocytes, however, was essentially unaltered. While we believe that splenectomy offers the most hopeful therapeutic procedure in the more severe cases of chronic hemolytic jaundice in which no causative factors can be demonstrated, it would appear that treatment of such individuals with liver extract may have a beneficial effect. It will be noted that liver therapy was instituted during the acute period of the crisis and that there was definite clinical improvement in the patients. While we feel that liver was of value in these instances, we appreciate the fact that spontaneous remissions do occur and for that reason feel

that more work must be done to prove that liver treatment will actually affect the course of the acute episodes. We suggest that liver extract may be of benefit in those individuals who are unfavorable surgical risks, who refuse operation, or in whom it is decided that the disease is not sufficiently incapacitating to warrant surgical intervention. It is also possible that if surgery is anticipated, or if the patient is in the stage of an acute hemolytic crisis, liver extract may considerably improve the clinical picture and make the individual a better surgical risk or possibly shorten the incapacitating period of the crisis.

SUMMARY

Three cases of chronic hemolytic jaundice were treated with liver extract and all showed definite clinical improvement. In one case, treated since 1929, clinical improvement without recurrence of a crisis occurred during treatment but the increase in the icteric index, urobilinuria and increased fragility of the erythrocytes persisted despite the improvement in the anemia. The two other cases, similarly treated, showed no definite and sustained increase in the resistance of red blood cells to hypotonic sodium chloride solution, but the disappearance of a mild degree of anemia, clinical jaundice and urobilinuria were noted.

It is felt that further observations as to the effect of liver therapy in chronic hemolytic jaundice are necessary before definite conclusions can be drawn. It is recommended that such therapy be given a trial and that careful detailed blood studies be made during the observations, together with similar observations on untreated cases.

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THE TREATMENT OF HEMOPHILIA

HAROLD W. JONES, M.D.

AND

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PHILADELPHIA

It is 130 years since hemophilia was first observed and accurately described by Otto.¹ The progress in its therapy has been slow and full of disappointments. This report will deal with a review of the methods of treatment of the condition at the disposal of the physician today. It is based partially on observations made on twelve hemophilic patients at various times over a period of seven years.

For the purpose of this discussion, hemophilia is defined as an inherited or noninherited tendency of males to bleed, characterized by the presence of a prolongation of the coagulation and prothrombin time of the venous blood. Cases of hemophilia in which a history of inheritance is not obtainable are included. Five of our patients fall in this group, although four of them have brothers similarly affected. Instances of so-called sporadic hemophilia are about as frequent as those in which a clear-cut history of inheritance can be obtained, which may indicate that the defect is sometimes atavistic.

From the Department of Medicine of Jefferson Medical College.
Prepared under a grant from the J. Ewing Mears Research Foundation.

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Otto, J. C.: An Account of a Hemorrhagic Disposition Occurring in Certain Families, *Medical Repository* 6:1, 1803.

The treatment of hemophilia may be divided as follows:

A. Preventive:

1. Prevention of the transmission of the disease.
2. Prevention of the accidents that usually precipitate the onset of a phase of hemorrhage.

B. Treatment of the condition itself:

1. Attempts to influence the general course of the disease or permanently change the fundamental defect of the blood; i. e., the coagulation factors.
2. Treatment of an acute hemorrhagic phase:
 - (a) General.
 - (b) Local.
3. Treatment of complications.

CRITERIA OF IMPROVEMENT

A statistical evaluation of the merits of any form of treatment is almost impossible because of the rarity of the disease. To judge the effectiveness of any measure we feel that the following criteria are useful:

1. Changes in the course of the disease in general may best be gathered from the patient's own history of increase or diminution in frequency and severity of the attacks of bleeding and the acute joint disturbances. Determinations of the venous and capillary clotting time give little idea of the progress of the disease, so they are not of practical use from this standpoint. We have observed patients enjoying comparative freedom from bleeding for six months or longer and yet their venous clotting time was continuously prolonged (two hours or more). On the other hand, it is common to find relatively short, almost normal, venous and capillary clotting times during the acute phase of bleeding.

2. Whenever blood transfusion is used to prepare the patient for a surgical procedure, the venous clotting time may be relied on as an indication of its effectiveness. Capillary clotting time determinations, unless done according to the technic of Gibbs² and Christie,³ are worthless as an index of the blood-tissue reaction in coagulation.

3. During the acute phase, the presence or absence of bleeding and its degree as measured objectively, or indirectly by hemoglobin and red blood cell estimation, should be the only criterion of improvement. In other words, during a phase of bleeding all measures should be directed toward its cessation with or without evidence of control of the blood clotting time. Often too much stress is placed on reducing the clotting time and sight is lost of the fact that measures other than blood transfusion designed to reduce the rate often fail to affect or may even increase the bleeding. Hemostasis, even in a hemophilic patient, is not synonymous with reduction of the coagulation factors to normal levels. During phases of bleeding, other factors, perhaps of a vascular nature, play a part in accentuating the hemophilic individual's tendency to bleed. This is best illustrated by the frequent detection of a prolonged skin bleeding time during these phases. The following case illustrates increased skin bleeding time:

L. M., a hemophilic man, aged 23, was admitted to the Jefferson Hospital on the verge of collapse after a fall. There was a hematoma the size of a grapefruit in the right thigh, and other extensive hemorrhages were noted in both legs. The pulse rate was 140 and of filiform character. The hemoglobin

(Sahli) was 45 per cent, the erythrocyte count was 2,450,000, the platelet count was 488,000, the venous clotting time was thirty-eight minutes; the skin bleeding time was seven minutes and the tourniquet test +. Two days later the general condition was unchanged, the hemoglobin was 35 per cent, the erythrocytes numbered 2,040,000, the platelet count was 360,000, the venous clotting time 172 minutes, the skin bleeding time was six minutes and the tourniquet test +. Three days later the general condition was unchanged, but the hemoglobin was 33 per cent, the erythrocyte count was 1,910,000, the platelet count was 566,000, the venous clotting time was 160 minutes, the skin bleeding time was thirty minutes and the tourniquet test + 4. At the end of four days the pulse was normal, the general condition was good, the hemoglobin was 40 per cent, the erythrocyte count was 2,410,000, the platelet count was 538,000, the venous clotting time was 188 minutes, the skin bleeding time was 1 hour and the tourniquet test + 4. There were only slight changes in these readings for the following three days; the general condition remained good. On the eighth day the hemoglobin was 48 per cent, the erythrocyte count was 2,970,000, the platelet count was 716,000, the venous clotting time was 176 minutes, the skin bleeding time was one minute and the tourniquet test was negative. There was gradual improvement in the patient's general condition and no bleeding occurred from this time on.

PREVENTIVE TREATMENT

Since many of the cases exhibit a clear-cut history of inheritance, the sisters of patients with hemophilia and the patients themselves should be made acquainted with the mechanism of inheritance and told of the great likelihood of their having "bleeders" in the family. The number of children in a family of hemophilic individuals is unusually large. In our series the average number of children born from transmitters of hemophilia was 5.3 (69 per cent male, 31 per cent female); 80 per cent of the males were bleeders. There does not seem to have been any attempt to curb procreation, owing probably to a lack of clear understanding on the part of the hemophilic individuals as to the manner in which the defect is transmitted. The fact that the condition often skips a generation tends to make them incautious and to trust to chance. Birch found that both the individuals with hemophilia and the transmitters seem to have families a little above the average in number.⁴ Furthermore, the transmitters of hemophilia have more sons than daughters, while persons with hemophilia have more daughters than sons.⁴ In this fashion nature appears to make sure of the perpetuation of the disease. Since not all daughters of transmitters are themselves transmitters and there is no known method of detecting them aside from reproduction, the problem of the control of the disease from the eugenic standpoint is a difficult one. All daughters of hemophilic males are carriers and should not reproduce.⁵

PROPHYLAXIS

With the knowledge that the hemophilic individual is more easily affected by trauma than the normal, he should be cautioned against engaging in strenuous occupations or undergoing operative procedures without the proper preparation. It would be well for an individual with hemophilia to carry a document stating clearly the condition from which he is suffering, in order that he may be properly protected if he is rushed unconscious to a hospital or physician's office. This means of identification could be sewed to a prominent part of the inner clothing.

2. Gibbs, O. S.: A Clinical Blood Coagulometer, *Quart. J. Med.* 17: 312 (April) 1924.

3. Christie, R. V., and Gulland, G. L.: Studies in Blood Coagulation and Hemophilia: The Treatment of Haemophilia, *Quart. J. Med.* 20: 499 (July) 1927.

4. Birch, C. L.: Hemophilia, *J. A. M. A.* 99: 1566 (Nov. 5) 1932.
5. MacKlin, M. T.: Heredity in Hemophilia, *Am. J. M. Sc.* 175: 218 (Feb.) 1928.

Preoperative Preparation.—If operative intervention is indicated, there are two methods to which one may resort to prevent undue hemorrhage:

1. Preliminary blood transfusion is known to reduce the clotting time for a period of from two to six days. Blalock⁶ performed a successful amputation of the arm in a hemophilic individual, and a cholecystectomy was done in one of the patients in our series after several blood transfusions had been resorted to.

2. Protein sensitization has been advocated since Vines⁷ discovered its effect in increasing the coagulability of the blood. Mills,⁸ Marlow,⁹ Eley and Clifford¹⁰ recommend it. The method consists in sensitizing the patient by intramuscular injection of 3 or 4 cc. of a foreign protein (sheep or hen serum preferably) after the usual preliminary test of sensitivity by intradermal injection of a drop of the serum. Two weeks later one drop of the serum first used is injected intradermally. The appearance of an urticarial wheal indicates sensitivity. Mills found a marked improvement in the blood coagulability and the reaction of the prothrombin to be much more normal especially toward cephalin after this treatment.¹¹ The intradermal injections should be repeated at intervals of several weeks to determine the sensitivity to the protein. This sensitivity usually lasts a year. Eley and Clifford tried the method in eight hemophilic children. They found that the coagulation time of the capillary blood was definitely shortened but that that of the venous blood remained unaltered. They did not consider the treatment to have any value in controlling hemorrhage from the larger blood vessels or in preventing the occurrence of hemorrhagic effusions into joints, subcutaneous hematomas or intestinal bleeding, but they were convinced of the benefit of the method in the prevention or control of bleeding from superficial injuries. It is probable that any beneficial effect brought about by this method comes from changes in the blood vessels. Two of our patients were given this treatment for one year with no significant change in any aspect of the disease.

Weil¹² advises intramuscular injections of 30 cc. of fresh serum one or two days before the operation. Intravenous injection of whole compatible human blood, citrated or noncitrated, one day or a few hours before the operation is just as satisfactory. The intravenous injection of blood has been shown to bring to normal the retarded rate of transformation of prothrombin into thrombin in as short a time as thirty minutes after it is given.¹³ It is therefore important that the blood group of every hemophilic patient should be known and a suitable donor kept available during and after any operative procedure. Throughout the first decade of life, with its many accidents and changes in dentition, these precautions are especially indicated.

Operations in general should be avoided but, when performed, hemostasis should be painstakingly cared for. It is helpful to ligate each piece or section of tissue

before incising it and to use fresh serum to dress the wound. The usual accidents to which children are exposed should be avoided. The operations of circumcision and incision of the frenulum should not be undertaken.

Diet.—Some advise the use of a high protein diet. It has been observed that an increased coagulability of the blood takes place for a period of one to four hours following a meal rich in protein in normal human beings.¹⁴ It has not been demonstrated, however, that this diet is beneficial in hemophilic patients. Kugelmass¹⁵ has observed no changes in the concentration of the clotting substance in patients with hemophilia after a diet high in protein. Neither has any improvement been observed following the ingestion of any of the known vitamins.¹⁶ In our experience high protein or high fat diets have not affected the hemorrhagic phase appreciably.

Purges.—The use of drastic purges is undesirable, and some patients believe that a purge induces an attack of hemorrhage.³ However, Otto¹ recorded the fact that there was a general belief among the hemophilic families he had studied that purging by sodium sulphate was beneficial.

Focal Infection.—The removal of foci of infection is desirable, particularly in view of its effect on the course of the arthritis and in improving the general condition of the patient. That infection bears relationship to the attacks of bleeding is disputable, since many attacks appear in the absence of infection and a number of our patients have gone through acute infections with very slight or no manifestations of bleeding. Dental extractions or other operations should not be attempted, of course, without the proper preparation as described.

Some of our patients have stated that immobilization in bed for long periods of time has increased the hemorrhagic tendency. One patient affirmed that a number of attacks of hematuria lasting several weeks had followed emotional shocks.

TREATMENT OF THE CONDITION ITSELF

By treatment of the condition itself is meant any attempt to change the fundamental defect (the prolonged coagulation and prothrombin time of the blood) or to diminish the incidence and severity of the manifestations associated with the condition. So far we have remained unconvinced of the value of many advocated measures. We have tried a few. Ovarian extract from different makers, in small and large doses, orally and intramuscularly, was used in four of our patients, and no changes were noted in any aspect of the disease. Previous reports of beneficial results following ovarian therapy were not based on the use of proper criteria. The work of recent observers fails to substantiate the claims.¹⁷ So far we must content ourselves to explain the almost absolute limitation of the disease to males on the basis of the laws of heredity, rather than on the hypothetical, disproved¹⁸ assumption

6. Blalock, Alfred: Amputation of Arm of Patient with Hemophilia, *J. A. M. A.* 99:1777 (Nov. 19) 1932.

7. Vines, H. W. C.: Anaphylaxis in the Treatment of Haemophilia, *Quart. J. Med.* 13:257 (April) 1920.

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9. Marlow, A.: Negative Effect of Administration of Liver in Hemophilia, *Bull. Johns Hopkins Hosp.* 49:49 (July) 1931.

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11. Mills, C. A.: Blood Clotting, *Am. J. Physiol.* 76:632 (May) 1926.

12. Weil, P. E.: *Nouveau traité de médecine*, Paris, Masson & Cie 9:473, 1927.

13. Feissly, R.: Recherches expérimentelles sur la correction in vivo de la coagulabilité sanguine chez l'hémophile, *Bull. et mém. Soc. méd. d. hôp. de Paris* 48:1739, 1924.

14. Mills, C. A.: Effect of Food Ingestion on the Clotting Time of the Blood, *J. Biol. Chem.* 55:18, 1923. Mills, C. A.; Necheles, H., and Chu, M. K.: Relation of Clumping and Disintegration of Platelets to Body Metabolism, *Chinese J. Physiol.* 2:219 (April) 1928.

15. Kugelmass, I. N.: Mechanism of Hemophilia in Infancy and Childhood, *Am. J. Dis. Child.* 44:50 (July) 1932.

16. Kugelmass, I. N.; Marlow, A.

17. Stetson, R. P.; Forkner, C. E.; Crew, W. B., and Rich, M. L.: Negative Effect of Prolonged Administration of Ovarian Substances in Hemophilia, *J. A. M. A.* 102:1122 (April 7) 1934. Brem, Jacob, and Leopold, J. S.: Ovarian Therapy; Relation of Female Sex Hormone to Hemophilia, *J. A. M. A.* 102:200 (Jan. 20) 1934.

18. Brem and Leopold.¹⁷ Brown, R. L., and Albright, F.: Estrin Therapy in Case of Hemophilia, *New England J. Med.* 209:630, 1933.

that the defect is present in the female but kept in check by ovarian hormones. Splenic and thyroid extracts were likewise of no immediate or remote value.

Course.—The disease seldom makes its appearance until several weeks after birth, and from then on until maturity the attacks of bleeding occur at intervals, probably more often in the latter half of the first decade. The preference of the hemorrhages for the joints and

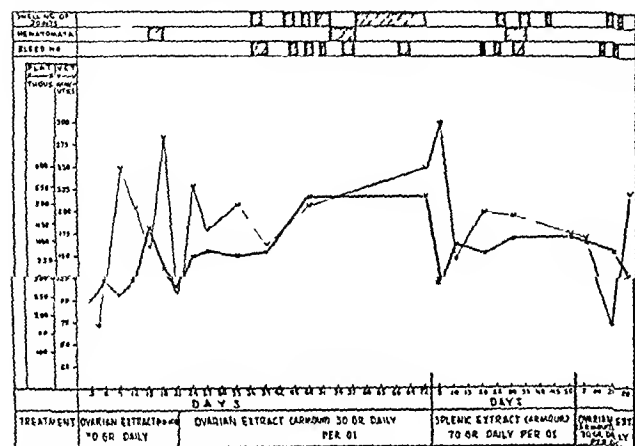


Chart 1.—Effect of the administration of two organ extracts to a hemophilic individual (S. M.). There was an interval of at least two weeks between courses. *Plat*, platelets, *V. C. T.*, venous clotting time.

muscles during the developmental period leads to deformities and retardation in growth. If the hemophilic individual reaches the third decade, however, his subsequent course is comparatively safe, as the incidence of attacks of bleeding decreases considerably. The grandfather of one of our patients, known to have hemophilia, died at the age of 60. The venous coagulation time, however, remains unaltered, which again exemplifies the fallacy of using this determination as an indication of the progress of the disease. The disease therefore follows a fairly definite course and its manifestations decrease in severity as the patients grow older. This phase of the present discussion may therefore be dismissed with the statement that there is no method known at present that is of undisputable, permanent value in altering the general course of the disease.

TREATMENT OF AN ACUTE PHASE OF BLEEDING

General Treatment.—Here the therapeutic measure *par excellence* is the transfusion of blood, unmodified or citrated. Sometimes as small an amount as from 30 to 50 cc. is enough to check the bleeding and reduce the coagulation time.¹⁹ It should be stressed again that the index of effectiveness of any measure used in an acute phase is the production of hemostasis and not the changing of the coagulation time. Large hematomas may be produced by punctures of veins during these phases. This can be avoided by the quick application of pressure and its continuation for at least one hour. Too often a hematoma interferes with the use of a vein for a much needed transfusion. Great care should be taken in having the blood cross-matched. Citrated blood is equally efficacious,³ but reactions are more frequent.

The improvement resulting from a blood transfusion lasts between two and six days when given in the usual dosage. In children we have found that intraperitoneal

transfusions are of equal benefit. This method is especially to be preferred when difficulties are experienced with the intravenous method, since the introduction of partially clotted blood may aggravate the symptoms. Intraperitoneal transfusion is not indicated in an emergency arising from hemorrhage. Blood must be transfused into a vein; the absorption of intraperitoneally injected blood is too slow to be helpful.

The intravenous or intramuscular administration of various serums (sheep serum, horse serum, hemostatic serum), autologous blood given intramuscularly, or the use of calcium, ergot, peptone, parathyroid extract, thromboplastic substance or tissue fibrinogen have proved of little value in our hands. Estrogenic substance was given to two of our patients and, like others,¹⁸ we found no changes in the course of the disease following its administration. We suggest that the administration of these drugs in hemophilia should be discontinued, since their use involves delaying the employment of measures of proved value.

If the patient is or has been made sensitive to a certain serum, a small desensitizing dose given intradermally is said to check the bleeding.⁸ We have had no experience with this type of therapy in the acute phase. However, in other hands,³ and even in one of Vines' cases,⁷ it was followed by negative results.

Local Treatment.—The problem of stopping the bleeding is simplified if the area is accessible. Intestinal or urogenital bleeding cannot be treated by local measures. The other commonest sources of the bleeding are in the joints and muscles, from the oral mucous membrane and deep skin cuts. When the bleeding is taking place in the joints or muscles, immobilization of the part is indicated, but the application of icebags and compression is of very little use. The following remarks apply to the control of bleeding in the accessible portions of the body, such as the skin and subcutaneous tissue, and oral, rectal or nasal mucous

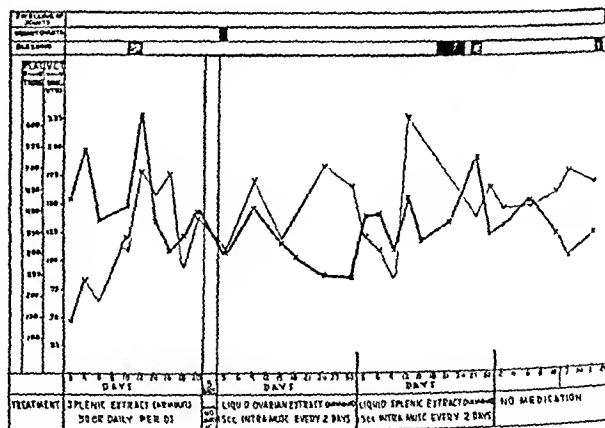


Chart 2.—Effect of administration of two organ extracts to a hemophilic individual (L. M.). There was an interval of at least two weeks between courses.

membrane. The measures to be employed may be grouped under the following heads:

1. Pressure is sometimes helpful, particularly when combined with other measures to be specified later. In order to be of any help it must be applied for one hour or longer. This may require special bandages, particularly when the bleeding is in difficult situations, such as in the oral mucous membrane. A "pyramidal" pack (a series of superimposed small gauze layers)

19. Bernheim, B. M.: *Blood Transfusion, Hemorrhage and the Anemia*. Philadelphia, J. B. Lippincott Company, 1917, p. 202.

24. Petersen, O. H.: Das Blutergelenk und seine Beziehungen zu den deformierenden Gelenkerkrankungen, Arch. f. klin. Chir. 126: 456, 1923.

R. L.: The Blood Platelets in Hemophilia, *Arch. Int. Med.* **18**: 474 (Oct.) 1918. Howell, W. H., and Cekada, E. B.: The Cause of the Delayed Clotting of Hemophilic Blood, *Am. J. Physiol.* **78**: 500 (Nov.) 1926. Christie, R. V.; Davies, H. W., and Stewart, C. P.: Studies in Blood Coagulation and Haemophilia: Haemic Function in Haemophilia, *Quart. J. Med.* **20**: 481 (July) 1927.

8. The trial of defibrinated blood injected intravenously is indicated.

9. Endocrinotherapy, according to our criteria, has been of no value.

10. Any therapeutic measure that diminishes venous clotting time and does not lessen the bleeding phenomena, or even increases them, should be avoided.

11. The use of special diets has proved disappointing.

12. Intradermal injections of antihuman platelet serum was followed sometimes by a marked decrease of the venous clotting time in three hemophilic patients, two of whom were going through an acute phase of bleeding; no prompt and permanent cessation of the bleeding followed the injections.

13. In an acute emergency due to hemorrhage, intraperitoneal transfusion is not indicated. Blood must be injected into a vein.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. GOLDHAMER, BETHELL, ISAACS AND STURGIS, REIFENSTEIN AND ALLEN, AND JONES AND TOCANTINS

DR. ADOLPH SACHS, Omaha: Hemophilia, hemolytic jaundice and pernicious anemia are diseases that have periods of remission and therefore it is difficult to estimate the full value of any form of therapy. Hemophilic patients during their periods of remission, often know without medical aid that they are less liable to bleed. Unless an emergency arises, it is advisable to postpone operative procedures until the patient enters such a remission. I have found that keeping hemophilic patients on a diet rich in vitamins, liver and iron affords the best means of keeping them fit. Mental and physical fatigue should be avoided. These measures will not forestall bleeding, but they give as much promise as any specific therapy thus far offered. Transfusion remains the most efficacious procedure in controlling hemorrhage, but its benefits are evanescent, lasting only from two to six days. Hence it is used only to control hemorrhages or in preparation for an operation. I am interested in the relationship of whole blood iron to whole blood copper. I have shown that, when the whole blood iron decreases, the whole blood copper tends to increase, and vice versa. To date no work on blood iron and copper in hemophilia has been reported. No abnormal relationship between the copper and iron content was present in one case examined. However, the tests were made during a period of remission. I plan to follow these cases during increased bleeding phases. I agree with Drs. Reifenstein and Allen that hemolytic jaundice is more common than the literature indicates. Mistaken diagnoses of gallstones in cases of hemolytic jaundice are commonly made, because 75 per cent of these patients do have gallstones. One of my patients has been on liver and iron therapy and has had no attacks in two years. This form of liver does not contain the factor effective in pernicious anemia, which further demonstrates the difficulty in evaluating any therapeutic response in a disease with normal remissions. It is difficult to determine what form of liver therapy is best suited in each individual case, but most men agree that long and continued use of liver is needed before neurologic changes improve. Patients who stop their liver therapy have relapses, and their neurologic complications soon recur. It is then often difficult to get a second remission. It is interesting to follow the whole blood iron and the whole blood copper in cases of pernicious anemia. As the patient improves, the whole blood iron increases and the whole blood copper decreases. It has been my experience that psychoses improve much more slowly than do the cord changes.

DR. WANN LANGSTON, Oklahoma City: It has been my privilege to follow a case of hemophilia since July 1931, during which time ten distinct plans of therapy have been used with equally unsatisfactory results, except that during a period of administration of theelin, 1 cc. intramuscularly three times a week, the clotting time approached normal and remained so

throughout the period. Theelin daily had no effect on the long clotting time. I make this statement, conscious of the frequent spontaneous remissions which these cases exhibit. My experience is limited to the parenteral administration of liver extract in a small group of cases of sickle cell anemia, in which no beneficial effects were observed. Drs. Goldhamer, Bethell, Isaacs and Sturgis in a study of an impressive group of cases arrive at the conclusion that little improvement in neurologic signs can be anticipated in adequately treated cases of pernicious anemia. My experience with a smaller group has impressed me similarly. It is inconceivable that repair can take place to any considerable extent in the degenerated tracts in the cord. On the other hand, it is conceivable that in the early stages of cord involvement, when perhaps there is only edema of the myelin, adequate treatment may arrest the process or even restore the tracts to normal function. Recently, through the courtesy of Dr. W. F. Keller, I have been privileged to follow a typical case of Addison's anemia with mild posterior column signs. With 46 per cent hemoglobin and 1,900,000 red cells, ten 3 cc. doses of a liver extract concentrate were given parenterally in twenty-seven days, when therapy was discontinued, the hemoglobin being 95 per cent and the red count 5,100,000. During the next month the hemoglobin reached 120 per cent, the red count 6,600,000, and during the following four weeks hemoglobin 123 per cent, red count 7,900,000, together with splenomegaly, encephalopathy, vascular crises, and so on. In spite of this remarkable response on the part of the hematopoietic system, the neurologic signs rapidly increased in severity, although the subjective symptoms almost entirely disappeared. In evaluating the efficacy of therapy in relieving neurologic symptoms, one must distinguish if possible between those caused by actual cord damage and the similar symptoms due to local nutritional disturbance; namely, the paresthesias, weakness, and the like. The latter group responds remarkably to adequate therapy, just as the same symptoms in other anemias respond to proper management.

DR. V. P. SYDENSTRICKER, Augusta, Ga.: The variety of remedies for hemophilia is sufficient proof that none are of particular avail. The important thing brought out by Drs. Jones and Tocantins is the advisability of blood transfusion in the presence of hemorrhagic manifestations. It appears that the citrated blood is more valuable than whole blood. A smaller needle will minimize the probability of a hematoma. The changes of the blood resulting from citration may stimulate coagulation. I should like to ask Drs. Reifenstein and Allen two questions. What was the behavior of the reticulocytes during the period of liver therapy, and was there any indication as to the part played by the liver in this particular dyscrasia? In the series of cases reported by Drs. Goldhamer, Bethell, Isaacs and Sturgis the high incidence of neurologic manifestations is a valuable lesson. They are more apt to be overlooked. My experience with pernicious anemia is not large enough for statistical discussion. I feel that pellagra replaces pernicious anemia in the section of the country where I live. It is perhaps roughly analogous as a deficiency manifestation. In addition to giving liver by mouth in pernicious anemia, I would advise a liberal supply of vitamin B₂ such as is furnished in pellagra at the beginning of the neurologic manifestations or before they are seen.

DR. RUSSELL L. HADEN, Cleveland: Drs. Jones and Tocantins have presented a pessimistic view of the treatment of true hemophilia. My experience has been much the same. The best method of treating this condition would be the prevention of the propagation of individuals who can transmit the disease. I have had no experience with the use of liver and liver substitutes in the treatment of hemolytic jaundice. I do not see how such treatment can be of value in true congenital hemolytic icterus. I am convinced that this disease depends on the inheritance of a red cell of a certain shape. It is spheroidal instead of a biconcave disk. The bone marrow is very active in an attempt to keep pace with the excessive hemolysis. Other types of hemolytic jaundice occur that are most difficult to differentiate from pernicious anemia. Here I can see how liver therapy might help. I am optimistic about the prevention and treatment of the neurologic manifestations of pernicious anemia. I am convinced that the neurologic complications need never develop if the patient is cooperative and has been

fully and continuously treated. Intensive therapy will also ameliorate strikingly neurologic symptoms after they have developed. What are the criteria by which adequate treatment in pernicious anemia is determined? I am sure that a patient with a red cell count of only four million has not been adequately treated. With intensive therapy the erythrocyte count should be well above normal. The volume of the cell is certainly the best index of the result of treatment. So long as macrocytosis of the red cells persists, the treatment is not adequate and the deficiency responsible for the disease is not fully met. I have yet to see a patient develop a neurologic lesion if the adequacy of treatment is judged on such a basis. I should like to emphasize what Dr. Sydenstricker has said about vitamin B. There is much to suggest that the neurologic manifestations are related to a vitamin deficiency. I have given my patients large amounts of vitamin B as well as intensive liver therapy. The results of such therapy justify optimism.

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DR. M. A. BLANKENHORN, Cleveland: In discussing the matter with the chairman of the section, I showed him the results of treatment of neurologic complications of pernicious anemia in the medical clinic at Lakeside Hospital. We are of the opinion there, too, that if there is a degeneration of the spinal cord, as shown by objective symptoms, this degeneration cannot be improved. But we are of the opinion that many of the so-called cord symptoms are produced by peripheral neuritis causing acroparesthesia and weakness. These symptoms do recover entirely. Lateral sclerosis with spasticity must be due to a definite cord change. Such spasticity does not disappear, but the patients learn to overcome it. Our form of treatment is physical therapy to overcome spasticity. I am more optimistic about improvement than Dr. Goldhamer and his collaborators are. Improvement comes by reeducation of muscles in overcoming the spasticity. I also think that these authors have not granted a sufficient period to testing the vitamin deficiency theory for the neurologic complications when they say that injections of the vitamin B complex have not cured the disease. Contemplating other deficiency diseases, one would hardly expect that it would. I should like to ask Drs.

Goldhamer, Bethell, Isaacs and Sturgis whether their patients who have continued to do badly, regardless of high blood values, have had the type of diet which Dr. Haden describes as excess of vitamin B complex, and how long they have taken it.

DR. LEANDRO M. TOCANTINS, Philadelphia: Dr. Jones and I agree with Dr. Sachs that the hygienic measures are helpful but we doubt that they have any specific effect at all or any permanent effect whatever. We have used theelin, with negative results, during the acute phase of the disease. This point has been gone over by Albright and Brown, who observed no significant changes in the coagulation of the blood after giving enormous amounts of theelin to a hemophilic patient. It seems that most of the disagreement in the literature concerning the effects of various measures is due first to the conception that measures that tend to accelerate the clotting time of normal blood will also accelerate clotting in the hemophilic patient, who has a clotting system all his own. Many measures for accelerating the clotting of normal blood do not affect the hemophilic blood. The reverse is also true. For instance, if a citrated blood transfusion is given to a patient with hemophilia it will shorten his coagulation time. If a citrated blood transfusion is given to a normal individual in adequate amounts, it will generally prolong the coagulation time slightly. The reverse is noticed when tissue fibrinogen is given; it leads to hypercoagulability of normal blood. If given to a patient with hemophilia it does not alter the coagulation. The other concept is that control of coagulation necessarily means control of the bleeding. There are many diseases accompanied by slight or no changes in the coagulation time that show severe bleeding manifestations. One need only look at the thrombopenias with an increased bleeding time, and normal or only slightly delayed clotting time. Blood transfusion affects the skin bleeding time and does not alter the blood clotting time but leads to the cessation of bleeding. These and other facts lead to our belief that hemostasis is not synonymous with control of coagulation of the blood. It depends on extrahemic as well as on hemic factors. This has come to be more and more appreciated with advance in the investigation of diseases of the peripheral vessels by more delicate technical methods.

DR. S. M. GOLDHAMER, Ann Arbor, Mich.: My associates and I had anticipated the objection to the choice of four million red cells per cubic millimeter as being the lower limit of normal and therefore expressed it as an "arbitrary" selection. We are not of the opinion that this is a highly desired level. On the other hand, in the routine examination of patients at the Simpson Memorial Institute, less than 10 per cent of the normal patients ever have a red blood cell count as high as five million cells per cubic millimeter but usually fall in the range between four and five million cells. We have given vitamins to many of our patients with combined degeneration, with no apparent differences in response to those who received vitamins and those that did not. Treatment with vitamins is not the answer to the problem, for multiple types of therapy are being tried, in the absence of specific medication. As for the kidney being the seat of the difficulty in pernicious anemia, it appears that if this were true the proper type of treatment would be feeding kidney. Furthermore, only 40 per cent of the patients with pernicious anemia had kidney disorder and in those patients in whom the genito-urinary infection "cleared up" the disease pernicious anemia has persisted. If the psychoses present are directly related to pernicious anemia, improvement can be expected when adequate therapy is instituted; however, we have seen cases in which, for instance, schizophrenia is present in addition to pernicious anemia; naturally there is no improvement in this type.

DR. ELLERGY G. ALLEN, Syracuse, N. Y.: Dr. Reifenstein and I agree with Dr. Sachs that relapses may occur in hemolytic jaundice without treatment. However, there is possibly some significance in the fact that in one case, treated continuously with liver extract over a period of four years, there was no occurrence of a hemolytic crisis. In the two other cases, treated over periods of ten months and six months respectively, no hemolytic crisis occurred. The treatment we concentrated, 3 cc. a week. In answer to Dr. Sydenstricker's question about the change in the antibody level, I will

8. The trial of defibrinated blood injected intravenously is indicated.

9. Endocrinotherapy, according to our criteria, has been of no value.

10. Any therapeutic measure that diminishes venous clotting time and does not lessen the bleeding phenomena, or even increases them, should be avoided.

11. The use of special diets has proved disappointing.

12. Intradermal injections of antihuman platelet serum was followed sometimes by a marked decrease of the venous clotting time in three hemophilic patients, two of whom were going through an acute phase of bleeding; no prompt and permanent cessation of the bleeding followed the injections.

13. In an acute emergency due to hemorrhage, intraperitoneal transfusion is not indicated. Blood must be injected into a vein.

1930 Chestnut Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. GOLDBAMER, BETHELL, ISAACS AND STURGIS, REIFENSTEIN AND ALLEN, AND JONES AND TOCANTINS

DR. ADOLPH SACHS, Omaha: Hemophilia, hemolytic jaundice and pernicious anemia are diseases that have periods of remission and therefore it is difficult to estimate the full value of any form of therapy. Hemophilic patients during their periods of remission, often know without medical aid that they are less liable to bleed. Unless an emergency arises, it is advisable to postpone operative procedures until the patient enters such a remission. I have found that keeping hemophilic patients on a diet rich in vitamins, liver and iron affords the best means of keeping them fit. Mental and physical fatigue should be avoided. These measures will not forestall bleeding, but they give as much promise as any specific therapy thus far offered. Transfusion remains the most efficacious procedure in controlling hemorrhage, but its benefits are evanescent, lasting only from two to six days. Hence it is used only to control hemorrhages or in preparation for an operation. I am interested in the relationship of whole blood iron to whole blood copper. I have shown that, when the whole blood iron decreases, the whole blood copper tends to increase, and vice versa. To date no work on blood iron and copper in hemophilia has been reported. No abnormal relationship between the copper and iron content was present in one case examined. However, the tests were made during a period of remission. I plan to follow these cases during increased bleeding phases. I agree with Drs. Reifenstein and Allen that hemolytic jaundice is more common than the literature indicates. Mistaken diagnoses of gallstones in cases of hemolytic jaundice are commonly made, because 75 per cent of these patients do have gallstones. One of my patients has been on liver and iron therapy and has had no attacks in two years. This form of liver does not contain the factor effective in pernicious anemia, which further demonstrates the difficulty in evaluating any therapeutic response in a disease with normal remissions. It is difficult to determine what form of liver therapy is best suited in each individual case, but most men agree that long and continued use of liver is needed before neurologic changes improve. Patients who stop their liver therapy have relapses, and their neurologic complications soon recur. It is then often difficult to get a second remission. It is interesting to follow the whole blood iron and the whole blood copper in cases of pernicious anemia. As the patient improves, the whole blood iron increases and the whole blood copper decreases. It has been my experience that psychoses improve much more slowly than do the cord changes.

DR. WANN LANGSTON, Oklahoma City: It has been my privilege to follow a case of hemophilia since July 1931, during which time ten distinct plans of therapy have been used with equally unsatisfactory results, except that during a period of administration of theelin, 1 cc. intramuscularly three times a week, the clotting time approached normal and remained so

throughout the period. Theelin daily had no effect on the long clotting time. I make this statement, conscious of the frequent spontaneous remissions which these cases exhibit. My experience is limited to the parenteral administration of liver extract in a small group of cases of sickle cell anemia, in which no beneficial effects were observed. Drs. Goldhamer, Bethell, Isaacs and Sturgis in a study of an impressive group of cases arrive at the conclusion that little improvement in neurologic signs can be anticipated in adequately treated cases of pernicious anemia. My experience with a smaller group has impressed me similarly. It is inconceivable that repair can take place to any considerable extent in the degenerated tracts in the cord. On the other hand, it is conceivable that in the early stages of cord involvement, when perhaps there is only edema of the myelin, adequate treatment may arrest the process or even restore the tracts to normal function. Recently, through the courtesy of Dr. W. F. Keller, I have been privileged to follow a typical case of Addison's anemia with mild posterior column signs. With 46 per cent hemoglobin and 1,900,000 red cells, ten 3 cc. doses of a liver extract concentrate were given parenterally in twenty-seven days, when therapy was discontinued, the hemoglobin being 95 per cent and the red count 5,100,000. During the next month the hemoglobin reached 120 per cent, the red count 6,600,000, and during the following four weeks hemoglobin 123 per cent, red count 7,900,000, together with splenomegaly, encephalopathy, vascular crises, and so on. In spite of this remarkable response on the part of the hematopoietic system, the neurologic signs rapidly increased in severity, although the subjective symptoms almost entirely disappeared. In evaluating the efficacy of therapy in relieving neurologic symptoms, one must distinguish if possible between those caused by actual cord damage and the similar symptoms due to local nutritional disturbance; namely, the paresthesias, weakness, and the like. The latter group responds remarkably to adequate therapy, just as the same symptoms in other anemias respond to proper management.

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right side, and bled easily. There was no thickening of the broad ligaments. Squamous cell carcinoma was revealed by biopsy, and radium and roentgen radiation therapy was administered.⁵

For a year and a half after the radiation therapy, follow-up examinations had shown no evidence of disease and the patient had been in excellent health. Then she began to have severe pains in the bladder, associated with some blood in the urine. These symptoms persisted for three weeks. When the patient returned to the clinic, cystoscopic examination revealed several submucous hemorrhages on the posterior wall of the bladder, in the center of which was a white, irregular area about 2.5 cm. in diameter. Subsequent examinations showed a definite ulcer in the irregular area mentioned. One year following the initial cystoscopic examination, the ulcer had disappeared completely except for a small area of submucous hemorrhage due to separation of the slough a few days previously.

Approximately a year and nine months subsequent to treatment the patient began to have unusual abdominal symptoms, simulating intestinal obstruction. Roentgen examination of the colon showed no obstruction at the time of the onset of these symptoms. No further roentgen studies were made. The initial attack soon subsided, but two months later there was a recurrent attack that was more severe, and an operation was performed. There was an old inflammatory process in the uterine tubes but no evidence of carcinoma could be found. About 25 cm. proximal to the rectum there was a definite, almost complete obstruction of the sigmoid colon. It was not adherent to the pelvis. It seemed as if there were a cicatricial band in the bowel wall, with very little inflammatory reaction outside. Resection was considered, but it was deemed more advisable to make an anastomosis around the obstruction, particularly in view of the fact that the sigmoid colon was unusually long. A side-to-side anastomosis was made. The last follow-up letter from the patient, five years after operation, states that she is in normal health.

CASE 3.—A woman, aged 41, had an enlarged cervix uteri, which was bleeding and ulcerated. The principal involvement was inside the cervix, extending into the uterus and outward through the cervix, lateral to the external os. The biopsy showed squamous cell carcinoma. Radium and roentgen therapy was administered.⁶

The frequent transitory rectal sequelae immediately following these treatments were prolonged in this case. For six months the patient complained of loose stools containing unusual quantities of mucus. It is significant to note here that there was no lesion in the rectum opposite the treated area where one would presume the maximum effect of radium would prevail. The following months there was marked constipation, and, after a period of eleven days without a stool, the patient suffered from considerable abdominal distention and was readmitted to the hospital with a diagnosis of intestinal obstruction. Follow-up examinations had shown no evidence of recurrence of the malignant growth in the cervix or adnexa. Proctoscopic examinations had shown no evidence of disease. Laparotomy was not performed at this time because her symptoms were relieved by the use of enemas and hot fomentations to the abdomen.

She was subsequently readmitted to the hospital at intervals of two and six months. An attempted barium enema was expelled as soon as it had reached the sigmoid colon, apparently indicating obstruction at this level.

Fifteen months after radiation therapy a cecostomy was done and a large tube was inserted for irrigations. Later a colon roentgen examination, during which the barium suspension was injected through the colostomy tube, revealed a definite obstructing lesion in the sigmoid colon. At the subsequent operation, performed recently, the lesion proved to be a benign stricture causing complete obstruction. This portion of the

colon was resected and an end-to-end anastomosis was made. The patient's recovery following operation was uneventful and the cecostomy closed itself.

CASE 4.—A woman, aged 50, had a diffuse carcinoma of the cervix uteri involving chiefly the cervical canal (stage 1). Squamous cell carcinoma was revealed by biopsy and the patient received irradiation.⁷

Subsequent examinations revealed satisfactory progress, and the patient was in good health except for an attack of gallstone colic. Approximately three years following irradiation therapy she stated (for the first time) that she had had some blood in the stools off and on during the previous year which she attributed to hemorrhoids. Unusual constipation was also present. Pelvic and proctoscopic examinations showed nothing except the hemorrhoids, and these were treated by the injection method. A colon roentgen examination, however, revealed an annular filling defect in the sigmoid colon, and reexamination one month later revealed the same finding. Bleeding continued at intervals and in one instance there was a cupful of blood clots.

At operation (three and one-half years following radiation therapy) the lesion proved to be a benign stricture. This portion of the colon was resected and an end-to-end anastomosis was made. Death from local peritonitis followed fifteen days after the operation.

CASE 5.—A woman, aged 59, suffered from a rather extensive carcinoma of the cervix uteri, involving chiefly the anterior lip of the cervix and extending into the vaginal wall. The lesion, as determined by biopsy, was a squamous cell carcinoma. The patient was treated with radium⁸ but received no roentgen therapy.

The patient made satisfactory progress but complained of slight constipation, which was unusual for her. Seven months following radium irradiation she stated that during the past few weeks the constipation had become more severe and that she had passed darkened blood, blood clots, and mucus by rectum, associated with cramplike abdominal pains. Pelvic examination showed nothing of significance, but roentgen examination of the colon revealed a conical, fixed, concentric narrowing in the midsigmoid area, believed to be due to an irradiation stricture. At operation the stricture was immediately behind the fundus of the uterus. This area appeared anemic as compared with the remainder of the sigmoid colon. A cecostomy was performed and one month later a resection of the lesion and an end-to-end anastomosis were done. The patient was discharged from the hospital one month after operation having normal stools.

CASE 6.—A woman, aged 58, had a carcinoma of the cervix uteri, involving chiefly the posterior lip and the posterior vaginal wall. The pathologic diagnosis was squamous cell carcinoma. Radium therapy was followed by roentgen irradiation.⁹

For five months the patient showed satisfactory progress with complete regression of the lesion but did not return for the usual subsequent examinations. Two months later, in a letter from the patient's husband, who was a physician in a distant town, it was learned that the patient had been confined to bed for a month because of abdominal pain, nausea and pronounced vomiting. He stated that examination revealed no evidence of carcinoma in the cervix or in neighboring structures. Death followed one month later. Autopsy was performed, which revealed an inflammatory stricture of the small intestine, causing a definite obstruction. The exact relation of this area to the uterus was not stated, but examination of this area of the intestine and the uterus, after removal from the abdomen, revealed adhesions on the peritoneal surfaces of both.

7. Two tubes containing 244 millicuries of radon were inserted, one in the cervix and one against the cervix, for ten hours, or a total of approximately 2,440 millicurie hours. One month later, roentgen therapy was administered.

5. Two tubes containing 305 millicuries of radon were inserted into the uterus and cervix and two tubes containing 140 millicuries of radon were placed against the cervix for six and a half hours, producing a total irradiation of about 2,759 millicurie hours. Twelve days later, roentgen therapy was started.

6. One tube containing 106 millicuries of radon was placed in the fundus of the uterus, one tube containing 247 millicuries of radon was placed in the cervix, and four tubes containing 142 millicuries were placed against the cervix for eight hours, or a total of approximately 3,960 millicurie hours. One month later roentgen therapy was administered.

8. One tube containing 266 millicuries of radon was inserted into the cervical canal, and ten radium needles, each containing 10 mg. of radium, were inserted into the carcinomatous mass, approximately 1 cm. apart, and one tube containing 107 millicuries of radon was placed against the anterior lip of the cervix, a total of 373 millicuries of radon and 100 mg. of radium for seven and one-half hours, equivalent to approximately 3,729 mg. hours of radium.

9. One tube containing 118 millicuries of radon was placed in the cervix and another tube containing 177 millicuries of radon was placed against the posterior lip of the cervix, for ten hours, or a total of approximately 2,950 millicurie hours. One and a half months later, roentgen therapy was administered.

say that in case 1 the reticulocytes fell from 10 to 4 per cent as the anemia improved. As to the action of liver extract or how it may affect the blood picture in hemolytic jaundice, we are unprepared to say. In answer to Dr. Haden's question about the type of case treated, I think it is fairly certain that the first case presented was, without doubt, a congenital case. It will be recalled that the family history was positive. The father has had recurrent attacks of jaundice for many years. He now has an increased icterus index and his blood cells show increased tendency to hemolysis as estimated by the hypotonic saline solutions. This boy definitely improved when treated with liver extract, whereas prior to treatment he had had a hemolytic crisis occurring every two or three months. Since he has had treatment continuously, he has had no hemolytic crisis and his blood count is improved very much.

RESULTS OF PROLONGED IRRADIATION FOR MALIGNANT CONDITIONS OF PELVIS

INTESTINAL, RECTAL AND BLADDER COMPLICATIONS;
SURGICAL TREATMENT

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In a previous communication¹ I directed attention to early and late effects of radiation in the rectum and bladder following radium and roentgen irradiation for carcinoma of the cervix. Attention was directed to the importance of differentiating between late reactions and recurring malignant lesions, because further irradiation of the benign condition may cause further insult to the tissue and result in irreparable damage, such as fistulas in the bladder or rectum.

The present study directs attention to a rather new clinical entity² that may develop and call for surgical intervention many months or years after complete regression or cure of the cervical cancer. In a series of 520 patients with cervical carcinomas having received radiation therapy at the Cleveland Clinic, there have been seven known cases of benign stricture of the intestine causing obstruction that might easily have been construed as, or confused with, metastatic carcinoma. In five of these cases the obstruction was in a movable segment of the sigmoid and in two cases in the small intestine. All these strictures were observed in patients who had been irradiated for carcinoma of the cervix, but the increasing use of radiation for other conditions necessitating exposure of the intestine may result in similar complications. Subsequent to the radiation therapy no evidence of carcinoma was found in these cases and, judging by present-day standards, none of these patients received excessive irradiation. Since similar methods of therapy are in general use, it seems probable that the incidence of the lesion is greater than is surmised at the present time; and if similar cases have been attributed to metastasis in the past, the mortality statistics relating to metastasis from cervical carcinoma are open to question. Desjardins,³ in a report of the literature, has called attention to intestinal injury produced experimentally by irradiation.

From the Cleveland Clinic.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Jones, T. E.: *The Treatment of Carcinoma of the Cervix*, J. A. M. A. 99: 880-883 (Sept. 10) 1932.

2. Collins, E. N., and Jones, T. E.: *Benign Stricture of the Intestine Due to Irradiation of Carcinoma of the Cervix Uteri*, Surg., Gynec. & Obst. 59: 644-649 (Oct.) 1934.

3. Desjardins, A. U.: *Action of Roentgen Rays and Radium on Gastro-Intestinal Tract: Experimental Data and Clinical Radiotherapy*, Am. J. Roentgenol. 26: 145 (July), 335 (Aug.), 493 (Sept.) 1931.

There are many reports in the literature dealing with the manifestations of acute injury to the intestine following irradiation, both experimental and clinical, but I have not been able to trace any reports on patients who have recovered from the acute symptoms and have later developed the chronic condition herein described. If such cases have been described, this report adds seven cases of intestinal obstruction that developed in patients from eight months to eight years after radiation therapy for cervical carcinoma.

The rate of recurrence of cancer is so high that almost any abdominal or pelvic pain may quite naturally and logically be attributed to malignant extension or metastasis. If the condition actually is a benign stricture caused by irradiation, it is quite obvious that additional x-ray treatment would only aggravate the condition and hasten the end. Therefore, one should always keep in mind the possibility that a patient who exhibits unusual abdominal symptoms, particularly if they simulate intestinal obstruction, several months or even years following radiation therapy, may have a stricture of the intestine and may be restored to normal health by resection of the lesion. Before this disability is attributed to metastasis, thorough reexamination by sigmoidoscopic and roentgenographic studies should be made to eliminate the possibility of this curable complication. While roentgen examinations demonstrate lesions in the sigmoid quite readily, strictures in the small intestine are quite difficult to visualize unless the obstruction is practically complete. In this type of case it is inadvisable to give barium in any large amounts, and therefore exploratory operation is warranted, especially in patients in whom there is no evidence of recurring carcinoma in the pelvis.

REPORT OF CASES

A brief review of the case histories will serve to clarify the problems involved:

CASE 1.—A woman, aged 60, when first examined had a carcinoma of the cervix uteri, extending into the broad ligament. Biopsy taken at the time of treatment showed a squamous cell carcinoma, and the patient was treated with radium and roentgen rays in 1927.⁴

Follow-up examinations had shown no evidence of malignant disease, and the patient had been in excellent health for more than two years after the last radium treatment. Then in 1929 unusual constipation set in, which became progressively more severe and at the time of readmission, a few weeks after its onset, she had symptoms and signs of intestinal obstruction. Proctoscopic examination yielded no information, and no blood or mucus was seen in the bowel. Roentgen examination of the colon revealed an obstructing lesion in the sigmoid colon, which was believed to be due to carcinoma. At operation, the lesion had the characteristics of a benign stricture. It was a napkin ring deformity, with a few firm adhesions to the omentum. The adhesions were severed, this portion of the colon was resected, and an end-to-end anastomosis was made. The pathologic diagnosis was chronic inflammation. The patient recovered well from the operation and has reported normal health on numerous occasions during the four and one-half years since the resection was performed.

CASE 2.—A woman, aged 52, had had a pelvic abscess years previously and came to the clinic because of pelvic pain. The cervix uteri was firm, enlarged and nodular, especially on the

4. One tube containing 170 millicuries of radon was inserted into the cavity of the uterus and cervical canal for twelve hours, producing a total irradiation of 2,040 millicurie hours. Three days later, roentgen therapy was started. Two months later a second radium treatment was administered to the cervix, 220 millicuries of radon being used in four tubes against the cervix for ten hours, totaling 2,200 millicurie hours, a total of approximately 4,240 millicurie hours for the two radium treatments. The actual amount of radiation received represents about 3 per cent less than these figures when calculated according to the time the radon is in place.

right side, and bled easily. There was no thickening of the broad ligaments. Squamous cell carcinoma was revealed by biopsy, and radium and roentgen radiation therapy was administered.⁵

For a year and a half after the radiation therapy, follow-up examinations had shown no evidence of disease and the patient had been in excellent health. Then she began to have severe pains in the bladder, associated with some blood in the urine. These symptoms persisted for three weeks. When the patient returned to the clinic, cystoscopic examination revealed several submucous hemorrhages on the posterior wall of the bladder, in the center of which was a white, irregular area about 2.5 cm. in diameter. Subsequent examinations showed a definite ulcer in the irregular area mentioned. One year following the initial cystoscopic examination, the ulcer had disappeared completely except for a small area of submucous hemorrhage due to separation of the slough a few days previously.

Approximately a year and nine months subsequent to treatment the patient began to have unusual abdominal symptoms, simulating intestinal obstruction. Roentgen examination of the colon showed no obstruction at the time of the onset of these symptoms. No further roentgen studies were made. The initial attack soon subsided, but two months later there was a recurrent attack that was more severe, and an operation was performed. There was an old inflammatory process in the uterine tubes but no evidence of carcinoma could be found. About 25 cm. proximal to the rectum there was a definite, almost complete obstruction of the sigmoid colon. It was not adherent to the pelvis. It seemed as if there were a cicatricial band in the bowel wall, with very little inflammatory reaction outside. Resection was considered, but it was deemed more advisable to make an anastomosis around the obstruction, particularly in view of the fact that the sigmoid colon was unusually long. A side-to-side anastomosis was made. The last follow-up letter from the patient, five years after operation, states that she is in normal health.

CASE 3.—A woman, aged 41, had an enlarged cervix uteri, which was bleeding and ulcerated. The principal involvement was inside the cervix, extending into the uterus and outward through the cervix, lateral to the external os. The biopsy showed squamous cell carcinoma. Radium and roentgen therapy was administered.⁶

The frequent transitory rectal sequelae immediately following these treatments were prolonged in this case. For six months the patient complained of loose stools containing unusual quantities of mucus. It is significant to note here that there was no lesion in the rectum opposite the treated area where one would presume the maximum effect of radium would prevail. The following months there was marked constipation, and, after a period of eleven days without a stool, the patient suffered from considerable abdominal distention and was readmitted to the hospital with a diagnosis of intestinal obstruction. Follow-up examinations had shown no evidence of recurrence of the malignant growth in the cervix or adnexa. Proctoscopic examinations had shown no evidence of disease. Laparotomy was not performed at this time because her symptoms were relieved by the use of enemas and hot fomentations to the abdomen.

She was subsequently readmitted to the hospital at intervals of two and six months. An attempted barium enema was expelled as soon as it had reached the sigmoid colon, apparently indicating obstruction at this level.

Fifteen months after radiation therapy a cecostomy was done and a large tube was inserted for irrigations. Later a colon roentgen examination, during which the barium suspension was injected through the colostomy tube, revealed a definite obstructing lesion in the sigmoid colon. At the subsequent operation, performed recently, the lesion proved to be a benign stricture causing complete obstruction. This portion of the

colon was resected and an end-to-end anastomosis was made. The patient's recovery following operation was uneventful and the cecostomy closed itself.

CASE 4.—A woman, aged 50, had a diffuse carcinoma of the cervix uteri involving chiefly the cervical canal (stage 1). Squamous cell carcinoma was revealed by biopsy and the patient received irradiation.⁷

Subsequent examinations revealed satisfactory progress, and the patient was in good health except for an attack of gallstone colic. Approximately three years following irradiation therapy she stated (for the first time) that she had had some blood in the stools off and on during the previous year which she attributed to hemorrhoids. Unusual constipation was also present. Pelvic and proctoscopic examinations showed nothing except the hemorrhoids, and these were treated by the injection method. A colon roentgen examination, however, revealed an annular filling defect in the sigmoid colon, and reexamination one month later revealed the same finding. Bleeding continued at intervals and in one instance there was a cupful of blood clots.

At operation (three and one-half years following radiation therapy) the lesion proved to be a benign stricture. This portion of the colon was resected and an end-to-end anastomosis was made. Death from local peritonitis followed fifteen days after the operation.

CASE 5.—A woman, aged 59, suffered from a rather extensive carcinoma of the cervix uteri, involving chiefly the anterior lip of the cervix and extending into the vaginal wall. The lesion, as determined by biopsy, was a squamous cell carcinoma. The patient was treated with radium⁸ but received no roentgen therapy.

The patient made satisfactory progress but complained of slight constipation, which was unusual for her. Seven months following radium irradiation she stated that during the past few weeks the constipation had become more severe and that she had passed darkened blood, blood clots, and mucus by rectum, associated with cramplike abdominal pains. Pelvic examination showed nothing of significance, but roentgen examination of the colon revealed a conical, fixed, concentric narrowing in the midsigmoid area, believed to be due to an irradiation stricture. At operation the stricture was immediately behind the fundus of the uterus. This area appeared anemic as compared with the remainder of the sigmoid colon. A cecostomy was performed and one month later a resection of the lesion and an end-to-end anastomosis were done. The patient was discharged from the hospital one month after operation having normal stools.

CASE 6.—A woman, aged 58, had a carcinoma of the cervix uteri, involving chiefly the posterior lip and the posterior vaginal wall. The pathologic diagnosis was squamous cell carcinoma. Radium therapy was followed by roentgen irradiation.⁹

For five months the patient showed satisfactory progress with complete regression of the lesion but did not return for the usual subsequent examinations. Two months later, in a letter from the patient's husband, who was a physician in a distant town, it was learned that the patient had been confined to bed for a month because of abdominal pain, nausea and pronounced vomiting. He stated that examination revealed no evidence of carcinoma in the cervix or in neighboring structures. Death followed one month later. Autopsy was performed, which revealed an inflammatory stricture of the small intestine, causing a definite obstruction. The exact relation of this area to the uterus was not stated, but examination of this area of the intestine and the uterus, after removal from the abdomen, revealed adhesions on the peritoneal surfaces of both.

7. Two tubes containing 244 millicuries of radon were inserted, one in the cervix and one against the cervix, for ten hours, or a total of approximately 2,440 millicurie hours. One month later, roentgen therapy was administered.

8. One tube containing 266 millicuries of radon was inserted into the cervical canal, and ten radium needles, each containing 10 mg. of radium, were inserted into the carcinomatous mass, approximately 1 cm. apart, and one tube containing 107 millicuries of radon was placed against the anterior lip of the cervix, a total of 373 millicuries of radon and 100 mg. of radium for seven and one-half hours, equivalent to approximately 3,729 mg. hours of radium.

9. One tube containing 118 millicuries of radon was placed in the cervix and another tube containing 177 millicuries of radon was placed against the posterior lip of the cervix, for ten hours, or a total of approximately 2,950 millicurie hours. One and a half months later, roentgen therapy was administered.

5. Two tubes containing 305 millicuries of radon were inserted into the uterus and cervix and two tubes containing 140 millicuries of radon were placed against the cervix for six and a half hours, producing a total irradiation of about 2,759 millicurie hours. Twelve days later, roentgen therapy was started.

6. One tube containing 106 millicuries of radon was placed in the fundus of the uterus, one tube containing 247 millicuries of radon was placed in the cervix, and four tubes containing 142 millicuries were placed against the cervix for eight hours, or a total of approximately 3,960 millicurie hours. One month later roentgen therapy was administered.

From these observations it may be inferred that the stricture of the small intestine involved an area adjoining the uterus, that fibrous adhesions formed between the two, and that the cause of death (since no other cause was considered or found) was severe toxemia, resulting from obstruction of the small intestine.

CASE 7.—A woman, aged 42, admitted to the clinic, June 1, 1926, had had vaginal bleeding for one year. Examination showed extensive papillary carcinoma of the cervix with involvement of the vaginal wall anteriorly and posteriorly, but apparently there was no invasion of the broad ligament. Radium and roentgen irradiation were administered in June 1926.¹⁰

About six months later the patient reported that for a month she had been having trouble with the rectum. The symptoms included tenesmus, mucus, and blood in the stools. This gradually subsided and when the patient was examined a year after treatment there was a narrowing of the rectum opposite the cervix, but the lumen easily admitted the index finger. The patient had no abdominal complaints.

In October 1930, more than four years after irradiation, the patient complained of recurring attacks of abdominal pain which her physician attributed to gallbladder disease. Roentgenographic examination of the gastro-intestinal tract at that time showed no abnormality except a nonfunctioning gallbladder. The attacks of pain continued at occasional intervals until March 1934, when she suffered a very severe one, at which time she had been ill with abdominal pain, nausea and vomiting for two weeks and had lost a great deal of weight. She reentered the Clinic Hospital, April 7, 1934, nearly eight years after the course of radiation therapy. While at the time of hospitalization there was no evidence of obstruction, it was felt that the last attacks simulated an obstruction, and operation was advised.

Exploratory laparotomy was performed, April 10. In the small intestine, 3 feet from the ileocecal valve there was an almost complete obstruction, with collapse below and considerable dilation above the stricture. About 4 inches above this there was a slight narrowing of the lumen. A resection of about 8 inches of small intestine and an end-to-end anastomosis were done. The patient made an uneventful convalescence and was out of the hospital on the fourteenth day. On the fifteenth postoperative day she experienced a sudden severe pain in the right lower quadrant with some abdominal distention, but there was no elevation in temperature or increased pulse rate. The patient was treated expectantly for five days apparently satisfactorily, when distention recurred and exploration was done. There was some free fluid in the abdomen and some distended coils of intestine, one of which was used for ileostomy. We were dealing with a mesenteric thrombosis. The ileostomy functioned quite satisfactorily but the patient gradually failed and died, about two weeks later, on May 13.

The pathologic report on the lesion removed was as follows: A longitudinal section of the small intestine showed marked thickening and dense fibrosis of the serosal coat in which there were large numbers of greatly thickened arteries, showing varying degrees of obliterative endarteritis, degeneration of the lamina elastica and hyalinization of the intima, with no calcification present. In some areas there was localized, perivascular, inflammatory infiltration, with plasma cells predominating. There was considerable diffuse increase of fibrous tissue in the muscular coat, with fibrosis of the submucosa. The mucosa was somewhat atrophic, contained very little lymphoid tissue and showed mild, diffuse, inflammatory infiltration, with numerous eosinophils and plasma cells present. In one area there was active ulceration, with almost complete destruction of mucosa. The base of the ulcer extended into the muscular coat. There was some fibrinous exudate, in which were many leukocytes together with plasma cells, eosinophils and lymphocytes. Ganglion cells of the submucosa showed extensive degenerative changes in the neighborhood of the ulcer. There was no evidence of neoplasm.

10. The first application of radium consisted of 3,584 mg. hours with tubes and needles in and against the cervix, and roentgen irradiation was given about three weeks later. A second application of radium to the cervix, amounting to 1,300 mg. hours, was administered about a month after the roentgen therapy.

In this case the small intestine, which was only .8 feet (244 cm.) long, accounted for the fact that the patient was losing weight in spite of a good appetite for years. The absorptive mucosa was destroyed and replaced by fibrous tissue.

COMMENT

This group of cases is of particular interest to me because I administered the radium in all cases and have had the surgical management of the resulting complications. The x-ray therapy was administered by Dr. Portmann. Obviously, as is the case in any pathologic process, the factor of particular interest is the causation and possible prevention of the lesion. In this case the radium therapist is likely to blame the x-ray therapist and vice versa, whereas both probably have contributed to the causation of the lesion. It is significant to note that in this series only one patient had any lesion in the rectum opposite the cervix where the maximum intensity of radium radiation would be delivered. With the obstruction of the small intestine in case 7 there was a slight narrowing of the rectum that was readily dilatable. This would seem to justify the statement that the radium dosage used in this series was not excessive.

That roentgen irradiation is not entirely responsible is a justifiable assumption because patient 5 received no x-ray therapy. Furthermore, the lesion in this case was not at the point of maximum intensity but in the sigmoid several inches away. One then must search for causes that contribute to fixation of a certain loop of small or large intestine in the pelvis which is the recipient of the maximum radium and roentgen dosage at that particular point. Previous inflammatory disease of the pelvic organs, either specific or post partum, might tend to fix a loop at a vulnerable point, yet this was not a factor in this group of cases, because in only one was the bowel fixed in the bottom of the pelvis by an apparent previous inflammatory process.

From my observations I would venture the following explanation, which may apply in the majority of cases: The initial insult is delivered by radium. If a loop of small or large intestine remains in the same position in the culdesac during the entire time of radium irradiation, the erythema produced at this point may be sufficient to produce a simple local peritonitis, which would fix the bowel at this point temporarily, and before the exudate is completely absorbed roentgen rays are administered, thus furnishing additional irritation, which is sufficient to cause an ulceration in the mucosa that eventually goes on to stricture formation. As time passes the exudate is absorbed and the bowel becomes free, which is the general finding at operation.

Whether this intestinal lesion is due to one agent or the other or to a combination of the two, ways and means should be devised to prevent it. A change of position of the patient during treatment suggests itself as an aid, but this would not be entirely safe for fear of dislodging the radium tubes and possibly causing damage to the rectum or bladder. However, a Trendelenburg position maintained during treatment may help to keep the intestine out of the pelvis while the latter is being irradiated both by radium and by x-rays. If the theory of some fixation of a loop of intestine is tenable, drugs to stimulate peristalsis may be considered, and it might be advisable to give from 0.5 to 1 cc. of ampoules of pitressin every four hours while the radium is in place or just previous to an x-ray treatment in order to keep the intestine moving and thus to preclude excessive irradiation of any one loop.

In presenting these intestinal complications I do not wish to convey the idea that I disparage the present-day treatment of cancer of the cervix. I believe it is the best that is offered and shall continue to use it. However, on the basis of the experience here reported, I would interject a word of caution regarding the step that is being taken at the present time, the stepping up of the voltage many times more than is in use now, because I think increased voltages carry a definite potential danger of damage to the intestine.

CONCLUSIONS

The recognition of the possibility of benign stricture of the intestine as a complication following radiation therapy, often months or years later, is of utmost importance, for it can very easily be confused with recurrence of a malignant condition. Its detection and surgical treatment may salvage the lives of many patients otherwise regarded as having a hopeless malignant growth.

ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, New York: In a series of 655 cases of cancer of the cervix under my care at the Woman's Hospital, I have observed fourteen cases in which intestinal complications exclusive of the rectum developed. Thirteen of these presented symptoms of partial or complete obstruction, and one involvement of the sigmoid without obstruction. Some were associated with fecal fistulas. In eight of these cases the diagnosis was confirmed by operation or autopsy, and in seven of them metastatic carcinoma of the intestine was found as well as adhesions and inflammatory exudate. Proctitis as evidenced by diarrhea, rectal pain and ulcerations has occurred in about 3 per cent of the cases. There were twenty-two rectovaginal fistulas with three spontaneous and two operative closures, and twenty-one vesicovaginal fistulas with no spontaneous and two operative closures. Eighty-eight per cent of these fistula cases were classed in groups III and IV on their first visit, and five had developed the complication previous to the irradiation. I therefore believe that the extent of the cancer was the causative factor in the majority of these cases rather than the irradiation. Carcinoma of the cervix stump following a supravaginal hysterectomy occurred in forty-seven of 655 cases, or about 7 per cent. In these cases the incidence of fistula was about twice the incidence in old cases. I believe that irradiation under these conditions is much more dangerous, as the bladder lies on top of the cervix at the site of the amputation, where it will come in close contact with the radium tube placed in the cervical canal. Consequently in these cases I have reduced the initial dosage about one half and repeat as necessary. I have encountered ureter and kidney complications from obstruction in eighteen cases as a late result. In many cases I believe it due to contraction of postirradiation connective tissue formation in the broad ligaments, and it is now my practice to pass ureteral catheters as a diagnostic measure in all late cases in which pelvic symptoms develop. Severe deep seated pelvic pain and edema of the extremities may be due to the same cause and not necessarily to metastatic cancer. While in the cases that came to operation or autopsy all but one of the intestinal complications were the result of recurrent carcinoma, nevertheless I appreciate the likelihood of benign postirradiation adhesions being a cause of trouble, as Dr. Jones has found. I am inclined to the belief that prolonged and repeated high voltage roentgen therapy is the most probable cause in the majority of cases of benign stricture of the intestine as the effective range of the radium is so limited, except in those cases in which a loop of intestine is adherent to the posterior surface of the uterus or culdesac. It will take time to determine whether the fractional method of Coutard is the safer technic. In view of Dr. Jones's experience and my own, I wish to advocate that, in all cases in which late postirradiation symptoms of intestinal or ureteral obstruction, severe pain or edema develop, an exploratory laparotomy be

done with the object of making an exact diagnosis and relieving the obstruction if due to benign adhesions, enucleation of any involved pelvic glands as suggested recently by Taussig, and a sympathectomy of the presacral nerve for the relief of pain. As many of these patients develop symptoms after the customary five year period of observation, I consider that a ten year period is necessary for the more correct evaluation of radiation therapy.

THE SIGNIFICANCE OF MIXED INFECTIONS IN PNEUMOCOCCIC PNEUMONIA

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It is my purpose in this communication to call attention to an important group of cases of pneumococcic pneumonia in which multiple bacterial agents are operative. The significance of these mixed infections in altering the course and outcome of the disease and in evaluating the effects of certain specific therapeutic agents will be brought out by citing a few examples.

Numerous instances of cases from which more than one strain or species of bacterium were isolated in the course of the disease may be found in the literature concerning pneumococcic pneumonia. Either most of these instances are recorded as part of intensive bacteriologic investigations of small groups of cases or they are mentioned in the reports of clinical and bacteriologic studies of large numbers of pneumonia cases.¹ In such reports little attention has been given to the significance of each of the various agents and its rôle in the individual case. Isolated examples of carefully studied cases of mixed infections in pneumonia, however, are to be found scattered among reports dealing with the evaluation of specific therapeutic agents² or where epidemiologic or immunologic studies have been undertaken simultaneously.³ Further examples are

This study was aided, in part, by a grant given in honor of Francis Weld Peabody by the Ella Sachs Plotz Foundation.

Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School.

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to be found in reports on epidemics of pneumonia, particularly those complicating influenza or measles.⁴

Many methods are employed to determine or to isolate the bacterial incitants in pneumonia. Ordinarily the sputum is utilized for this purpose. The organism, usually a single strain (type) of pneumococcus, is obtained by inoculating the sputum into a mouse and identified from the peritoneal exudate or heart's blood of the animal by its morphologic, cultural and serologic characteristics.⁵ When sputum cannot be obtained, suitable culture of material obtained by swabbing the throat may be utilized either directly or after mouse inoculation. Other methods involve tests for soluble and specifically reacting substances in the sputum⁶ or urine,⁷ or tests for specific serologic reactions of organisms observable directly in sputum.⁸ These methods are designed primarily for the isolation and serologic classification of pneumococci, but occasionally they yield

the infected pleural cavity in the living patient, or from these and other portions of the body at necropsy. Additional valuable information may be obtained from the reactions of the serum of the convalescent patient with type-specific organisms (agglutinins) or their products (precipitins), or by testing the capacity of such serum to protect animals against multiple lethal doses of virulent specific organisms.¹⁰

No effort will be made here to evaluate the relative importance of each of these methods. It is merely to be pointed out that the frequency with which multiple bacterial strains are encountered is directly proportional to the diversity of the methods employed. To determine the rôle that each of the agents thus identified plays in the particular disease process of any given individual necessitates the application of a combination of these methods with careful clinical and pathologic observations.

TABLE 1—Distribution of Organisms Among 133 Cases of Pneumococcic Pneumonia with Mixed Infections

Pneumo- coccus Type	Second Type*					Total Cases with Other Pneumo- cocci†	Other Organisms*								Total Mixed Cases†	
	II	III	V	VIII	Others		S. H.	S. Au.	F. B.	T. B.	S. V.	S. H. and S. Au.	S. V. and S. Au.	B. I.		Ty.
I ..	1	3	1	4 ^a	7 ^{b,c}	16	10	3	1	4 ⁱ	2	1	0	3	1 ^j	41
II ..		3 ^d	0	0	2 ^e	6	2	1	0	3	1	2	0	1	0	16
III ..			1	2	6 ^f	15	8	2	0	0	1	2	0	1	0	32
V ..				0	3 ^g	5	2	0	0	0	0	1	0	0	0	8
VIII					1 ^h	7	3	2	1	0	1	1	1	1	0	17 ^k
Others					3	22	8	3	8	2 ^k	3	2	2	1	2	53
Total						37§	55 (a)	12 (b)	14 (c)	9	0 (d)	9	3	8 (e)	5	133§

* Each patient appears once.

† Each number includes cases with preceding pneumococcus types.

§ Excludes duplications.

¶ Excluding one case with gonococci in joint fluid.

Superscripts represent the following additional organisms:

- a S. H., 1 case.
- b XX in addition to XIX, 1 case.
- c XXIV in addition to XXI, 1 case.
- d VII, 1 case.
- e F. B., 1 case.
- f XVII in addition to X, 1 case.
- g S. H., 1 case.
- h S. V., 1 case.
- i T. B., 1 case.
- j B. I.
- k S. Au., 1 case.

(a) includes a and g.

(b) includes b.

(c) includes c.

(d) includes d.

(e) includes j.

Abbreviations:

- S. H. = Streptococcus hemolyticus.
- S. Au. = Staphylococcus aureus.
- F. B. = Friedlander's bacillus.
- T. B. = Tubercle bacillus.
- S. V. = Streptococcus viridans.
- B. I. = Bacillus influenzae.
- Ty. = B. typhosus or B. paratyphosus

other organisms. For determining the presence and relative numbers of other bacteria, direct cultures on suitable mediums are employed.⁹ Organisms can also be cultured from the blood, from material obtained by direct puncture of the consolidated lung or from

SOURCE OF MATERIAL

At the Boston City Hospital, between November 1929 and May 1933, approximately 2,000 cases of pneumonia or pneumococcic infections were studied bacteriologically.¹¹ Among these were 133 cases in which pneumonia was associated with the finding of two or more organisms, at least one of which was a pneumococcus. The organisms were isolated, in almost every instance, during a period of active infection. All pneumococcus strains from these 133 patients were identified as belonging to one or another of the serologic groups I-XXXII (Cooper) with the exception of four that failed to agglutinate in antisera for types I-XX, no other serums being available at the time when they were isolated. The majority of the other organisms were isolated directly from the blood or from pleural fluid, or they were cultured at necropsy from the heart's blood, from accumulations of pus, or from the consolidated lung. Some instances are included in which the organisms were shown to be predominant in cultures made directly from the sputum or in which they were obtained from the heart's blood of a mouse

4. (a) Clendening, Logan: Reinfection with Streptococcus Hemolyticus in Lobar Pneumonia, Measles and Scarlet Fever and Its Prevention, *Am. J. M. Sc.* 156:575 (Oct.) 1918. (b) Cole, Rufus, and MacCallum, W. G.: Pneumonia at a Base Hospital, *J. A. M. A.* 70:1146 (April 20) 1918. (c) Opie, E. L.; Freeman, A. W.; Blake, F. G.; Small, J. C., and Rivers, T. M.: Pneumonia at Camp Funston, *ibid.* 72:108 (Jan. 11) 1919. (d) Nuzum, J. W.; Pilot, Isadore; Stangl, F. H., and Bonar, B. E.: Pandemic Influenza in a Large Civil Hospital, *ibid.* 71:1562 (Nov. 9) 1918. (e) Opie, E. L.; Blake, F. G.; Small, J. C., and Rivers, T. M.: Epidemic Respiratory Diseases, St. Louis, C. V. Mosby Company, 1921. (f) MacCallum, W. G.: The Pathology of the Pneumonia in the United States Army Camps During the Winter 1917-1918, Monograph 10, Rockefeller Institute for Medical Research, 1919.

5. (a) Avery, O. T.; Chickering, H. T.; Cole, Rufus and Dochez, A. R.: Acute Lobar Pneumonia. Prevention and Serum Treatment, Monograph 7, Rockefeller Institute for Medical Research, Oct. 16, 1917. (b) Sabin, A. B.: The Microscopic Agglutination Test in Pneumonia, *J. Infect. Dis.* 46:469 (June) 1930.

6. Krumwiede, C. J., and Noble, W. C.: A Rapid Method for the Production of Precipitin Antigen from Bacteria: An Attempt to Apply to the Type of Pneumococcus in Sputum, *J. Bact.* 1:111 (Oct.) 1918.

7. Avery, O. T.: The Elaboration of Specific Soluble Substance by Pneumococcus During Growth, *J. Exper. Med.* 26:477 (Oct.) 1917.

8. (a) Armstrong, R. R.: Immediate Pneumococcal Typing, *Brit. M. J.* 1:187 (Jan. 30) 1932. (b) Sabin, A. B.: Immediate Pneumococcal Typing Directly from the Sputum by the Neufeld Reaction, *J. A. M. A.* 100:1584 (May 20) 1933.

9. (a) Griffith, F.: Types of Pneumococci, Report 13 on Public Health and Medical Subjects, 1922. (b) Gundel, M.: Die Bakteriologie, Epidemiologie und Prävention der Pneumonie, *Monatsh. f. Bakt. u. Hyg.* 1:1 (1922). (c) Thomson, D.: The Causation of Colds, Tonsillitis and Bronchitis, *Ann. & Repts. Res. Lab.* 8:130 (Dec.) 1932.

10. (a) Dochez, A. R.: The Presence of Protective Substances in Human Serum During Lobar Pneumonia, *J. Bact.* 16:665, 1912. (b) Chickering, H. T.: Lobar Pneumonia and Agglutination of These Reactions and the Regularity of These Reactions, *Hopkins Hosp. Rep.* 20:167 (June) 1919.

11. This work was carried out with Dr. W. D. Sutcliffe during 1929-1932 and with Dr. A. W. Winkler in the fourth year.

inoculated with sputum. Tubercle bacilli were demonstrated only in stained preparations of sputum.

The numbers of patients with the various combinations of organisms are shown in table 1. Each patient is listed only once, except in the summary columns, as indicated. A total of thirty-seven patients had more than one pneumococcus type, including four with three distinct serologic groups and four from whom other organisms were isolated in addition to the two types of pneumococci. The remaining ninety-six patients had a pneumococcus and one or more other organisms. There were, in addition, nine patients in whom immunologic reactions of serum obtained during convalescence indicated that the disease was probably caused by a pneumococcus of a different type than the one isolated from the patient. These nine cases were studied with Winkler³⁶ in 1932-1933 but they are not included in the table.

CLASSIFICATION OF CASES OF MIXED INFECTION

It is impossible to present here the details of the examinations in all the cases. A review of the data available in these cases has indicated that they may be divided roughly into three groups. In the first group are cases in which only one of the multiple bacterial agents is causing the pulmonary infection, the other probably being incidental. In the second, more than one organism is invading simultaneously, either at the same or at different sites. In the third group, one invasion follows on another and here, again, the same or different sites may be involved. A few examples of cases in each group will suffice to illustrate the significance of the various organisms in relation to the disease.

Mixed Infections, with One Organism Probably Incidental.—Examples of such cases abound in the literature. In some instances one of the organisms can be shown to be a more or less constant inhabitant of the particular individual's nasopharynx.¹² In other instances some of the bacteria may be related to the antecedent infection of the upper respiratory tract.³⁶ In the former, type III or some of the types formerly classified as group IV pneumococci are most commonly found; in the latter, influenza bacilli are by far the most frequent, particularly during epidemics. It may be noted that with the further classification of the pneumococci previously included in group IV¹³ and with the serologic identification of these organisms when associated with disease,¹⁴ it has become apparent that some of the newly classified types are regularly associated with disease processes in the lung, while others are more regularly found in normal throats and only rarely cause disease. This new classification has helped considerably in determining the relative significance of multiple bacterial invaders. In patients unable to raise sputum, or with sputum mixed with material from the nose or pharynx, or when ordinary care is not taken to obtain sputum coughed up directly from the lung, organisms not related to the disease are frequently obtained. It is such instances that account for most of the inconsistencies in sputum typings in which one of the group IV

pneumococci is obtained from one sputum and a different type obtained from another sample of the same patient's sputum or from a different source.¹⁴

CASE 1.—G. O., a man, aged 45, had coryza and generalized aches and pains, Jan. 17, 1933. The next day he had chills followed by the chest pain and respiratory distress. He was admitted to the hospital, January 20, and was found to have lobar pneumonia of the left lower lobe. His condition was very toxic and remained so until his death, January 29, the pulmonary process having extended to the upper lobe of the same lung. Sputum, obtained with difficulty in each instance, showed no pneumococci in the specimen of January 20 and type X pneumococci in those of January 21 and 27. The blood cultures made on January 20, were sterile, those on January 25 and 29 showed type I pneumococci. The patient's serum obtained January 20, 24, 25 and 29 failed to agglutinate either type I or type X. There was no autopsy.

CASE 2.—P. C., a woman, aged 26, had on Feb. 23, 1933, a sudden onset with chill, followed by fever, cough and chest pain. She entered the hospital, March 5, at which time she had lobar pneumonia of the left lower lobe. She recovered by crisis, March 7. Purulent sputum inoculated into a mouse, March 6, yielded type III pneumococci in pure culture, and on March 10 type V and no type III organisms were obtained in the same manner. Blood cultures on March 6 and 8 were both sterile. Her serum on March 6, 12, 19 and 26 showed a high titer of agglutinins and protective antibodies against type V but failed to show either antibody against type III.

The evidence in these cases appears to indicate that the type X in case 1 and the type III pneumococci in case 2 were probably not related to the pulmonary lesion.

Concurrent Infections.—Cases in which more than one type of pneumococcus have been shown to cause infection in the lung simultaneously are extremely rare. This may be due to the difficulty of isolating different types from the same culture, except by careful bacteriologic technic. Likewise, cases of lobar pneumonia with proved simultaneous infections and with pneumococci and other organisms are rare. Examples from the present series may be cited:

CASE 3.—K. P., a man, aged 43, had a mild infection of the upper respiratory tract without general symptoms, April 10, 1931. April 12, he had a severe chill followed by right-sided chest pain, fever, and cough productive of frothy red sputum. He entered the hospital, April 18, at which time he had lobar pneumonia involving the entire right lung. He was extremely ill and toxic and remained so until his death, April 24. During the last eighteen hours preceding his death he was given intravenously, 130 cc. of Felton's concentrated antibodies (types I and II) in divided doses. There was no apparent benefit from this treatment. From brown tenacious sputum, obtained April 19, both types I and III pneumococci were isolated, but only the former were recovered from a mouse inoculated with similar sputum on April 22. The blood cultures made, April 23, before serum was given, showed 126 colonies per cubic centimeter of blood, and cultures from picked colonies agglutinated in type I serum only. A second blood culture made two hours after 5 cc. of serum was given showed thirty-six colonies per cubic centimeter of blood. Another 25 cc. of serum was given and two hours later fifty-eight colonies were cultured from 1 cc. of blood. Two additional doses of 30 cc. of antibody were given. From the second and third blood cultures only type I pneumococci could be identified. A culture on the following morning showed approximately 2,700 colonies per cubic centimeter of blood, but from these colonies only type III pneumococci and

12. Cruickshank, R.: Pneumococcal Infections, *Lancet* 1:563 (March 18) 1933.

13. Cooper, Georgia; Rosen, William; Galloway, Walter; Annabel, and Peizer, Lenore: The Further Classification of the Pneumococci Hitherto Included in Group IV. *Journal of Bacteriology* 44:1-10 (April) 1932. (The agglutinating serums for types IV-XXXII were obtained through the kindness of Miss Georgia Cooper and Dr. William H. Park.)

14. (a) Birge, E. G., and Havens, L. C.: A Comparison of the Bacteriology of Pneumonia, Ante Mortem and Post Mortem, New York M. J. 109:544 (March 29) 1919. (b) Sutcliffe, W. D.: An Investigation of the Reliability of Sputum Typing for Pneumococcus by the Mouse Method, *J. Infect. Dis.* 42:485 (May) 1928. (c) Raia, Antoinette; Plummer, Norman, and Shultz, Selma: New Types of Pneumococci in Pneumonias of Children, *Am. J. Dis. Child.* 42:57 (July) 1931.

not type I could be isolated. Immediately after death, which occurred seven hours after the last blood culture was made, thoracentesis revealed no free fluid in the right pleural cavity, but from thick bloody purulent material obtained directly from the lung both type I and type III organisms were isolated.

CASE 4.—H. T., a man, aged 55, was suddenly taken ill, Feb. 14, 1930, with a chill, followed by fever and cough productive of blood tinged sputum. He entered the hospital February 16, with evidence of incipient delirium tremens and signs of lobar pneumonia of the right lower lobe. His condition grew rapidly worse and he died about thirty-six hours after admission. Type VI pneumococci and Friedländer's bacilli were obtained from thick, brown, somewhat foul-smelling sputum raised at the time of admission. Blood cultures made at the same time showed a pure culture of Friedländer's bacilli in broth, but the pour plates remained sterile. At autopsy the right lower lobe was uniformly consolidated and the cut section was gray, mucoid and stringy, and showed many areas of necrosis. The upper and middle lobes showed red hepatization. Cultures from the heart's blood and the right lower lobe showed Friedländer's bacilli only, and these organisms were demonstrated in large numbers in the microscopic sections from this lobe. From the right middle lobe, a pure culture of type VI pneumococci was grown and no Friedländer's bacilli were obtained.

Case 3 probably represents a concurrent infection, apparently of the same lobe, with types I and III pneumococci, both invading the blood stream, the latter type predominating before death, after type I antibodies had been given. This therapeutic procedure may possibly have caused the removal of the homologous type pneumococci from the circulating blood. Case 4 represents a simultaneous infection of two different portions of the lung, each with a different organism.

Consecutive Infections (Superinfections).—From the army camps during the World War there were reported a few instances of definite superinfections in cases of pneumococcic lobar pneumonia that were observed clinically and studied bacteriologically and pathologically.⁴ These observations were made during epidemics of measles or influenza. Usually hemolytic streptococci, but occasionally staphylococci or other types of pneumococci, were shown to be the causative agents in these secondary infections. In nonepidemic periods occasional cases of late infections with other organisms complicating the course of pneumococcic lobar pneumonia are mentioned by various writers, usually as incidental observations in discussing failure-of specific therapeutic agents.² Many such instances have been observed among the cases enumerated in table 1. In a number of these cases immunologic, as well as bacteriologic and postmortem, studies were made. Three cases of this sort are cited:

CASE 5.—M. L., a man, aged 43, had an infection of the upper respiratory tract, Feb. 18, 1930. He still had some residual symptoms on February 24, when he was suddenly taken with a chill followed by marked prostration, chest pain and cough productive of rusty sputum. He entered the hospital, February 26, showing signs of lobar pneumonia in the right lower lobe. During the following four days the pulmonary process extended to the remainder of the right lung. He was toxic, distended, cyanotic and delirious and had signs of meningeal irritation, but lumbar puncture yielded normal spinal fluid on two different occasions. On March 3 and 4 he was considerably improved mentally, and the temperature and pulse rate approached normal. Bilateral septic parotitis developed, March 4, which, under treatment with hot applications, apparently drained adequately into the mouth. The temperature and pulse rate, however, rose steadily during the next three days. The patient again became stuporous and increasingly dyspneic and cyanotic and died, March 8. Type I pneumococci were isolated from thick brown mucoid sputum obtained, February 26, and

again from purulent sputum two days later. February 27 and during the succeeding five days, repeated small doses of Felton's serum were given intravenously without apparent benefit. Repeated blood cultures, before and after the serum administration, were sterile. The patient's serum repeatedly showed a large excess of antibodies, even on the day of death. Autopsy revealed complete consolidation of the right lung with many large abscesses containing thick green pus. From these abscesses, from numerous areas in the consolidated lung, and from the parotid abscesses, pure cultures of hemolytic *Staphylococcus aureus* were obtained and no pneumococci could be found.

CASE 6.—E. H., a woman, aged 59, was suddenly taken ill with chills and vomiting, March 29, 1933. Fever, cough and chest pain soon followed. She was admitted to the hospital, April 1. April 2, she first showed signs of lobar pneumonia in the left lower lobe and, successively, abdominal distention, cyanosis, prostration and auricular fibrillation developed. April 6 the temperature dropped by crisis with striking coincident general improvement. The temperature remained normal for twenty-four hours and then again rose steadily. Dyspnea, cyanosis and prostration recurred, and the patient died, April 9. Type VIII pneumococci were obtained from the sputum, April 2. Blood cultures, April 3 and again April 7, were sterile. The serum on April 7 showed a high titer of agglutinins and mouse protective antibodies for type VIII pneumococci, although these antibodies were entirely absent in the serum of April 3. At autopsy there was a resolving pneumonia and fibrinous pleuritis of the left lower lobe, marked tracheobronchitis and patchy consolidation of the right lower lobe. Hemolytic streptococcus in pure culture was grown from the heart's blood and *Staphylococcus aureus* and hemolytic streptococcus, but no pneumococcus, were cultured from the lungs.

These two cases probably represent fatal superinfections, in one instance with staphylococci, in the other with streptococci and staphylococci. In the latter case there was definite immunologic evidence of recovery from the type VIII pneumococcus infection. Another instance will be mentioned, in which the superinfection was with another type of pneumococcus, and the patient recovered.

CASE 7.—D. V. F., a woman, aged 39, was admitted to the hospital, Jan. 7, 1933, following attempted suicide by iodine ingestion. The patient gave a confusing history, but she had definite signs of right lower lobar pneumonia at the time of admission to the hospital. She did not appear very ill and had only a low grade fever. The temperature dropped by lysis, January 8, and remained normal from January 9 to 12, when there was a recrudescence of low grade fever with cough productive of thick brown sputum. She was moderately ill until January 19, when there was a critical drop in temperature with coincident improvement. The signs in the right lower lobe persisted, but no new areas of consolidation were detected in the lung. Type III pneumococci were obtained from purulent sputum, January 8. The thick brown sputum obtained on January 12 showed type VII and no type III pneumococci. Blood cultures made on January 12 and 17 showed no growth. Agglutinins and protective antibodies for type III pneumococci were demonstrated in the serum, January 11 and again January 17 and 26. Type VII antibodies could not be detected in the serum on January 11 and 17 but were found in high titer on January 26.

In this case there is evidence of successive infections with two distinct types of pneumococci and immunologic evidence of the successive antigenic activity of each of these respective types.

A summary of some of the important features in the seven cases cited is given in table 2. These cases have been chosen simply to illustrate some of the different ways in which mixed infections may manifest themselves in different patients.

COMMENT

Brief mention may be made of some of the clinical and epidemiologic implications involved in such mixed infections as have been described here. Clinically, each of the three categories mentioned has a special significance. Practically, their importance is concerned largely with the application of specific therapeutic agents. The efficacy of serum treatment in pneumococcic pneumonia has been shown repeatedly to depend strictly on its type specificity. Correct and rapid etiologic diagnosis is essential for its rational use. It becomes apparent at once that when more than one organism is present it is necessary to recognize, if possible, the rôle played by

in group IV. This matter, however, has been discussed in the literature dealing with bacteriologic studies in pneumonia and with its specific therapy.

That the presence of multiple organisms invading simultaneously or consecutively may complicate the clinical course and outcome of the disease is obvious. That mixed infections can account for certain failures in cases otherwise adequately treated with specific agents is likewise apparent. In a similar manner, these mixed infections may be responsible for relapses in certain instances, after apparent beneficial effects, and sometimes seemingly striking improvement, have temporarily followed the administration of such specific agents. It

TABLE 2—Observations in Seven Cases of Mixed Infection Cited in the Text

Case Number, Initials, Sex, Age	Onset of Pneumonia	Admission to Hospital	Termination		Clinical	Bacteriology		Serology	Post Mortem	
			Mode	Date		Sputum	Blood		Lung Manifestations	Cultures
1 G. O. ♂ 45	1/18	1/20	Death	1/29	1/17 coryza, lobar pneumonia, LI; extended LU	1/20 no Pn. 1/21 Pn. X 1/27 Pn. X	1/20 N.G. 1/25 Pn. I 1/26 Pn. I	1/20, 21, 25, 29 no aggl.; Pn. I, and Pn. X		
2 P. O. ♀ 36	2/23	3/5	Crisis	3/7	Lobar pneum. LI	3/6 Pn. III 3/10 Pn. V	3/6 N.G. 3/8 N.G.	3/8, 12, 19, 26 aggl. and Prot.; absent Pn. III, present Pn. V		
3 K. P. ♂ 43	4/12	4/18	Death	4/24	4/10 coryza, lobar pneum., Ruml. 4/23, 24 serum, 130 cc in 5 doses	4/19 Pn. I and III 4/22 Pn. I	*4/23 (a) 126 Pn. I (b) 36 Pn. I (c) 58 Pn. I 4/24 2,700 Pn. III			Lung puncture, RI: Pn. I and III
4 H. T. ♂ 55	2/14	2/16	Death	2/19	Incipient D.T.; lobar pneum., RI	2/16 Pn. VI and F.B.	2/16 F.B.		Lobar pneum., RI, brown mucoid; Ruml. red hepat.	H.B.: N.G. RI: F.B. (no Pn.) Rm: Pn. VI (no F.B.)
5 M. L. ♂ 43	2/24	2/26	Death	3/8	2/18 24 cold and cough; lobar pneum., Ruml. meningismus 2/26 3/3 serum, 18 doses, 370 cc. 3/3 lysis?, much improved 3/4 8 parotitis, dyspnea, stupor	2/26 Pn. I 2/23 Pn. I	Daily, all showed N.G.	Aggl. and Prot. Pn. I present 2/27 - 3/8	Lobar pneum., Ruml. with multiple abscesses containing thick green pus	H.B.: N.G. Parotids } Lung abscesses } 8 Au., Lungs (many areas) } no Pn.
6 E. H. ♀ 59	3/29	4/1	Crisis Death	4/9 4/9	Lobar pneum. LI, Aur. fibril. 4/6 crisis, T. and P. normal 4/7 symptoms recurred	4/2 Pn. VII	4/3 N.G. 4/7 N.G.	Aggl. and Prot. Pn. VII absent 4/3, present 4/7	Lobar pneum. RI. Fibrinous pleuritis RI. Bronchopneumonia, LI. Acute tracheo-bronchitis	H.B.: S.H. Lungs: S.H. and S.Au.
7 D. V. T. ♀ 33	?	1/7	Lysis Crisis	1/8 1/19	Lobar pneum., RI, mild 1/8 lysis 1/9 12 no symptoms 1/12 19 fever, brown sputum	1/8 Pn. III 1/12 Pn. VII (no Pn. III)	1/12 N.G. 1/17 N.G.	1/11, 12, 17 Aggl. and Prot. present Pn. III, absent Pn. VII 1/26 Present Pn. III and Pn. VII		

* (a) Before serum; (b) 2 hours after 5 cc; (c) 2 hours after 50 cc. The numbers indicate number of colonies in pour plates per cubic centimeter of blood.

Abbreviations:
LI = left lower lobe
RI = right lower lobe
Ruml = right upper, middle and lower lobes, etc.
D.T. = delirium tremens

Aur. fibril = auricular fibrillation
Pn. = Pneumococcus (type indicated by Roman numeral)
F.B. = Friedlander's bacillus (*B. mucosus capsulatus*)
S.H. = *Streptococcus haemolyticus*
S.Au. = *Staphylococcus aureus*

N.G. = no growth
Aggl. = agglutinins
Prot. = mouse protective antibodies
H.B. = heart's blood

each. Likewise, even when only one agent is recovered at first, it is necessary to be aware of the possible errors involved in the methods and of the relative importance of the finding of different organisms or of the various types of pneumococci. Studies¹⁵ of the antibody response of pneumonia patients to infections with different types of pneumococci and comparisons of pneumococcus types found in sputum with those recovered from other sources in the same patient have indicated that certain types, such as types I, II or V, are more apt to be etiologically significant than others, particularly type III and certain of the types formerly classified

is necessary, therefore, to think of the possibility of mixed infection or superinfection in pneumonia whenever one is concerned with an unusually prolonged acute illness, or when there is a recurrence of acute symptoms after apparent improvement. To be sure, focal purulent complications are the commonest cause of such irregularities in the course of or during convalescence from pneumococcic pneumonia, but the possible presence of other invaders should be kept in mind and will explain some puzzling cases.

Epidemiologically, the cases of mixed infection have a special significance. Repeated investigations have shown that the virulent types of pneumococci and those most frequently associated with primary acute pulmonary infections can be recovered only rarely from nor-

15. (a) Finland, Maxwell, and Winkler, A. W.; Antibody Response to Infections with Type III and the Related Type VIII Pneumococcus, *J. Clin. Investigation* 13:79 (Jan.) 1934, (b) Antibody Response to Infections with Type II and the Related Type V Pneumococcus, *ibid* 13:97 (Jan.) 1934.

mal mouths. Except in rare instances of chronic carriers, such organisms are found as transient inhabitants of normal throats, usually in persons who have had some contact with cases of the same type. Furthermore, the frequent occurrence of virulent pneumococci associated with colds, particularly when pneumonia is prevalent,¹⁶ and the frequency of antecedent acute infections of the upper respiratory tract in patients with pneumococcal pneumonia indicate that persons with mild infections may acquire virulent pneumococci and become sources of pulmonary infections in themselves and to their contacts. That mixed infections and superinfections arise from without, in a manner similar to the usual primary pneumococcal pneumonias and not simply as autoinfections due to lowered resistance, is clearly shown by the observations made by Opie, Blake, Small and Rivers⁴⁶ in their studies on epidemic respiratory infections at Camp Pike. This was demonstrated for superinfections with pneumococci as well as with virulent hemolytic streptococci. The observations of these investigators and those mentioned in other epidemiologic studies indicate clearly the importance of isolating cases of pneumonia, especially in crowded wards and during unusual prevalence of respiratory disease.

SUMMARY AND CONCLUSIONS

Certain features of a group of 133 cases of pneumonia associated with two or more pneumococcus types or with pneumococci and other organisms have been brought out by referring to illustrative cases.

The cases fall into three groups: (1) cases in which one organism is the effective invader and the other organisms are incidental; (2) cases of concurrent infections, and (3) cases of consecutive infections.

It is important, for purposes of therapy and prognosis, to recognize the presence of mixed infections and to evaluate the relative importance of the various organisms found.

Boston City Hospital.

ABSTRACT OF DISCUSSION

DR. W. D. SUTLIFF, Chicago: The data that Dr. Finland has presented illustrate the usefulness of accurate bacteriologic examinations in pneumonia. As a result of frequent determinations, changes in the clinical course are more easily explained and complications are really traced to their sources. From a clinical point of view, this particular application of bacteriologic study of pneumonia cases should appeal to every one. Other reasons for studying pneumonia bacteriologically have been presented from time to time. The first of these is to choose patients for type-specific antipneumococcus serum therapy. As is well known, a small proportion of the total number of cases of pneumonia are susceptible to specific therapy, and determination of the type of pneumococcus is essential to the discovery of such cases. A second use for bacteriologic information in pneumonia has to do with the question of the precaution that may be necessary to prevent spread of the infection. The degree of isolation of pneumonia patients varies widely. In certain hospitals extreme measures are used to protect pneumonia patients from visitors, from physicians and from other patients. In other hospitals no precautions are used. A recent investigation by Smillie and Leader in Boston, in which two different hospitals were compared, has thrown light on this situation. In one hospital it was difficult to find organisms of the same type as those of the patients among the attendants. The infecting pneumococcus strain was found among attendants about as often as it was in the general population. In another hospital, in which a patient with type I pneumonia had developed

an empyema and was being tapped frequently, the spread of organisms was very obvious. The type I pneumococcus was found in the throats of those who were in contact with the patient and in one instance led to a second infection. Thus a more thorough understanding of the circumstances in which one needs to take care to prevent the spread of virulent pneumococci is being evolved by means of careful bacteriologic work. In the classification of pneumonia it has been found that the various organisms differ to a certain extent in the sort of pneumonia they produce. Lobar pneumonia is produced by the more virulent types I and II. Bronchopneumonia is produced by the less virulent pneumococcus, streptococcus, staphylococcus and Friedländer's bacillus. Bronchopneumonia is almost entirely a secondary disease, secondary to debilitating disease, to operation and to previous infections. In the cases that Dr. Finland has reported, it is fairly obvious that lobar pneumonia itself may be classed as one of the precursors of a secondary pneumonia or bronchopneumonia. Such secondary infections can be fully understood clinically only through repeated bacteriologic examinations.

DR. MAXWELL FINLAND, Boston: I thank Dr. Sutliff, who was associated with the largest part of the work here presented, for his discussion. There is one point I might raise in regard to the importance of some of the infections we have observed since these data were accumulated. In the first two weeks of May, of ten consecutive autopsies on pneumococcal lobar pneumonia, six were complicated with hemolytic streptococcus. I was interested to read a recent report to the effect that measles was more frequent this year than it has been for the past thirty years. Hemolytic streptococcal infections complicating lobar pneumonia were very prevalent during the war in the army camps in this country, especially during measles epidemics. Such cases were studied carefully by Cole and McCallum and were reported before this association in 1918 and 1919. There may be some relationship between the high frequency that we have recently observed of hemolytic streptococcal infection following lobar pneumonia and the high prevalence of measles this year throughout the community.

ECTOPIC PREGNANCY

OBSERVATIONS IN ONE HUNDRED AND THREE
CASES SEEN IN PRIVATE PRACTICE

CHESTER M. ECHOLS, M.D.

MILWAUKEE

In the course of a general surgical practice of thirty years I have operated in 103 cases of ectopic pregnancy,¹ not including a few cases of hematosalpinx of uncertain origin. The operations were done in various Milwaukee hospitals, in smaller outlying hospitals and, a few of the earlier ones, in cases in which it was deemed inadvisable or unsafe to transport the patient, in private homes in the country.

All the patients were white women and all were private patients; that is, none came from clinics or outpatient departments. The predominant age was from 25 to 35 years; the oldest patient was 43.

Four cases were twin pregnancies; all unilateral. There was no case of concurrent intra-uterine and extra-uterine pregnancy. Two were abdominal pregnancies of from six to seven months. Ovarian pregnancy, interstitial pregnancy, and lithopedion formation were not encountered in the series. In no case was there a rupture into the broad ligament.

In one instance the pregnancy was in the rudimentary horn of a bicornate uterus.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

¹ The first thirty-seven of these cases were previously reported: Echols, C. M.: Wisconsin M. J. 15:408 (April) 1917.

16. Smillie, W. G.: Epidemiology of Lobar Pneumonia: A Study of the Prevalence of Specific Strains of Pneumococci in the Nasopharynx of Immediate Family Contacts, J. A. M. A. 101:1281 (Oct. 21) 1933.

Three of the women were widows and two had never been married, a fact of slight importance, except as regards the matter of diagnosis.

One patient subsequently became pregnant in the remaining tube. So far as I could learn, this was the only recurrence in the entire series. None of the patients died. With the exception of one woman, in whom a pelvic abscess developed and who was in the hospital five weeks, all were able to leave the hospital in from eleven to fourteen days.

For statistical study, there are available in the literature reports of many series of hundreds of cases of ectopic pregnancy. For completeness of data, the series reported from the Johns Hopkins Hospital embracing all cases at that hospital since 1890 is one of the best.² Hawks'³ compilation of 824 cases from New York is one of the most comprehensive on the subject. It must not be forgotten, however, that these large lists, after all, represent the work of many operators of varying degrees of ability, employing different technics and possibly having conflicting opinions as to when to operate. The results obtained in such a composite collection of operations may well fall short of what could be expected if one surgeon did all the operating. The large personal experience of Polak,⁴ Oastler⁵ and Hendry,⁶ lends great interest to their reports and weight to their opinions, even though their records may be less complete statistically than the larger compilations.

OBSERVATIONS IN 103 CASES

Observations suggested by my own series of 103 cases may be conveniently discussed under the following headings:

Incidence.—The ratio of extra-uterine pregnancies to births can be determined with reasonable accuracy by dividing the total number of births in a given city or area by the total number of ectopic pregnancies in the same area. Thus, in the year 1933, the total number of births (including stillbirths) in the county of Milwaukee was 13,251. During the same year fifty-nine cases of ectopic pregnancy came to operation in all the hospitals in the county. Two of the fifty-nine cases originated outside of the county, leaving the net total number fifty-seven. The ratio of ectopic pregnancies to births was therefore 1 to 250 in Milwaukee County for the year 1933.

By a similar calculation Schumann⁷ found the ratio to be 1 to 267 in Philadelphia for the year 1918. This method of figuring does not take into account the unknown percentage of intra-uterine pregnancies that terminate by abortion and are not reported to the health authorities, nor the ectopic pregnancies in which recovery occurs without operation or diagnosis. Since economic and social conditions affect the abortion rate as well as the birth rate, it is obviously impossible to give any estimate of the percentage of abortions applicable to all times and localities. My impression is that ectopic pregnancies are relatively, if not actually, increasing.

Previous Gonococcic Infection.—Early in the century Schauta, Hahn⁸ and other workers in large European

clinics assigned to gonorrhea the major rôle in the causation of tubal pregnancy. Writers of textbooks copied their statements and have passed them along down to the present day. My own observations fail to confirm the prominent part assigned to the gonococcus. Only two women in my series gave a clearcut history of gonorrhea, and half a dozen others gave histories suggestive of a former gonococcic infection. This opinion is expressed with the full realization that a woman may have gonorrhea without being aware of it. Engelmann⁹ is convinced that the increasing incidence of ectopic pregnancy is due to abortion rather than to gonorrhea, an opinion in which I heartily concur.

Previous Operations and Abortions.—Twenty-eight women of this series had had previous abdominal operations or abortions. These figures are significant when one considers that abortions and abdominal operations may be productive of salpingitis or pelvic adhesions with distortion of the tubes; conditions that predispose to tubal implantation of the ovum.

Age and Social Status.—The age range was from 22 to 43 years, the large majority being between 25 and 35.

As previously stated, five of the women were either unmarried or widows. This fact is mentioned only as a reminder that one must not be unduly influenced by the social status of the patient in seeking a correct diagnosis.

Sterility.—None of my patients had borne more than three children prior to operation, and only four of them had borne that number. Previous total sterility was fairly common, but by far the largest group fell in the category of one-child sterility for a period of years preceding the ectopic pregnancy. In two of the patients tubal pregnancy developed while they were nursing babies aged 5 and 6 months, respectively.

In contrast with my own experience and that of most other observers, it is interesting to note that Polak reported a number of cases of tubal pregnancy among poorer immigrant women of New York and Brooklyn who had borne numerous children in rapid succession, while Hendry reports a remarkable case of tubal pregnancy from the Montreal General Hospital. The patient, aged 35, had gone through fourteen full term pregnancies and had had twelve abortions.

Menstrual Anomalies.—Menstrual anomalies of one kind or another were observed in slightly more than three fourths of the patients. The commonest form was as follows: After a period had been missed for from two days to a week or more, flowing began and continued for weeks, accompanied by occasional lancinating pelvic pains. Many women in this flowing stage have been curetted, usually with a diagnosis of incomplete abortion. In no case in my series did the curettage produce more than a temporary check to the flow.

Uterine bleeding in tubal pregnancies is much less profuse than in real abortions—an important point in differential diagnosis which, it seems to me, has not been sufficiently emphasized.

About 20 per cent of my patients had no warning menorrhagia or uterine bleeding. In this group are included those cases of early tubal perforation and violent intraperitoneal hemorrhage with collapse.

Vaginal bleeding in ectopic pregnancy is usually interpreted as meaning that the embryo is dead and that shedding of the uterine decidua has begun, but in those

2. Wynne, H. M.: Extra-Uterine Pregnancy, Bull. Johns Hopkins Hosp. 30: 15 (Jan.) 1919.

3. Hawks, E. M.: Surg., Gynec. & Obst. 36: 232 (Feb.) 1923.

4. Polak, J. O.: Am. J. Obst. 2: 280 (Sept.) 1921.

5. Oastler, E. R.: Ectopic Pregnancy, Surg. Gynec. & Obst. 24: 224 (Feb.) 1917.

6. Hendry, W. B.: Clinical Analysis of 152 Cases of Ectopic Gestation, Am. J. Obst. & Gynec. 10: 386 (Sept.) 1925.

7. Schumann, E. A.: Extra-Uterine Pregnancy, New York, D. Appleton & Company, 1924.

8. Hahn, W.: Zur Frage der Häufigkeit und Ätiologie der Tubar-gravidität, München, med. Wchnschr. 10: 248-250, 1903.

9. Engelmann, F.: Med. Klin. 19: 535 (April 22) 1923; abstr. Am. J. Obst. & Gynec. 8: 242, 1924.

cases of early, sudden tubal perforation with massive intraperitoneal bleeding, collapse comes before the uterus has had time to begin shedding its decidua.

Tubal Abortion and Tubal Rupture.—Tubal abortion, partial or complete, occurred about four times as often as rupture of the tubal wall. To avoid confusion of terms, I am limiting the expression "ruptured tubal pregnancy" to cases of gross rupture or perforation of the tubal wall. The early destruction of the delicate gestation sac and escape of the ovum (internal tubal rupture of Litzenberg) is really more analogous to abortion, and I prefer to look on it as a variety of tubal abortion. In this restricted sense, rupture occurred in slightly under 20 per cent of the cases in this series. The bleeding in the ruptured cases was generally but not invariably enough to cause immediate pallor and collapse.

Of the unruptured cases diagnosed before operation, three presented no other palpable evidence than a tender fusiform enlargement of the tube the size of a hazelnut close to the cornu. The thin and flaccid abdominal wall made it possible to diagnose tubal pregnancy in these three cases by bimanual palpation. Ordinarily it is not possible to make such an early diagnosis.

Contrary to the commonly accepted teaching, I found that four of the most dangerous cases of hemorrhage were caused by perforation in the outer half of the tube.

Abdominal Pregnancy.—In my series there were two cases of abdominal pregnancy. In each case the fetus had died at about the end of the sixth or the first half of the seventh month. Since both fetuses died from two to four weeks prior to operation, there was no troublesome hemorrhage in dealing with the placenta. These cases are believed to have originated as tubal pregnancies. In one of them a portion of the placenta was still attached to the mucosa of an enormously distended fallopian tube; in the other the placenta was attached to various structures up as high as the liver.

Multiple Pregnancies.—In each of the four cases of twin pregnancy encountered in this series, the twin fetuses were in the same gestation sac. Although the literature abounds in isolated reports of concurrent extra-uterine and intra-uterine pregnancy and of bilateral tubal pregnancy, I have not yet seen any of this type.

Pregnancy in a Rudimentary Horn of a Bicornate Uterus.—The one case of pregnancy in a rudimentary horn of a bicornate uterus occurring in my series behaved in every way like a sudden rupture of a pregnant tube with massive hemorrhage. When brought to the hospital in shock and collapse, the patient gave a history of having one healthy child, aged 3½ years. The delivery had been normal. She had missed the last three menstrual periods. Immediate laparotomy revealed an enormous amount of fresh blood and a fetus of about fourteen weeks, attached to a cord lying among the intestines. The frayed-out placenta indicated that the pregnant rudimentary horn broke with explosive violence. The operation consisted of amputating the rudimentary horn with the attached ovary and tube.

Examination of the specimen disclosed two interesting facts: (1) There was no corpus luteum in the ovary removed, and (2) the rudimentary horn had no canal communicating with the cervical canal. This meant, of course, that a sperm had traveled up through the tube on the opposite side and had fertilized an ovum from the ovary of that side, and that the fertilized ovum had then been picked up by the tube

attached to the rudimentary horn. This was, therefore, a clearly demonstrable case of external migration of the fertilized ovum, and not one of external migration of spermatozoa.

Recurrence.—Five years after the removal of a pregnant right tube, one woman in this series came back with a pregnant left tube. It is rather surprising that this is the only instance of recurrence that I have observed in the 103 cases. Some writers have found recurrences in as high as from 4 to 10 per cent of their cases. Of course, it might be argued that there may have been subsequent ectopic pregnancies in the patients of this series who were operated on by other surgeons. It seems more likely, however, that I would have heard about such operations through my colleagues, if not from the patients themselves.

Diagnostic Errors.—Correct diagnosis before operation was made in between 70 and 80 per cent of the cases. A more complete and detailed history in all cases would have raised the percentage of correct diagnoses. On three occasions, to my knowledge, I have examined women with extra-uterine pregnancy without recognizing the condition. Later, when the symptoms were more pronounced, the patients were operated on by other surgeons. Errors of this type must be included if a close check is to be kept on all mistakes. Five times I have operated for ectopic pregnancy without finding it. No particular harm was done by this sort of error, for in each case some other condition was found that called for surgery.

One of my failures to recognize a tubal pregnancy was in the case of a woman, aged 42, who, ten months previously, had received an intra-uterine radium treatment for menorrhagia due to fibrosis in an enlarged uterus. The purpose of the radium treatment was to shrink the enlarged uterus and bring about the menopause. The treatment apparently was a complete success, for when I saw her ten months later because of a slight pain in the right lower quadrant, she had not flowed at all since the radium treatment. I thought the slight pain was probably appendical. Three weeks later another surgeon removed a pregnant right tube.

Two other failures to diagnose tubal pregnancy before operation occurred in women who were nursing babies of 5 and 6 months and who, therefore, had not menstruated for the preceding fourteen or fifteen months.

A surprisingly large number of my earlier patients had been diagnosed as bleeding from incomplete abortion, and curettage had been done with the idea of emptying the uterus of retained secundines. Curettage invariably failed to cure such uterine bleeding. A careful history and physical examination will nearly always differentiate between extra-uterine pregnancy and ordinary abortion without resort to curettage. The greater severity and shorter duration of hemorrhage in abortion is one important differential point.

Hormone tests, such as the Aschheim-Zondek, have been disappointing. The extra-uterine embryo is usually, if not always, dead before vaginal bleeding begins. Since hormone tests become negative soon after the death of the embryo, they are apt to fail when they are needed most.

Failure to think of the possibility of ectopic pregnancy in a given case is one of the commonest causes of failure to recognize it.

Finally, there is no constant unfailing sign or symptom of ectopic pregnancy. Its pathology is too varied

to be reduced to a formula. For this reason it is doubtful whether the time will ever come when more than three fourths of all cases will be correctly diagnosed before operation.

Operative Measures.—Lawson Tate, just fifty-one years ago, was the first man to operate deliberately for ruptured ectopic pregnancy.

Among surgeons of today there is no serious difference in the procedure, except in dealing with the condition that some writers are fond of calling "tragic cases" of rupture, rapid hemorrhage and collapse. When in 1907 the late Hunter Robb advocated waiting for such patients to recuperate from the shock of hemorrhage before operating, he precipitated a controversy that has not completely subsided to this day. He rightly argued that death rarely comes from the first hemorrhage following rupture, and counseled waiting for improvement before operating.

Convincing evidence, however, has accumulated that patients with ruptured tubes can, and do, bleed to death. In the desperate cases, which constituted about 15 per cent of my own series, I made it a rule to operate quickly if there was a breath of life in the patient, and to stimulate during and after operation. It is worse than a waste of time to mop the abdominal cavity dry. I removed only the large masses of clot and then the abdomen was filled with salt solution while the peritoneum was being closed.

Drainage was employed only three times in this series. Colpotomy was done only twice, and then only because of a wrong diagnosis. Puncture of the vaginal vault is neither a desirable nor an accurate method of diagnosing ectopic pregnancy.

Mortality.—The fact that all of the 103 women of this series, including an average proportion of "tragic" cases, recovered completely following their operations is eloquent testimony to the recuperative power of this class of patients. These women are usually in the prime of life and are among the most promising risks in the whole field of major surgery.

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ABSTRACT OF DISCUSSION

DR. JOSEPH D. HEIMAN, Cincinnati: The ratio of ectopic pregnancies to the total number of births is interesting. Another way of determining the incidence is in relation to the total number of gynecologic cases. With an average turnover of about 1,300 a year in the Cincinnati General Hospital there are approximately fifteen ectopic pregnancies, or a ratio of 1 to 78. I am glad that Dr. Echols disagrees with the prescribed teachings of gonorrhea as a causative factor. There was no history or evidence of this infection in a series of thirty cases that I reviewed in 1932 and 1933, whereas a number of these patients had abortions previous to their ectopic pregnancies. The chief symptoms are still menstrual anomalies of one kind or another and one-child sterility. I differ slightly in my method of treatment in that I try partially to overcome the shock before operation, by means of blood transfusion. I have never failed to produce some degree of improvement. During the operation, if time will permit, I suck out as much fluid blood as possible, filter it and introduce it into the patient's vein. As much as 1,200 cc. has been given in this way. A very important point brought out is that vaginal bleeding in tubal pregnancy is much less profuse and of longer standing than in real abortions. In sudden rupture, vaginal bleeding may be absent. Tubal abortion is a much less serious accident than tubal rupture. If one could be sure of the type with which one is dealing, one could allow the condition to improve before doing an immediate operation. These are the cases that present recurrent attacks of pain, bleeding and then recovery.

It is when the clot can no longer hold the pregnancy in the tube that profuse fatal bleeding may occur. In the rupture of the tubal wall, however, there is no temporary stoppage of bleeding. Dr. Echols' single recurrence reminds me of a case in which a right tubal pregnancy occurred two years after a previous tubal pregnancy on the same side. The first surgeon had not completely removed the tube at the time. So far as I know this is the only case in which two pregnancies have occurred in the same tube.

DR. JOSEPH B. DE LEE, Chicago: I should like to know what your treatment is of ectopic gestation that has ruptured and the patient when you first see her is in a moderate or even a considerable degree of shock. I am therefore going to make a proposition and ask you to vote on it. How many will operate at once in a diagnosed ectopic pregnancy in which the patient enters the hospital in shock?

DR. EMIL NOVAK, Baltimore: You ought to qualify that—with transfusion at the time.

DR. DE LEE: Well, I will put it this way: If the woman is in shock, the first thing one does is to give her blood and salt solution and sugar, but one makes immediate preparations for operation and operates. How many do that and how many prefer to follow the recommendation of Hunter Robb many years ago, of waiting for the shock to disappear before operation? Those who are in favor of immediate operation please say "aye." How many prefer to wait until the shock has gone?

DR. NOVAK: Hunter Robb, as I understand it, advocated in a very large percentage of cases conservatism in the management of these cases.

DR. DE LEE: I think the issue is clearly defined and I am not criticizing Hunter Robb. How many prefer to wait until the shock is over or, to put it even more drastically, how many wait in any case of ectopic pregnancy whether the symptoms are mild or severe? Say "aye." [All said aye.] I feel that, when a diagnosis of ectopic pregnancy is made, immediate operation should be performed and one should not wait until the next morning either, even if the symptoms are mild. I am glad to see that the majority agree with me.

DR. W. H. WEIR, Cleveland: As an assistant to Dr. Hunter Robb, I was privileged to help in his research to which Dr. Echols referred. Dr. Robb found that it was practically impossible to kill a pregnant bitch by dividing and leaving untied the uterine arteries, even if the abdomen was reopened an hour or so later to start the bleeding anew. One cannot argue that the same could be done in a human being, but it does show the ability of the organism to overcome a tremendous loss of blood. There is no question that most of the fatalities in ectopic cases in those days were due to the patients' being operated on in severe shock. Transfusion was seldom employed, as the technic was far more complicated and difficult than it is now. Blood grouping was unknown and bad results occasionally happened. The ease and rapidity with which blood transfusion can be performed today has decided the whole problem of that time as to whether to operate immediately, before the patient might bleed to death, or to wait in the hope that the hemorrhage might cease and the patient recover from the severe shock, which she will do almost always without blood transfusion. There is no condition in gynecology which so often leads to mistakes in diagnosis as ruptured ectopic pregnancy. I have made many errors. Pus tubes may be far more suggestive of ruptured ectopic and vice versa, and all the clinical signs and the laboratory aids to diagnosis, such as the leukocyte count and the sedimentation test, may indicate the wrong diagnosis. In one unusual case a thin-walled ovarian cyst, presumably a follicular retention cyst, was felt to rupture during examination, a relatively common experience and unattended by any ill results as a rule. The history in this case had been a little suggestive of ectopic pregnancy, so the patient, who was in the hospital, was carefully watched. No trouble occurred until about fourteen hours later, when she quickly went into profound shock. Transfusion was done and the patient immediately operated on for a supposed ruptured ectopic pregnancy. No blood was found in the abdominal cavity, only a quantity of chocolate-colored fluid from a ruptured endometrial cyst. The gradual absorption of this fluid apparently produced a toxemia with the clinical picture of severe shock.

OXYGEN IN THE TREATMENT OF ACUTE CORONARY OCCLUSION

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In a previous communication¹ we reported that the administration of 50 per cent oxygen to certain patients suffering from coronary thrombosis sustained cardio-respiratory function during a critical period and made possible their ultimate recovery. Because the importance of this measure has not been recognized in a number of recent articles and textbooks, further evidence in support of our original conclusions is presented and the technic of oxygen therapy outlined in detail.

When a coronary branch is suddenly occluded, the area of myocardium normally supplied by this vessel is abruptly deprived of blood. The function of the affected muscle is impaired because of lack of nutrition, especially through want of the oxygen necessary for normal contraction. If a sufficiently large area is involved, the heart is no longer able to empty itself of the customary volume of blood and the pressure in the auricles and veins increases. Passive congestion is thus produced in the lungs and viscera. Pulmonary function with respect to the absorption of oxygen becomes impaired, since oxygen does not diffuse readily through edematous alveolar walls. The volume of air in the lungs is diminished by the increased amount of blood in the congested pulmonary vessels. Loss of pulmonary distensibility prevents adequate ventilation. The blood passing through the lungs is incompletely aerated and the heart is consequently provided with arterial blood deficient in oxygen. Its activity is thus further handicapped.

As the result of this sequence of events, a vicious circle is initiated which induces progressive oxygen starvation of the heart muscle. That the myocardium is particularly sensitive to this condition was shown in an experimental study by Katz and Long.² They demonstrated that increasing oxygen want caused an exhaustion of the heart muscle when the lactic acid content was elevated to two and a half times the normal level, whereas skeletal muscle was able to contract until the lactic acid reached four and a half times the resting content.

In two cases of heart failure, Beddard and Pembrey³ in 1908 observed that the inhalation of oxygen caused a marked decrease in pulmonary ventilation. A similar effect, with subjective improvement, was noted by Campbell and Poulton.⁴ In 1921, Barach and Woodwell⁵ showed that the arterial and venous oxygen saturations of patients with congestive failure could generally be substantially elevated by the inhalation of from 40 to 60 per cent oxygen. In 1929, Barach,

Richards, Milhorat and Levy⁶ reported that certain patients with advanced cardiac insufficiency who had failed to respond to other forms of treatment were restored to compensation by continuous oxygen therapy, given for from two to six weeks. In the cases that improved, the noteworthy features were relief of dyspnea, occurrence of diuresis and marked elevation of the carbon dioxide content of the arterial blood. These results were in part confirmed by Hamburger, Katz, Cohn and Rubinfeld.⁷ In studying the oxygen consumption of patients with cardiac failure, Uhlenbruck⁸ noted a temporary increase in oxygen absorption when oxygen was inhaled instead of air. This observation was repeated by Jansen, Knipping and Stromberger,⁹ who termed the increment of absorbed oxygen the "oxygen deficit." The patient with cardiac insufficiency was thus shown to be continuously short of oxygen.

That the pain of acute coronary occlusion might be relieved by inhaling oxygen in high concentration was first pointed out by Rizer.¹⁰ Lewis¹¹ showed that pain results when the blood supply to a working muscle is inadequate and inferred that attacks of anginal pain are brought about by relative ischemia of the heart muscle. Kissin,¹² going a step further, demonstrated that oxygen want is the chief contributing cause of pain in an exercised muscle. With Rothschild, Kissin was able to induce attacks of anginal pain by lowering the concentration of oxygen in the air breathed by patients with coronary sclerosis.¹³ Conversely, Barach¹⁴ reported that individuals who suffered from repeated attacks of cardiac pain obtained definite relief while in residence in an oxygen chamber.

The facts just enumerated establish three points: 1. Anoxemia of the heart muscle occurs after sudden occlusion of a sizable coronary branch. 2. Oxygen want induces impairment of cardiac and respiratory activity. 3. The inhalation of oxygen, in high concentration, increases the oxygen content of the arterial blood and results in improvement in the functional capacity of the heart.

The beneficial effects of oxygen treatment in cases of coronary thrombosis have been confirmed in clinical reports by Ulrich,¹⁵ Kilgore¹⁶ and Bickel.¹⁷ A dramatic instance was recorded by Burgess, Briggs and Burgess:¹⁸

A woman, aged 66, became pulseless and cyanotic following an acute attack. The blood pressure was not obtainable. Characteristic electrocardiographic changes were found. Oxygen was given by the "open box" method at the rate of 7 liters

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Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

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a minute. At the end of three hours, the cyanosis had disappeared and the pulse was of good quality. The patient ultimately recovered.

The group of sixteen new cases that we have studied is not sufficiently large for statistical presentation. The results, however, have confirmed our earlier impressions and, in the cases which have responded favorably, may be summarized as follows:

1. Subjective improvement occurred in from one to three hours after the administration of oxygen was begun. The relief of pain was striking. Respiration became less labored and slower. The patient was no longer restless. It was therefore possible to curtail materially or even stop entirely the use of morphine and other sedatives.

2. Cyanosis was diminished or abolished.

3. Cheyne-Stokes breathing, if present, gradually disappeared.

4. The temperature, in cases in which it was elevated, tended to fall.

5. The heart rate became slower. The heart sounds grew stronger and the volume of the pulse improved. The signs of congestion in the lungs became less marked. As the state of the circulation improved, the arterial blood pressure rose and the venous pressure fell.

6. Interruption of oxygen therapy before adequate readjustment of circulatory conditions had taken place resulted in recurrence of the symptoms and signs just cited.

It is not to be expected that all these beneficial effects will take place in every case. When one of the larger vessels is occluded, particularly if the heart muscle is already seriously damaged, recovery may not be possible. It is frequently difficult to foretell the outcome. We have been surprised to observe improvement in cases that seemed to offer but little hope of a favorable course. In other patients, a sudden turn for the worse has resulted in death at a time when the prognosis seemed good. The use of oxygen does not appear to prevent extension or recurrence of the thrombotic process, but it does lighten the burden thrown on a myocardium that has received a sudden, damaging shock. Thus, during the period of greatest stress, it affords an added margin of safety, which may be sufficient to enable the heart to recover.

During the acute phase we have come to depend less and less on drugs, with the exception of morphine. The value of digitalis or caffeine at this time is debatable. A paroxysm of ventricular tachycardia can usually be terminated by quinidine. A discussion of other details of management may be found in current monographs.

METHOD OF OXYGEN TREATMENT

Not every case of acute coronary occlusion requires oxygen therapy. Patients who suffer from the milder forms¹⁹ may experience only brief discomfort and may make a rapid symptomatic recovery. On the other hand, the potential gravity of the condition and the abruptness with which circulatory failure may develop make it desirable to provide for the availability of oxygen on short notice, as soon as the diagnosis is made. It is well to pursue a policy of watchful waiting and to begin oxygen when evidences of impairment in cardiorespiratory function first become apparent. The presence of cyanosis is the classic index of oxygen want, but it cannot be trusted too far. An ashen gray

color or pallor may be observed even in the presence of relatively severe anoxemia, since capillary constriction, due to shock, may prevent sufficient blood from reaching the skin to transmit the bluish tint. The clinical picture serves as the best guide. Rapid heart rate, feeble heart sounds, often with gallop rhythm, labored breathing, persistently low blood pressure and moist râles at the bases of the lungs are signals of distress from a failing circulation which needs support.

The most effective way of giving oxygen is by means of a large, well ventilated tent.²⁰ The temperature inside the tent should generally be kept between 60 and 65 F., since at these levels most patients experience the greatest comfort. A concentration of 50 per cent oxygen is usually employed; 60 per cent can be given indefinitely without harm. In severe cases with rapidly progressive failure, 70 per cent concentration may be used for several hours at a time. Mixtures containing over 70 per cent are not recommended except for brief periods, for in animals such high concentrations have been found to be irritating to the lungs when administered continuously for a number of days. The aim of therapy is to maintain a degree of concentration sufficient to overcome the existing anoxemia.

On the average, it is desirable to keep the patient in the tent for about five days. This period may be shortened or extended, depending on the condition. It must be borne in mind, however, that the satisfactory and comfortable appearance of the patient may be due to the sustaining effect of inhaling a mixture rich in oxygen. For this reason, it is advisable to lower the oxygen concentration gradually from 50 to 35 per cent over a twenty-four hour period, then to 21 per cent during the following twelve to twenty-four hours. If it is desired to stop oxygen without previous lowering of the concentration, the patient should be carefully observed after removal of the tent, for signs of dyspnea and cyanosis. The pulse and respiratory rate should be counted at fifteen minute intervals for three hours. If the heart rate does not increase more than ten beats a minute above its rate in the tent, and the respiratory rate does not rise more than six a minute, oxygen may be discontinued. If such an acceleration in either cardiac or respiratory rate should occur, it is safer to continue treatment for another day and then stop the oxygen, the same observations being made.

An oxygen chamber is, of course, a more comfortable method of therapy, but it is available only in a hospital. A portable chamber,²¹ made of rubberized fabric, can be brought to the home and affords a sense of greater spaciousness. It is more troublesome to set up and more costly to maintain.

If a tent or chamber is not available, the nasal catheter may be employed as a measure of moderate effectiveness. The oxygen should come from a high-pressure tank and be given through a calibrated gage at the rate of from 5 to 6 liters a minute. This provides about 38 per cent oxygen, if the patient breathes through the nose. By placing the catheter beyond the posterior pharynx, so that the tip rests just above the glottis, Wineland and Waters²² have found that a flow of from 7 to 8 liters per minute is capable of maintaining a concentration of 50 per cent. This is the rate of flow ordinarily employed in supplying a

20. Barach, A. L.: Importance of Ventilation in Oxygen Tent and Oxygen Chamber Therapy, with Description of an Improved Oxygen Tent, *New York State J. Med.* 31:1263 (Oct. 15) 1931.

21. Barach, A. L.: An Oxygen Chamber Simplified in Design and Operation, *J. A. M. A.* 97:390 (Aug. 8) 1931.

22. Wineland, A. J., and Waters, R. M.: Oxygen Therapy: Insufflation into Oral Pharynx, *Arch. Surg.* 22:67 (Jan.) 1931.

19. Levy, R. L.: Mild Forms of Coronary Thrombosis, *Arch. Int. Med.* 47:1 (Jan.) 1931.

tent. A few patients that we have treated by this method complained of irritation of the throat, and a hacking cough necessitated withdrawal of the tube. The method is undoubtedly of value, but the throat must be sprayed frequently with liquid petrolatum.

SUMMARY

Anoxemia of the heart muscle occurs after sudden occlusion of a sizable coronary branch. General oxygen want results and induces impairment of cardiorespiratory activity. The inhalation of oxygen, in high concentration, increases the oxygen content of the arterial blood and results in improvement in the function of the heart.

On the basis of these facts, oxygen has been given, usually in a concentration of 50 per cent, to a series of patients suffering from the effects of acute coronary occlusion. In a considerable number, both in our own experience and in that of others, great symptomatic relief has been afforded. We feel justified in concluding this report, as we did the paper published in 1930, with these words: "Employment of oxygen therapy may aid in maintaining an adequate circulation until the heart has had an opportunity to recover from its acute functional disturbance. Obviously, the cardiac injury may be so severe that recovery is impossible. But in certain instances, effective use of oxygen may be responsible for the saving of life."

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ABSTRACT OF DISCUSSION

DR. WALTER M. BOOTHBY, Rochester, Minn.: Whenever a patient has anoxemia of the acute type of any of the tissues of the body due to interference with the oxygen diffusion through the lungs, oxygen therapy is always indicated. Pulmonary edema of any type that is acute is always relieved by the use of oxygen. In the cases of chronic cyanosis and chronic conditions there is comparatively little hope of obtaining any material improvement from temporary use of oxygen. The authors have been interested in keeping some cases under oxygen therapy of various types for months at a time. That is an interesting research problem. I do not believe that hospital facilities for oxygen therapy at present permit of a prolonged monthly use of oxygen in a large series of cases. It ties up too much equipment and the results are, on the whole, too doubtful. But in any form of acute anoxemia, whether cardiac or pulmonary in origin, patients will be helped and benefited and a certain percentage of lives will be saved by the conservative and proper use of oxygen therapy.

DR. A. CARLTON ERNSTENE, Cleveland: The primary aim in the treatment of patients with coronary occlusion is the relief of pain. It is difficult to evaluate the effect of oxygen in shortening the duration of pain, but instances have been recorded that are striking. Kilgore, for instance, reported a case in which the patient was relieved of pain during the time he was kept in an oxygen tent, but the pain promptly returned when oxygen therapy was stopped temporarily. I believe therefore that, whenever the pain of acute coronary occlusion is not relieved with reasonable promptness by large and repeated doses of morphine, one should proceed to the use of oxygen. Aside from the use of morphine, drugs are of little value. A few instances have been reported of prompt cessation of pain following the intravenous administration of theophylline-ethylenediamine. This drug in my own experience, however, has been quite disappointing. The second aim in the treatment of coronary occlusion is support of the circulation. In a majority of the cases, adequate rest in bed is all that is required after the pain has been relieved. In cases, however, in which symptoms and signs of congestive myocardial failure develop or in which persistent auricular fibrillation occurs, the administration of digitalis is indicated. If digitalis does not effect relief of the symptoms and signs of congestive failure, or if acute pulmonary edema develops, one should be prepared

to administer oxygen. I believe that the use of oxygen in these particular situations will frequently give gratifying results.

DR. FORD HICK, Chicago: Dr. Herrick made well known the clinical picture of coronary thrombosis about twenty-two years ago. I want to attest further the effectiveness of the therapy that the authors have outlined. Physicians who have watched these patients die about six hours after the attack feel keenly that anything which will tide them over that period is well worth while. Why the textbooks should not recognize its importance and effectiveness is hard to understand. Surely it must be because the men who write textbooks on therapeutics rarely see the cases in the clinical wards. The effectiveness of oxygen in certain of these cases is little short of miraculous. I would like to attest again the effectiveness of the use of the nasal catheter. As a matter of clinical application, I found that the inspired air contains about 42 per cent of oxygen when administered with the tip of the nasal catheter resting on the top of the soft palate, as Waters recommends.

DR. LOUIS F. BISHOP JR., New York: One important point is the fact that oxygen therapy will often relieve pain when morphine will not. All physicians who have had the experience of not being able to relieve the pain in a case of acute coronary thrombosis realize the value of having some other adjunct. At Bellevue Hospital we have used oxygen therapy in coronary thrombosis in a number of cases. Unfortunately, we do not have the elaborate apparatus the authors have described, such as oxygen chambers and tents, and have not been able to keep the patients in over long periods of time. We have, however, used the nasal catheter as Dr. Ernstene has also reiterated, often with pleasing results. For that reason I hope that more physicians will use oxygen in coronary thrombosis, particularly because it will make it unnecessary to give huge doses of morphine to control the pain.

DR. MARTIN FRIEDRICH, Brooklyn: I would emphasize the use of extremely high oxygen concentrations in anoxemia, whether of cardiac or of pulmonary origin. In reading and hearing the report of the authors, one notes that they always emphasize that one should never exceed 70 per cent, because animals kept in small oxygen chambers succumb to a serious pneumonia after about the seventh or eighth day. Experiments have been done by R. R. Sayers in which animals have been kept at 100 per cent concentrations, or as close to it as is physically possible, for various periods of time. One group of animals was exposed for sixteen hours daily for fifty consecutive days without apparent harmful effects. I would take this opportunity to report a case of a woman who had just been delivered and who suddenly developed a pulmonary embolism. Cyanosis was extremely intense. She was put in a well ventilated, large oxygen tent and the concentration raised to 60 per cent. The cyanosis and dyspnea still persisted and the patient remained quite uncomfortable. Not until the concentration was elevated to 95 per cent was the patient made comfortable. Concentrations of between 80 and 95 per cent were maintained continuously for a period of six days. On the sixth day we were able to reduce the concentration to 60 per cent. Two days later we removed the patient from the tent, with complete recovery. As regards the use of nasal catheters, frequently patients complain of irritation if the catheter is less than 4 inches long. On the other hand, if the nasal catheter is so long as to reach almost to the glottis, it may cause cough and irritation. I have used the happy medium, seeing that the catheter (not the urethral catheter, but a soft rubber tube F. 8 in diameter with 4 or 5 terminal perforations) is at least 4½ or 5 inches long, so that the oxygen flows into the pharynx, and thus irritation of the nasal mucosa, or of the glottis or lowermost part of the pharynx is avoided. In that way one can frequently administer as high as 8 liters of oxygen per minute, which readily insures concentrations of 50 per cent. I do not employ a wash bottle with the nasal catheter, as it is not the absence of moisture that is irritating.

DR. ALVAN L. BARACH, New York: We have had at the Presbyterian Hospital thirty-five cases carefully treated with oxygen over a long period of time. Some of these patients were observed in the hospital for periods of from one to five months and others for shorter periods. These were patients who have not regained compensation under ordinary routine methods. Patients with rheumatism of the heart respond to

oxygen poorly. When they do improve, taking them out of the oxygen room or the tent frequently results in a recurrence of decompensation. An entirely different effect is obtained in the treatment of patients with cardiac failure the result of a myocardial fibrotic or degenerative lesion and not of rheumatism. In these patients we have seen a restoration of compensation in from two to four weeks. This was attended by a significant rise in the carbon dioxide content of the arterial blood, sometimes as high as 20 or 30 volumes per cent. As the patient gets better and the pulmonary ventilation falls, the carbon dioxide content of the arterial blood will gradually be decreased toward the normal level. If we gradually take these patients out of the oxygen, we find that many of them maintain compensation for a year or longer. We have had patients who were unable to walk and who subsequent to oxygen treatment of three or four weeks were able to walk as far as two miles a day. I think that what Dr. Friedrich said is probably true. I have been impressed by the failure to have animals live in a concentration of oxygen of over 75 per cent. I spent several years trying to get animals gradually to endure concentrations of 80 per cent, keeping them at 50 per cent and then 60 per cent; but every time the concentration went over 75 per cent the animals developed pulmonary edema in two or three days and died. Sayers has shown that if animals are kept in oxygen sixteen hours out of twenty-four they may survive without developing that irritating pulmonary lesion. I think it is probably true that a great many of the cases that I have treated might have been better helped by the use of very high concentrations of oxygen for shorter periods.

DR. ROBERT L. LEVY, New York: One who is going to administer oxygen to patients with acute cardiac failure should not wait too long. The oxygen should be given in sufficient concentration to overcome anoxemia and long enough to enable the heart to recover from its acute functional disturbance.

HIGH FREQUENCY CURRENTS IN PERFORMING BIOPSIES

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AND

FRED D. WEIDMAN, M.D.

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Templeton¹ and others² have already indicated the value of high frequency currents in the treatment of various dermatoses requiring excision, and others have indicated the value of the so-called radio knife in such major procedures as amputation of the breast. The present communication, however, has nothing to do with such phases of the field. It is true that Templeton spoke of the usefulness of this modality in performing biopsies and exhibited several photographs. However, the attempt was not made in such presentations to distinguish between the value of the coagulating and cutting currents. It is to this particular phase that the present communication is confined.

It has been the experience of doubtless many pathologists to have specimens submitted for histologic examination which have been removed by the coagulating current and in which the severity of the coagulative processes has been sufficient to compromise or even destroy the value of the specimen for histologic examination. This has naturally prejudiced them against such a technic.

Accordingly, it came as a pleasant surprise to us to encounter certain specimens in which the zone of coagulation necrosis was extremely narrow and in no way interfered with histologic interpretations. In checking up for an explanation it was found that the cutting current rather than the coagulating current had been employed in such cases, and, except in cases in which we had purposely used the coagulating current to note its effect, its use was due to our failure to "throw the switch" to the cutting current. Consequently we have confined ourselves entirely to the employment of the cutting current for biopsy purposes and with such good results that we feel it advisable to emphasize the availability of this technic in the routine performance of biopsies. Our experience parallels that of Dr. F. H. Krusen,³ who has been using this method for some time.

We have already pointed out the difference between the therapeutic and the biopsy aspects of the situation and the fact that we are confining ourselves to the biopsy phase. In doing this it is appreciated that a certain conflict might arise; i. e., that by employing the cutting current in malignant conditions, the advantage of coagulative effects would be forfeited. We feel, however, that this disadvantage is only apparent and we overcome it by always coagulating or desiccating thoroughly the site of the excised lesion. With lesions so large that it would be inadvisable to excise them in toto with the cutting current, we excise only a small portion for histologic examination and then promptly follow up with the coagulative technic. We excise the smaller lesions in toto and retain the entire sample as a biopsy specimen. In this way any clash between the welfare of the patient (necessitating coagulating current) and an optimum histologic section (cutting current advisable) is avoided.

We feel particularly justified in calling attention to our experience, because the adoption of the cutting current technic will make for the performance of larger numbers of biopsies. Thus, the endotherm apparatus is standard equipment in practically every dermatologist's office and it needs but the turn of a switch to make the cutting current available. It is not necessary to call on the surgical tray except when bleeders are encountered. This makes for rapidity and simplicity.

Furthermore, there is a psychologic aspect. The inherent aversion of the patient to the use of the scalpel or other cold steel is overcome. The operation is bloodless and sutures are unnecessary. All these circumstances may play a part in forestalling misgivings on the part of a certain type of patient. The postoperative events are free of unpleasant memories, for both the physician and the patient. The base of the wound can be coagulated or desiccated immediately after the specimen is removed. It is sterile, heals nicely and does not leave a highly disfiguring scar. All these factors may be cited as advantages of the cutting current technic over ordinary surgical excision, and, when explained to the patient tactfully, will tend to secure his consent for the operation and permit the acquirement of a specimen that will be useful for histologic examination.

THE LIMITATIONS OF THE CUTTING CURRENT

The most serious limitation of the cutting current is muscular twitching; workers are in agreement that nothing has been discovered thus far which can prevent it. The sudden spasm interferes with the precise course

3. Krusen, F. H.: Personal communication to the authors.

From the Laboratory of Dermatological Research, University of Pennsylvania School of Medicine (Dr. Weidman).

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Templeton, H. J.: *California & West. Med.* 30:83-87 (Feb.) 1929.

2. Ward, G. E.: Value of Electrothermic Methods in Treatment of Malignancy, *J. A. M. A.* 84:660 (Feb. 28) 1925. Hollander, Lester: *M. Rev. of Rev.* 34:203 (April) 1928.

of the needle and hence of the incision. As a result, the needle may be directed to some portion of the specimen which might be particularly useful in the histologic examination and which would therefore suffer an undesirable coagulation. A second disadvantage is encountered in extremely small lesions. In a trial on a guinea-pig as well as in operating on patients we have found that it is not advisable to attempt to secure a specimen less than 6 or 8 mm. in diameter. It might also be considered a disadvantage that a steady hand and reasonable cooperation on the part of the patient are necessary; these, however, are problems that would have to be met in the individual case.

Apparatus.—It is not likely that the instrument of one manufacturer will be found superior to that of another. Our own instrument is a Westinghouse Model F endotherm. Each operator will establish his own personal equation by trial and error as to the optimum "cutting intensity" and "current controls" to be employed. In our own instrument the best results were secured with the cutting intensity at E and the current control at 7. With this a sufficiently rapid excision was secured with a minimum of coagulation necrosis around the specimen. Incidentally, we found that the amount of necrosis was far less, indeed almost nil, at the bottom of the specimen; it was much greater along the line of primary incision which is commonly known as the line of circumvallation.

Technic.—This does not differ from that employed in ordinary therapeutic work. Procaine hydrochloride anesthesia is employed. The patient is made as comfortable as possible and the hand of the operator is steadied by appropriate means. The attempt should be made to circumvallate the lesion completely down to the subcutaneous tissues at one maneuver; i. e., to avoid if possible the necessity of retracing or supplementing the original incision. After circumvallation the lesion can be transfixed with an ordinary sewing needle, which is thereafter used as a tractor during the removal of the lesion from the parts underneath. After the removal of the specimen, a nonbleeding but somewhat moist base remains, which is then coagulated or desiccated and painted with an antiseptic such as gentian violet. Sutures are not employed.

SUMMARY AND CONCLUSIONS

The objections of the pathologist to the use of coagulating currents can be largely overcome by adhering to the cutting current. The method is not infallible, owing to such factors as muscular twitch, an unsteady hand, or an anatomic location such as the face, which limits the removal to a very small specimen. Barring these conditions the readiness of the apparatus, the bloodlessness, the insensitiveness to postoperative pain and the psychologic effect on the patient all contribute to the securing of a greater number of biopsies, which are so sorely needed for the advance of dermatology in general, to say nothing of the assistance that accrues in confirming the diagnosis.

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ABSTRACT OF DISCUSSION

DR. GEORGE M. MACKEE, New York: Until the last few years I was unable to remove small pieces of tissue with the high frequency current without causing too much coagulation for satisfactory histologic study. Now, however, with better apparatus and improved technic, I find it possible to remove all

but very small pieces of tissue with the cutting current, with an amount of coagulation that does not preclude adequate microscopic examination. I am therefore in agreement with the authors. The apparatus must be modern, the controls carefully adjusted, and the excision performed quickly. The novice should first experiment on a piece of raw beef and then on animals. In my experience, surgical diathermy gives rise to a larger percentage of hyperplastic scars than do the scalpel, punch or scissors. As a rule, however, the hyperplasia usually disappears in time, at least to a large degree. A wound caused by the cutting current will not heal by primary intention, as a rule, unless the fine line of coagulation is removed before the wound is closed. Unless sutured, wounds caused by a biopsy punch are round and rather conspicuous. The question of a cicatrix is important in some instances. The principal reason for using the cutting current when performing a biopsy is that many believe that the coagulation prevents spreading or metastasis of malignant cells. It now appears to be the consensus among pathologists and among cancer experts that this danger has been overemphasized. It is claimed now that there is no danger, provided the instrument is sharp and the tissue is not massaged or squeezed.

DR. MAX S. WIEN, Chicago: I have been using the cutting current at the Cook County Hospital in the treatment of superficial malignant growths. I have also taken specimens of tissue for histologic study and with large specimens had no trouble with distortion as the result of the current. In the smaller specimens, however, which have been studied in collaboration with Dr. Jaffe at the hospital, there were noted changes that were akin to those produced by electric burns resulting from accidental or intentional electrocution. These consisted of dehydration and coagulation with increased basophilic staining and liquefaction of the connective tissue in the pars reticularis, and a stretching of the epithelial cells of the rete malpighii with strandlike proliferation into the cutis, forming whirls in some places. It was only in the smaller specimens that we noted such changes; otherwise we have found it a very satisfactory method for removing larger pieces of tissue for histologic study.

DR. FRED D. WEIDMAN, Philadelphia: No doubt every dermatologist has excised lesions as a therapeutic rather than diagnostic procedure and has turned them over to the laboratory in the hope that the pathologist may be able to salvage something out of the perhaps tattered and "cooked" specimen. As a result, the pathologist has rightly become prejudiced against coagulating modalities in securing biopsy samples, and it is the duty of the clinician to correct, if he can, these shortcomings, which waste the time of the pathologist and give no information to benefit the patient. I must confess that I prompted Dr. Guequierre to report this experience as part and parcel of a general propaganda in favor of more and better biopsies. As to the danger of biopsies in malignant conditions, I was influenced largely in favor of doing them by a paper that Francis Carter Wood read before the Philadelphia Pathological Society ten years ago. He used one series of cancer-bearing mice on which biopsies were done, another series in which nothing was done, and a third series in which he massaged the experimental tumors. He found at necropsy that there was not any increase of metastases in those in which biopsies had been done; in those in which the lesions had been massaged there was a marked increase. At the Philadelphia Oncologic Hospital we take biopsy specimens of every lesion as a routine procedure even when the clinical diagnosis is clear. We do this with the specific purpose of being able to check up later on those cases in which we get remarkable therapeutic results in what appeared to be perhaps hopeless cases, under these circumstances. The question always arises whether we were dealing with a malignant condition or only something that looked like it. Did we err in our clinical diagnosis? Then we always have the biopsy sample to go back to as a check. Furthermore, I can't say that we have had any evidence that the incidence of metastasis has been any greater as the result of our routine and therefore extensive biopsy procedures. As to the detailed cytologic changes which Dr. Wien brought up, those have been elaborated by Dr. Ellis of Chicago recently in the *Archives of Pathology*. They have not fallen in the field of our communication.

THE ASSOCIATION OF SINUS DISEASE
AND MIDDLE EAR INFECTION

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The conclusions arrived at in this paper are based on more than one hundred cases of mastoiditis in private patients which I have observed since the influenza epidemic of 1918. A great many mastoid operations were performed in my clinic at the Vanderbilt Hospital. As I did not perform these operations it was not possible to get a thorough examination of the sinuses in connection with the mastoiditis, so those cases have not been taken into account. The case histories of these patients read so much like the histories of the patients that were carefully examined with respect to their sinuses, however, that it leaves no doubt in my mind that sinusitis was present in these cases to a very large per cent.

Following the epidemic of influenza in 1918 there were a great many cases of mastoiditis. There were also many cases of sinus infection. The association of sinus disease and middle ear infection did not make a definite impression on me until 1920. Then I had a run of mastoid operations in which I also did operations for drainage of the sinuses. At that time I had as assistant Dr. F. E. Hasty. I called his attention to the association of the two and we began to investigate their relation. The association was quite striking and I took to having a roentgenogram made of the sinuses in each case requiring one of the mastoid. We found that about 85 per cent of our mastoid cases also presented cloudy sinuses. We then discovered that there was in every case a cloudy sinus on the same side as the mastoiditis. There were any number of cases of middle ear infection which did not eventuate in a mastoid infection of sufficient severity to call for a roentgen examination which showed a cloudy antrum under transillumination on the same side as the middle ear infection.

In April 1925 I read a paper before the Tennessee State Medical Association on the subject of disease of the nasal accessory sinuses. This paper was written in 1924. In this paper I said:

While I have spoken of the various complications of sinus disease, I wish to emphasize one that has been brought home to me forcibly. I was somewhat surprised in reviewing our cases of acute mastoid abscess to find that practically all of our cases done during the last four years had empyema of one or more sinuses. There should be nothing surprising in the fact, however, when we consider that the pus draining into the postnasal space passes over the orifice of the eustachian tube. The surprising thing is that they do not all get infection of the ears.

In March 1926 I¹ reported a case and showed the patient before the Nashville Academy of Ophthalmology and Oto-Laryngology. I demonstrated a very cloudy right antrum by means of transillumination in the patient who had a discharging right ear. The case report was as follows:

A., a white man, aged 29, had not been feeling well the week of March 1. On Sunday, March 6, he had pain in the right ear. On Tuesday, the right ear began to discharge and the pain in the ear stopped. The patient continued to feel ill and the ear continued to discharge. He consulted me, Saturday,

March 13. The patient was pale and looked ill. There was a discharge from the right ear. After cleansing the ear, I found a small perforation in the drum membrane. There was a unilateral purulent discharge from the right nostril, causing excoriation of the skin. Transillumination showed the right antrum dark.

This case is reported to illustrate a group of cases that I have observed for the past six years; namely, middle ear abscess following empyema of the antrum on the same side as the ear involved. I would say, roughly, that 85 per cent of my mastoid cases coming to operation during the last six years have shown an infected antrum on the same side as the mastoid involved. There is nothing mysterious about this. The only thing surprising is that in all patients with antral empyema abscess of the middle ear does not develop, as the pus draining downward runs over the orifice of the eustachian tube, and the infection easily follows. It is the same mechanics that gives patients a middle ear abscess following irrigation of the nose.

In the fourteen years that have elapsed since I began to observe the association of sinus disease and middle ear infection, many observers have noted the association between infected sinuses and middle ear abscess. Unknown to me, Watson Williams had reported the same observations in a paper published in October 1924. In a study of forty-two consecutive cases of surgical mastoiditis he found the nasal sinuses infected in twenty-eight instances. In twenty-five of these cases the sinus infection was on the same side as the mastoiditis. As far as I know he has not followed up these studies.

In 1929 I read two papers on the etiology of middle ear suppuration, one before the Tennessee State Medical Association in April and one before the Southern Medical Association in November. I showed x-ray plates of the mastoids and the sinuses, demonstrating the association of mastoiditis and sinus suppuration on the same side. At the Philadelphia session of the American Medical Association I had an exhibit of x-ray plates in the Scientific Exhibit showing mastoiditis and sinus suppuration on the same side with the exception of one case, which showed a cloudy antrum on the right side and cloudy cells in the left mastoid.

Campbell's² paper in 1932 on the association of acute sinusitis and acute otitis media in infants and children is based on the study of 150 cases of otitis media in children between the ages of 2 days and 11 years. One hundred and ten of the children were under the age of 2 years. In 140 of the 150 cases a positive diagnosis of purulent sinusitis was made by means of the nasoscope. Of the remaining ten cases six were classified as doubtful because no pus could be seen, but the intranasal appearance indicated probable infection of the sinuses. Only four patients showed no evidence of sinus infection when examined by the nasoscope and in each of these cases a thick purulent secretion had been draining from the sinuses for long periods suggesting that the otitis was of the chronic type. In such cases the purulent sinusitis probably present at the start of the sinusitis had apparently cleared up. If the six doubtful but probable cases of sinusitis are classed with the positive ones, the percentage of cases in which acute sinusitis accompanied the otitis is 97.3. In twenty-five cases roentgenograms were made and in only one case in which there was nasoscopic evidence of sinusitis

¹ Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Cullom, M. M.: *Laryngoscope* 36:426 (June) 1926.

2. Campbell, E. H.: Association of Acute Sinusitis and Acute Otitis Media in Infants and in Children, *Arch. Otolaryng.* 16:829 (Dec.) 1932.

were the roentgen examinations negative. The patient, an infant of 3 months, showed a large amount of pus in both middle meatuses and both sphenoid-ethmoid recesses. Of eighty-five infants under 1 year of age with otitis media, definite infection of the sinuses was found in 97.5 per cent and probable infection in 100 per cent.

Dr. Campbell says:

While the total number of cases is small, it represents a consecutive unselected group and is therefore probably an accurate indication of the percentage of association of the two conditions. Therefore, it seems reasonable to conclude that when an aural discharge is present in an infant, sinusitis is also present. This should be of considerable significance to the pediatricians, who for the past few years have stressed the importance of infection of the ear as a factor in gastro-intestinal disturbance of infants but who have not taken into consideration the coexisting sinus infection. If, as they assume, infection of the ears have such a deleterious influence on the infant, how much greater effect would the infected sinuses have, which produce perhaps twice as much pus as do the ears. It seems to me that infected sinuses are of more importance than infected ears in gastro-intestinal conditions, and that it would be as rational for the pediatrician to advocate operative treatment for such conditions of the sinuses as to insist that mastoidectomy be performed.

This is directly in line with an observation I made in two papers read in 1929 before the State Medical Association of Tennessee and the Southern Medical Association. In these papers I said:

Many observers have noted gastro-intestinal disturbance in infants as a result of an obscure infection in the mastoid. The clinical course of these cases was athrepsia, vomiting, diarrhea, final cachexia and death. Autopsy disclosed in all of them a purulent infection of one or both mastoids. Floyd of the University of Iowa and Alden and Lyman of Washington University have made a practice of opening the mastoid of these cases, and report good results if done early. Since I have noticed the intimate connection between purulent sinus infection and mastoiditis, I have wondered if there were not a previous sinus infection in these cases from which the mastoid became infected. It would be interesting if all the children showing this syndrome could have an x-ray of the sinuses.

I am deeply grateful to Dr. Campbell for carrying out this exhaustive study of the association of acute sinusitis and acute otitis media in infants and children. In a measure it establishes the truth of the observation I made seven years ago. The facts he established are of supreme importance and should have a direct bearing on the question of prognosis and treatment of acute otitis media.

Fowler³ approached the subject from a different angle. The study is based on the examination of 100 children (200 ears). There were five cases of nonsuppurative otitis media, thirty-seven of healed suppurative otitis media, thirty-four of recurrent suppurative otitis media, thirteen of chronic suppurative otitis media and eleven of nerve deafness. The study was extremely thorough. The diagnosis was made not alone from the immediate pathologic conditions presented but also from the whole history of the case. The roentgen examinations were interpreted by Dr. Frederic M. Law, without knowledge of the clinical diagnosis. The youngest patient was 3 years of age, the oldest was 19, and the average of the group was 11.

There was a history of discharge or pain in 78 per cent of the cases, of exanthems in 65 per cent, and of colds, influenza or pneumonia in 66 per cent. There

were seven mastoid operations. In the five cases of chronic nonsuppurative otitis media all presented histories of repeated colds, and 60 per cent a history of earache. It is probable that all the patients had suffered from infection of the ear.

The roentgen examination showed that the sinuses were involved in 86 per cent of the cases. This is interesting, as my observations reported in 1926 showed that 85 per cent of my mastoid cases showed involvement of the sinuses by roentgen examination. If the other 15 per cent could have been examined at the inception of the suppuration I have the feeling that practically 100 per cent involvement of the sinuses would have been found.

To my mind this study of Dr. Fowler's constitutes one of the most important contributions that has been made to the study of deafness. Since 1920 I have had the growing conviction that nearly all forms of deafness are the result of infection and that the infection for the most part is by continuity and not blood borne.

There are many who can remember when Dr. Shambaugh first raised his voice against the orthodox pronouncement that deflection of the nasal septum causes deafness. I think he is now coming into his own and that the newer pathology will place the blame where it belongs, on infection. Not that I deprecate the operation of submucous resection. Deflection of the septum is a grave offender by reason of blocking the drainage from the sinuses and thereby setting up a condition which may result in purulent middle ear infection and mastoiditis but also thickening of the mucous membrane and resulting deafness even if no diagnosis of purulent infection can be made. How often has the surgeon removed a deformed nasal septum to find behind it an active ethmoiditis or a blocked antral orifice?

Since observing the association of sinus infection with middle ear infection I have examined my hard-of-hearing patients for associated sinus infection, which has been found in a very large percentage of cases. Two cases are reported that were of especial interest to me.

H. H. C., a boy, aged 9 years, was brought to me suffering with an acute infection in his left maxillary sinus in July 1919. I treated him until the acute symptoms subsided. In 1929 he returned on account of deafness in his left ear. His left ear drum membrane was thickened dull in appearance with absence of light reflex. Bone conduction was better than air conduction, Weber lateralized to the left, a watch could be heard at 8 inches. Transillumination showed a cloudy left antrum. A roentgenogram made by Dr. Shoulders showed the left antrum to be very cloudy. All other sinuses were clear. He had been away at school most of the time since I had treated him in 1919. He had had treatments for sinus disease numerous times while he was away.

In 1929 I was consulted by his mother, who had noticed for some time that she was gradually losing her hearing. The drum membranes of both ears were dull with very little light reflex. Bone conduction was better than air conduction. Weber not lateralized. A watch could be heard at 4 inches in both ears. Transillumination indicated cloudiness of both antrums. Dr. Shoulders reported from roentgen examination that both antrums were cloudy, indicating a chronic thickening of the membranes.

These two cases furnish food for thought. May they not furnish a probable explanation for much hereditary deafness? If the son had been deaf in both ears it might not have made such an impression. But I was able to show from my records that the son suffered with unilateral sinus disease in his ninth year. He returned in ten years with a well developed chronic

3. Fowler, E. P.: The Incidence of Nasal Sinusitis with Diseases of the Ear, Arch. Otolaryng. 9: 159 (Feb.) 1929.

antrum infection on the same side and a well developed chronic otitis media catarrhalis on the same side, while the maxillary sinus and the ear on the other side were normal. Every one knows how frequently sinus disease is found in families and I have the strong feeling that it is the tendency to sinus disease that is inherited rather than familial deafness.



Fig. 1.—At left, densely cloudy left antrum, at right, cells of the left mastoid broken down, in the case of J. C., a boy, aged 16, with discharging ear four months following a cold.

In "Etiology of Middle Ear Suppuration," Southern Medical Association, November 1929, I listed among the causes the great prominence given by most authors to specific infections in the exanthematous diseases, scarlet fever, measles, diphtheria and epidemic influenza. I made the following commentary:

The cases of infectious diseases attended by middle ear abscess would, I believe, show a very large percentage of existing purulent infection in some one of the accessory sinuses if they were properly examined. The swimming pool and the nasal douche cases are strictly analogous to infection from infected sinuses. Purulent material from the patient's own nose is washed into the eustachian tube or else water infected with virulent bacteria gives entrance through the nose.

The views expressed in these words based on my observations covering a nine year period have since received abundant confirmation in the work of others.

Childs⁴ submits a study of 383 cases of scarlet fever admitted to the City Hospital and examined there by each department participating in the study. Roentgenograms were made during the first week of the disease. A group of these were reexamined at a later date at about the twenty-eighth day of the disease. Roentgen examinations were carefully made in the chin, nose, forehead and lateral positions. No attempt was made to take the sphenoids. They were classified as clear, hazed and dense, and opaque. These studies were begun in February 1930 and still continue.

Hoople and Cave⁵ presented a study of the same group of cases.

In only 9 per cent were the sinuses found clear. In other words, 91 per cent of the 383 cases showed sinus involvement by roentgen examination, 79 per cent showed hazing and density while 12 per cent were classed as opaque. The frontals were clear in 110 cases. In 30 per cent, or 123 cases, there was bilateral hazing of the maxillaries and ethmoids. There were 104 cases of bilateral hazing of the maxillaries, or 27 per cent. Pansinusitis was present in nine cases. There was maxillary involvement in well over two thirds of the cases. Ninety cases were restudied and only 12

per cent showed improvement. Thirty-six per cent showed no improvement and in more than 50 per cent there was definite evidence of the progression or extension of the sinus involvement.

There were no clear sinuses in the 3 and 4 year old group. From 5 to 14 the sinuses were clear in 8 per cent, while from 14 years on the proportion was from 11 to 14 per cent clear. The conclusion drawn by Baulmen, quoted by Silverman, is that the younger the child the more likely is sinus involvement. Thirty-three patients developed mastoiditis, shown by roentgen evidence and confirmed by surgery. In every case of mastoiditis there was roentgenographic evidence of sinusitis on the same side as the mastoiditis. A most significant statement to my mind is that in no case of clear sinuses did mastoiditis develop. This is strong presumptive evidence that middle ear suppuration comes from infected sinuses and that adenoids and tonsils play a very little rôle in its inception, though they may be a factor in its continuance. In the four groups of cases that are reviewed in this paper there are four separate angles of approach.

My group of considerably more than 100 cases dealt mainly with adults. Dr. Campbell's group of 150 cases dealt with infants. Dr. Fowler made a study of deafness in children which demonstrated 91 per cent of associated sinus disease. Dr. Hoople's series dealt with a very large number of scarlet fever cases in young children. The percentage of sinus disease present in his cases was about 91. Dr. Campbell found more than 90 per cent associated sinus disease while my mastoid cases showed about 85 per cent associated sinus disease. It would appear from these figures that the percentage holds about equally for all ages.

Now I shall pause and take stock of the case I have made out against sinus disease. As long ago as 1920 I began to suspect sinus infection as the guilty cause of middle ear infection and mastoiditis. A close follow up of mastoid and middle ear infection in more than 100 private cases of mastoiditis and a great many more cases of middle ear abscess that did not eventuate in surgical mastoiditis showed a demonstrable sinus infection in 85 per cent of the cases. Many ear men have

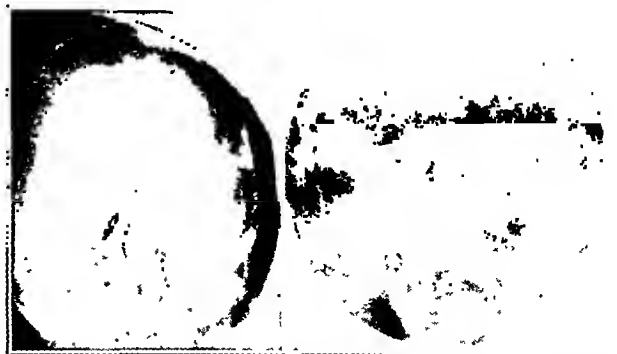


Fig. 2.—At left, both maxillary sinuses cloudy, at right, involvement of left mastoid cells, in case of M. H., a boy, aged 16, both of whose ears had been discharging for some time. Lately there had been pain in the left mastoid region. The left mastoid was operated on. The maxillary sinuses were drained a year later, after which the chronic purulent discharge from the right ear ceased.

communicated to me that investigation of their cases since I called attention to the condition has confirmed my observations.

1. The significant feature of these investigations is the fact that sinus infection was found on the same side as the mastoid in nearly all cases.

4. Childs, D. S.: New York State J. Med. 33:141 (Feb. 1) 1933.
5. Hoople, G. D., and Cave, L. S.: Otorhinologic Aspects of Scarlet Fever, J. A. M. A. 101:1121 (Oct. 7) 1933.

2. Dr. Fowler found in his large group of children suffering from deafness that 91 per cent showed conclusive evidence of sinus disease.

3. Dr. Campbell found conclusive evidence of sinus disease in 91 per cent of 150 infants suffering from middle ear abscess.



Fig. 3—Sinus infection followed by mastoid infection on the same side; acute mastoid disease on right side with active symptoms; acute infection of all sinuses not recognized clinically. Reproduced from a roentgenogram sent by Dr. Willis F. Manges, head of the department of roentgenology at Jefferson Medical College, Philadelphia. Dr. Manges sent roentgenograms of three cases showing the association of purulent sinus disease with mastoid infection; the other two are not reproduced here, as this illustrates the type of disease.

4. Dr. Childs and Dr. Hoople examined 383 cases of scarlet fever and found the sinuses involved in 91 per cent of the cases.

5. To go outside the scope of the charges brought against the defendant sinuses in the title of this paper I think it is competent and material to introduce other evidence proved against said sinuses. I had an exhibit in the Scientific Section at the Philadelphia session of the American Medical Association in 1931 showing a large number of x-ray plates demonstrating the association of sinusitis and nonspecific infections of the chest. Many of these patients were under treatment for supposed tuberculous infection. This exhibit was confirmatory of the work of Mullen, Manges, Jackson and others.

6. While the connection between sinusitis and retrobulbar neuritis is not on such a sound basis, the work of Leon White and others, as shown by Gordon Hoople, cannot be ignored. The weight of evidence is against the sinuses here, and further investigation will doubtless confirm their guilt.

7. It has long been believed that sinus disease is an etiologic factor in pneumonia, from the high percentage of infected sinuses found post mortem in patients dead of pneumonia. I feel that a case has been made out against infected sinuses that is truly appalling. The infected sinus is taking up a campaign against other bodily structures which is disabling, crippling and death-dealing. It has been the fashion lately to decry the sinuses as an important focus of infection. In the light of the evidence I think it is the real factor in focal infection. I have the feeling that, owing to the position of the sinuses at the top of the upper respiratory tract, they are a menace to all lower lying structures. The drainage from infected sinuses flows down over the postnasal opening of the eustachian tubes and brings about infection of the middle ear. The drainage flows over the adenoid tissue and may be the factor in adenoid infection. It flows down over the faucial tonsils and may account for infected tonsils. The drainage

follows the airway into the larynx and trachea and may set up pneumonia, bronchitis and nonspecific infections of the chest. The pus is swallowed in large quantities in severe cases and may set up digestive disturbances and interfere seriously with nutrition. It may be a potent factor in heart, kidney and joint disease.

The body may well be likened to a fortress or citadel. This fortress is beleaguered round about with billions of attacking forces seeking to gain entrance for the purpose of overwhelming and destroying it. The body, like a well designed fortress, is very well planned for defense. The skin may be described as the walls. The only way the invading host can effect an entrance through the walls is by means of a breach that comes about through traumatism. Like a fortress, the body has openings for the ingress of supplies and the excretion of waste.

If the enemy is debarred from effecting an entrance through the walls, where then is his best chance to gain admittance? Manifestly through the openings. What is the chance to effect an entrance through the openings designed for the excretion of waste? Not so good, as here the enemy would have to go against the current. Then evidently his main chance to get inside the defenses is through the openings designed for the reception of supplies. The enemy then seeks an opportunity to ride in on the food we eat, the water we drink, the air we breathe. Once having gained admittance, what does the enemy do? Having ridden in on the wings of contagion or infection through the air, or by means of infected food or water, he finds lodgment in a sinus, a tooth or a lymphoid structure. Having secured a footing he digs himself in and with that location as a base he multiplies and sends out attacking forces to find lodgment in other parts of the body, there to wield his destructive warfare until he is stamped out or until he permanently impairs or destroys the fortress.

It is evident that the great majority of bodily infections have their beginning in the upper respiratory tract. To you as ear, nose and throat men, what does this fact convey? To you is entrusted the front line of defense. You are the shock troops whose duty it is to meet the first furious onslaught of the enemy and stop him in his tracks. To you is given the organization of the clean-up squads that mop up the shell holes



Fig. 4—At left, densely cloudy right maxillary sinus, at right, cloudiness of left mastoid cells, in case of Miss E. J., aged 28, who had influenza. The left ear drum had been incised, after several days of suffering, one week before these roentgenograms were made. This is the only case of the author in which the infected sinus was on the opposite side from the infected mastoid. This mastoid cleared up without operation.

and underground hiding places of the enemy. You are hunting in big game country and you are on the trail of a quarry that is both cunning and dangerous. For thirty-eight years I have followed his trail, witnessed his depredations, and learned something of his habits,

his method of attack and his means of defense. He is now brought into the open more than ever before. It is our business to meet and destroy him. I do not share the fashionable pessimism of the present day in regard to the sinus problem. The surgical problems of the sinus are not different from surgical principles applied

for drainage. Hence it appears that sinus disease is a penalty man pays for assuming the upright position, thus radically changing the design of the Creator.

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ABSTRACT OF DISCUSSION

DR. LYMAN G. RICHARDS, Boston: Dr. Cullom has presented figures and clinical data which tend to establish beyond doubt that there is a frequent coincidence and to a certain extent, at least, an etiologic relationship between sinus disease and middle ear infection. In many respects this is what one would expect, in view of the histologic anatomy of the nose and nasopharynx. Both the mucous membrane lining the nasal sinus and that lining the middle ear are parts of the same generic structure and have a right to be involved in the same inflammatory process. The earlier in life that this inflammation occurs, the more likely is one to find involvement of both structures, as shown by Campbell's figures, since in the infant the wider eustachian tube and the larger sinus ostium result in a freer communication between the sinuses and the middle ear. As age advances and the more complicated anatomic developments take place there occurs a change in this relationship, such that there is a greater likelihood that sinus infections may develop without necessarily involving the now better protected middle ear cavity. Even so, in such generalized involvements of the upper respiratory tract as are seen in scarlet fever, there are noted, as confirmed by Hoople's figures, frequent involvements of the nasal sinuses and a concomitant middle ear inflammation. As further statistical reports appear, one wonders how far this indictment of the nasal sinuses is to extend. What, for instance, would an investigation of the sinuses in cases of measles or whooping cough, perhaps even of chickenpox, show as to sinus involvement, at least as evidenced by the x-rays? Does it not seem probable that any of the epidemic diseases involving the upper respiratory tract will show a high percentage of sinusitis? The important question seems to be whether such involvement is of such clinical significance as to require specific treatment. This decision cannot be based entirely on the roentgen examination, and yet it must be admitted that this diagnostic feature is the one most commonly used to establish the existence or nonexistence of a sinus involvement. Unless further procedures, such as the examination of the sinus contents, bacteriologic and serologic, are brought into play, the diagnosis is only an assumption, and even then the actual infection may be in the submucosal tissues, where its presence can be proved only by microscopic examina-



Fig. 5.—Cloudy right antrum, cells of right mastoid very cloudy, and very large mastoid filled with pus, in J. E. F., a boy, aged 11. This case was very interesting, as the author predicted the outcome. The mother telephoned that the boy was in bed with influenza and was having a bloody discharge from the right nostril. The author told her that in a few days an abscess would probably develop in the right ear, which might go on to a mastoiditis. In five days he was brought to the office with an abscess in the right ear, which was incised under gas anesthesia. A profuse bloody discharge ensued for ten days and the mastoid became involved and went on to operation.

to other parts of the body. It is when we neglect simple surgical principles that we go wrong. In dealing with the sinuses we have a problem worthy of our best skill and I am optimist enough to believe that the ear, nose and throat profession will solve it.

CONCLUSIONS

1. One thing stands out with startling distinctness in these studies and that is how intimately infection in the middle ear is bound up with infection in the paranasal sinuses.

2. When one considers the fact that four different types of investigation show from 85 to 95 per cent of sinus involvement in middle ear infections, the magnitude and importance of the sinus problem becomes apparent.

3. Careful investigation shows sinus involvement in 91 per cent of a large number of cases of scarlet fever. The inference may be drawn that the other exanthematous diseases and epidemic influenza have also a high incidence of sinus involvement. From this it can be seen that a large percentage of the population have sinus involvement at one time or another. This means that a large proportion of the population are menaced by infection that may result in deafness, disease and death.

4. Sinus disease appears to be largely confined to human beings. Other animals appear to be practically immune to sinus infection and its crippling sequelae. When our ancestors walked on "all fours" the openings in maxillary sinuses were at the bottom or most dependent portion, thereby being in the most favorable position for drainage, as was also the opening in the sphenoid sinus. When man began to walk in the upright position the openings in the antrums were thrown to the top, or in the most unfavorable position



Fig. 6.—E. T., a youth, aged 17, had diphtheria at the age of 3 years. Since then there had been a chronic purulent discharge from the right ear. There was a large perforation of the drum. The color was very bad. Roentgen examination by Dr. Shoulders showed a very cloudy right antrum, right ethmoid, right sphenoid and right frontal sinus. The patient has a leaky heart.

tion of the lining membrane. Noninfectious allergic swelling of the sinus mucosa is well known to give roentgenographic evidence of varying degrees of opacity, which it is all too easy to ascribe to infection.

DR. GORDON D. HOOPLE, Syracuse, N. Y.: If Dr. Cullom's contentions are true, or if they are but partly true, prophylaxis

should play an important part in the prevention of ear abscesses and surgical mastoids. About one half of the total number of cases of scarlet fever in Syracuse are hospitalized. It would seem that an equal number of surgical mastoids should develop in the hospital cases and outside the hospital. It would seem that more would develop in the hospital, as the more seriously ill are the ones who are hospitalized. Looking at the records, however, I found that, of the last seventy-one mastoidectomies done on patients with infectious diseases at the City Hospital, more than 70 per cent of the total had been on patients brought into the hospital after the ear infection had started. In many of these cases the nasal hygiene had been haphazard during the early part of the illness. This is suggestive evidence that proper care of the nose in head infections is important and, if observed, will cut down the incidence of otitis media and mastoiditis. We should pass this information on to the internist, and especially to the pediatrician. We must seek opportunities to emphasize the importance of pain in the ear, of colds and sinusitis in children, and bring out the fact that deafness in later life is often the result of neglect in these conditions.

DR. GEORGE E. SHAMBAUGH JR., Chicago: The author's observation of the frequent association of sinus disease and middle ear infection is interesting and significant. In many patients the otitis media follows the sinus infection, and here the sinus can be blamed, but in others it must be said that the two processes have begun simultaneously from an acute head cold rather than the one causing the other. The relation of purulent sinusitis to deafness is of particular interest, and here one must examine further the author's statement that "nearly all forms of deafness are the result of infection and that the infection is by continuity and not blood borne." Mild and moderate degrees of deafness in childhood are practically always due to a middle ear catarrhal or infectious process. As high as 10 per cent of all school children suffer from this type of deafness at one time or another, but in the majority of cases the hearing returns to normal at puberty when the adenoid tissue in the nasopharynx shrinks up. Purulent sinusitis is undoubtedly a very important factor in deafness in children, as Dr. Fowler's studies have shown. However, when deafness in adult life is considered, an entirely different picture is seen. Most of the mild and moderate cases of tubotympanic deafness have cleared up and have left scarred and thickened drum membranes, but essentially normal hearing. To be sure, there are a number of adults with mild deafness that is the result of childhood tubal catarrh. This type of deafness usually is not progressive, since the etiologic factor, the hyperplasia of lymphoid tissue in the nasopharynx, disappeared at puberty. The most important cause of progressive deafness in adult life is, unfortunately, otosclerosis, which accounts in my statistics for approximately 70 per cent of severe adult deafness. Since 18 per cent of adult deafness is due to a primary nerve defect, either congenital, acquired from an acute infection, acquired from a chronic focus of infection, or occupational, it is seen that in adult life the majority of severe deafness is not due to direct extension of infection from the nasopharynx; in fact, I have found suppurative sinusitis in very few severely deafened adults.

DR. S. S. EVANS, Memphis, Tenn.: The close association of the mastoid and middle ear with the nose and accessory sinuses would lead one to think that mastoid infections may as well be coincidental. It has often been suggested that the mastoid may be considered anatomically another nasal accessory sinus. I do not recall having seen an otitis media or mastoiditis following maxillary sinus infection of dental origin; therefore I have reason to believe that otitis media and mastoiditis depend more on the virulence of the organism and resistance of the host than on a primary sinusitis. It has been my observation that the otitis media often begins at the first stage of the infection at the same time the sinus infection begins. This is during the so-called stage of congestion and before there is much drainage. A bacteriologic and cytologic examination of the aural and sinus discharge along with a more careful history of the time of onset of fullness or pain experienced both in the ear and over the maxillary sinus area would be of interest. Whether the mastoiditis is secondary or coin-

cidental, there remains the fact that both should be treated. One is prone to direct attention to the mastoid infection and neglect a sinusitis. A careful study of the sinuses should be made as a routine in all cases of middle ear disease.

DR. J. A. PRATT, Minneapolis: I believe that most of the infection when there is sinus involvement is due to mechanics rather than to continuity of inflammation. With the postnasal space filled with discharge, by sneezing, coughing and blowing the nose one forces the infected matter into the middle ear. If more children hawked back instead of blowing the nose to clean it, there would be about 50 per cent less deafness. Then, in blowing the nose, nearly every one holds one nostril and then the other, and, of course, if one side is blocked and the pharynx is filled with discharge and one closes the open nostril and blows, one is liable to inject the discharge into the middle ear. In Minneapolis, where there are so many lakes, mastoid cases appear during the dog days, because the children dive and come up and blow the nose. There will be a blockage, they will blow it into the ear, and in two or three days there will be a discharge from the ear. I have seen it after twenty-four hours, a suppurating, breaking drum. If people are taught to clean the nose by hawking back, or, if they do blow, to do it with both nostrils open, a great many of these cases will be relieved and improved, and this infection will not develop.

DR. M. M. CULLOM, Nashville, Tenn.: Dr. W. F. Manges, head of the department of roentgenology of Jefferson Medical College, makes it a practice to roentgenograph the sinuses of every mastoid patient he is asked to examine. In three cases that came to him the same day, sinusitis had not been suspected. He made roentgenograms on his own account and found sinus involvement in all three. He writes, "I am in entire agreement with you as to the causal relation between sinusitis and middle ear infection." It has been my experience that the symptoms of the cold come first and later on the development of the infection in the middle ear. I think that the infection in the sinuses is the cause of the infection in the ear.

Clinical Notes, Suggestions and New Instruments

SMALL SPINDLE CELL SARCOMA OF THE KIDNEY IN THE ADULT

E. A. WATSON, M.D., GRAND ISLAND, NEB., AND
B. CARL RUSSUM, M.D., OMAHA

The rarity of spindle cell sarcoma of the kidney in the adult is indicated by the fact that Otto Lubarsch in 94,498 autopsies found twenty sarcomas of the kidney, only four of which were classified as spindle cell sarcoma. In the same series he encountered 201 carcinomas. At the pathologic institute of the University of Berlin from 1898 to 1922 there were found thirteen sarcomas in 30,820 autopsies. The rarity of the condition prompted Kretschmer and Randolph¹ in 1928 to record a single case encountered at the Presbyterian Hospital in Chicago. Hyman² observed only two sarcomas in ninety-nine renal neoplasms.

REPORT OF CASE

P. J. C., a white man, aged 45, the manager of a lumber company in a small town in Nebraska, presented himself for examination, Nov. 14, 1933, with the following history: His mother died at the age of 60, of an unknown cause. The father died at 54 of pneumonia. There were four brothers and four sisters living and none dead. The siblings were all in good health. The patient had had no disease of importance in the past. In 1916 a gastro-enterostomy was done for duodenal ulcer with satisfactory results.

The patient smoked, and drank three cups of coffee daily, a considerable amount of beer and some hard liquor. His strength was poor; he worried considerably. He tired easily

1. Kretschmer, H. L., and Randolph, H. S.: Spindle Cell Sarcoma of Kidney in Adults, *Ann. Surg.* 88: 1033-1038 (Dec.) 1928.
2. Hyman, Abraham: Observations on a Series of Ninety-Nine Renal Neoplasms, *Am. J. Surg.* 5: 102-127 (Aug.) 1928.

and slept well. His weight was 130 pounds (59 Kg.) and he felt that he had not lost much.

He complained chiefly of some headache, pain in the lumbar region which was not bad, and at times distention which was not severe. The appetite was poor; he belched some gas and at times was nauseated. There was some pain immediately after eating. The bowels were constipated and the patient had to take some kind of a laxative. There was no genito-urinary history such as burning or difficult urination, and the patient had noticed no cloudiness of the urine. He said that he had always had some gastric disturbance but was relieved of most of this after the stomach operation. In the past month there had been considerably more pain localized to the right lower quadrant of the abdomen, quite severe at times, and there was always some pain present. There was also pain in the back with weakness and tiredness, and increased nervousness. There was no increase of pain at night. His color was good and he was fairly well nourished. The skin was smooth and moist.

The eyes reacted to light and in accommodation. The teeth were all false. The heart was normal in size and there were no lesions. The chest was well filled. Excursion was good, with nothing abnormal found. The abdomen was flat and tender over the entire right quadrant, more marked in the lower region of McBurney's point. There was slight tenderness in the back over the kidney as well as a more marked tenderness in front. Neurologically the examination was negative.

The blood pressure was 120 systolic, 85 diastolic. The blood count showed: red blood cells, 4,640,000; white blood cells, 8,300; hemoglobin, 74 per cent (Dare).



Fig. 1.—Appearance of kidney.

The specific gravity of the urine was 1.012. The urine was acid and contained no albumin or sugar, casts or kidney epithelium. There was a trace of diacetic acid. The urine was about one plus positive for pus cells and a later specimen showed from two to three plus pus cells.

Because of the combined observations a Cole-Graham test was made of the gallbladder and a gastro-intestinal series of roentgenograms was made, which disclosed a poorly concentrating gallbladder, a working gastro-entrostomy and later a visualized and segmented appendix with tenderness over it, the greater tenderness being over the cecum.

November 22, because of the combined symptomatology and physical examination and carrying out the wishes of the patient, the appendix was removed. At this time the right kidney was explored and found enlarged to about one fourth of the normal size and smooth, and no defined mass could be felt. During the first four days of convalescence the patient was free from pain and very optimistic. From this period on he complained of pain in the entire right quadrant, which seemed to increase each day.

December 5, a diodrast injection was done and the following observations were recorded: No stone shadows were seen on the preliminary picture. A definite hydronephrosis of the right kidney with marked clubbing of the upper and middle calices was found. The lower calix was not filled in any of the pictures. The opening of the pelvis into the ureter was very sharp, as if contracted by a stricture or outside pressure. There was also a loculation of the right ureter just as it entered the bladder. The pelvis of the left kidney appeared normal. There was a slight dilatation of the lower end of the left ureter.

The diagnosis was hydronephrosis of the right kidney.

December 6 the patient was taken to the operating room and a ureteral dilator was passed on the right side. Following this, there was some amelioration of symptoms and on December 9 he was discharged from the hospital with instructions to return for observation.

Immediately after his discharge and on reaching home the pain became very severe and he returned to the hospital. December 20, a renal function test was done and the left kidney

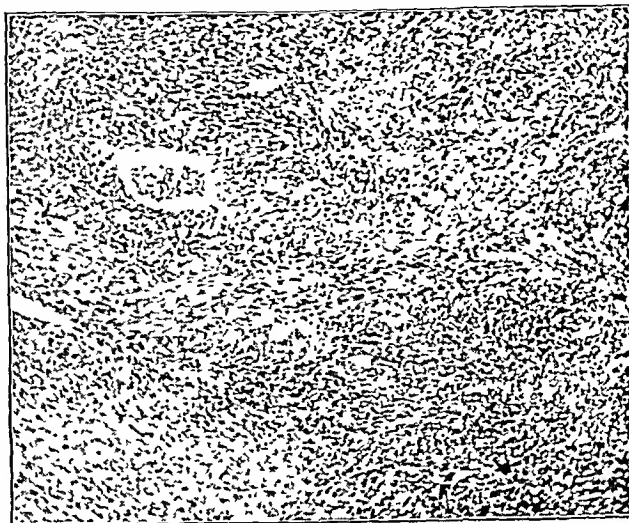


Fig. 2.—Section of kidney tumor under low power.

was found to be doing all the work. We still hesitated to operate, but the pain was severe, and at this time a mass could be palpated in the right kidney region, so an operation was deemed advisable, and on December 26 a nephrectomy was done. The lower pole was found adherent to the peritoneum with two small abscesses between, where an evident explosion of the lower pole of the kidney had occurred. This mass had evidently taken its origin in the cortex and had broken through the

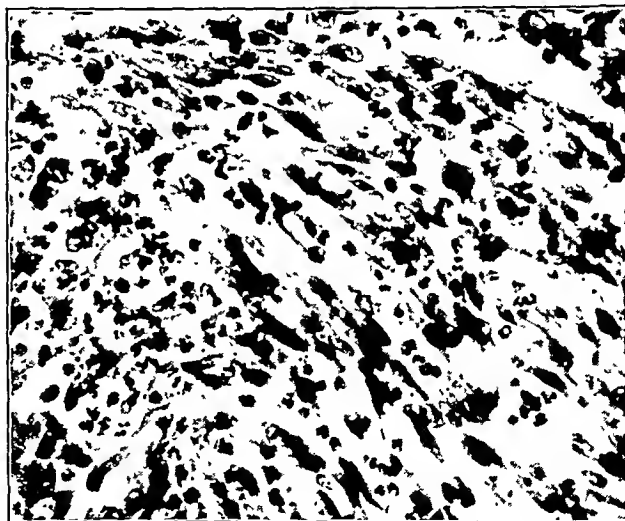


Fig. 3.—Section of kidney tumor under high power.

cortex with ectropion of the tissue like a full bloom rose. Photographs and measurements of the mass were taken after several days in a hardening solution, but they are fairly descriptive of the condition (fig. 1). The tumor mass measured, after hardening, 12 by 12.5 cm.

Pathologic examination of the kidney and the upper 1.5 cm. of the ureter revealed that the kidney was 12.5 cm. long and up to 7.5 cm. wide in its lower half and 8.5 cm. from front to back. It had been opened. The lower three fourths of the

kidney substance was replaced by a tumor mass, which was gray, mottled with yellow, nodular and bulged beneath the surface of the kidney. It compressed but did not invade or arise from the kidney pelvis.

Microscopic examination revealed a diffusely growing cellular tissue in which were embedded occasional glomeruli and kidney tubules. The cells making up the section were polygonal and spindle cells growing diffusely. There were many mitotic figures, and many areas contained numerous polymorphonuclear leukocytes. In a few places there were thin-walled blood vessels forming a skeleton for the tumor cells. There was none of the extreme lipid deposit usually seen in a hypernephroma, and there was no tubular arrangement or papillary formation sometimes seen in carcinoma of the kidney. In the margin of the growth there was a fibrous thickening, apparently the kidney capsule.

The diagnosis was spindle cell sarcoma of the kidney.

This growth was evidently very rapid. We are confident that the majority of the growth and bursting of the kidney occurred between the operation of November 22 and the one of December 26.

May 1, 1934, the patient died at his home some distance from me. Our last examination was on Feb. 8, 1934. The patient was failing very rapidly and a mass the size of a grapefruit could be felt in the right lumbar and kidney region. We were informed that this mass had grown to fill the entire right quadrant of the abdomen. We are of the opinion that, at the time of death, metastasis of the lungs could also have been demonstrated.

407 First National Bank Building—306 North Fourteenth Street.

MEDIASTINAL AND INTRASPINAL PERINEURIAL FIBROBLASTOMA (HOUR-GLASS OR DUMB-BELL TUMOR) REMOVED BY ONE-STAGE OPERATION

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ROCHESTER, MINN.

Many hour-glass or dumb-bell tumors have been reported in the literature, and they occur with relative frequency in the cervical, thoracic and lumbar spine. Those in the cervical and lumbar regions do not present the same surgical problem as do those in the thoracic region. The reason for this is that the extraspinal portion of the tumor in the thoracic region is in the mediastinum and encroaches on the adjacent intrathoracic structures. This involves the double surgical problem of combining the procedures for an intraspinal and an intrathoracic tumor. In a careful review of the literature, we have been unable to find the record of any case in which this type of tumor has been removed successfully in one stage. In the majority of cases the intraspinal portion is removed first, the intrathoracic portion being reserved for removal at a second stage. The procedures may be reversed, depending on the predominance of symptoms. Our reason for doing the operation in one stage was that, in our previous experience with the two-stage operation for the removal of similar tumors, complications followed that we thought could be avoided by removing the tumor in one stage.

REPORT OF CASE

A married woman, aged 34, consulted her physician because of occasional subjective sensations of weakness in the knees. This had been present to a mild degree since the birth of her child four years previously. During the past year these intermittent attacks had progressed to the point at which she felt definitely unstable on her feet, and in addition she recently had subjective numbness of the toes of both feet. Her examination at that time was essentially negative except for the roentgenogram of the thorax, which depicted a shadow in the left thoracic cavity, and in the lateral views the shadow was attributable to a mass in the left posterior mediastinum. It was suspected that the mediastinal tumor might be contributing to her symptoms and she was referred to us for further consideration.

This case was of clinical interest because the early neurologic symptoms were mild, indefinite and associated with generalized symptoms of chronic nervous exhaustion. It illustrates the importance of a thorough general examination of patients with this type of complaint, for during the course of her general examination the roentgenogram of her thorax was taken and the lesion found in the posterior mediastinum. It is unlikely that the mediastinal portion of this tumor contributed to her symptoms, as benign tumors in this region rarely produce symptoms until they have reached considerable size, thereby causing pressure on the surrounding mediastinal structures. Among the patient's general complaints there were definite symptoms of weakness of the legs as well as numbness of the feet, which indicated that the mediastinal tumor might be of the dumb-bell type and that the neurologic symptoms might be due to mild pressure on the cord. By the time the patient had reported to the clinic for examination, her symptoms had progressed to the point at which definite signs of compression of the spinal cord could be elicited.

The general examination was essentially negative except for the roentgenologic examination of the thorax, which disclosed a circumscribed shadow of soft tissue at the left of the fifth and sixth ribs on the left side, posteriorly (fig. 1). A localized roentgenogram of the spine revealed erosion of the left pedicle of the fifth dorsal vertebra and upper border of the left pedicle of the sixth dorsal vertebra. The tumor was extruding through the intervertebral foramen between the fifth and sixth dorsal spines and into the mediastinum. The intervertebral foramen was eroded and enlarged by the extruding tumor. There was increase in width of the fifth intercostal space and erosion of the posterior inferior border of the fifth rib and posterior superior border of the sixth rib. A roentgenologic diagnosis of neurofibroma of dumb-bell type, invading both spine and mediastinum, was made.

Neurologic examination revealed a loss of epigastric, mid-abdominal and hypogastric reflexes, with diminution of the patellar and achilles reflexes on both sides. The gait was spastic and there was a slight area of anesthesia on the plantar surface of both feet. Spinal puncture was made, and the cerebrospinal fluid was found to contain 40 mg. of total protein, with a positive globulin reaction. There was no pleocytosis. A complete subarachnoid block was present, as demonstrated by the lack of response in the manometer when the jugular veins were compressed. The areflexia, subjective numbness and anesthesia, as well as the complete subarachnoid block, were indicative of compression of the spinal cord at a level corresponding to that of the mediastinal tumor disclosed in the roentgenograms. In view of the fact that the neurologic level of compression of the spinal cord corresponded to the situation of the shadow in the roentgenograms, a diagnosis of mediastinal and intraspinal perineurial fibroblastoma of the dumb-bell type was made. Because of the character of the tumor, the patient was seen jointly in consultation, and a one-stage operation was considered to be the operation of choice, unless contraindicated at the time of operation. As the intraspinal portion of the tumor was the most important factor in producing the symptoms and involved the most important structures, it was deemed advisable to expose this portion of the tumor first, and, as the mediastinal portion was large, we felt that it should be removed through a separate incision.

Operation was carried out, April 16, 1934. Choice of the method of administering the anesthetic was important in this case because the tumor was in the posterior mediastinum. Tumors in this region and of this size are usually very adherent to the underlying structures, and in many instances the pleura is unavoidably opened during operative removal of the growth, producing an open pneumothorax, which may result fatally from pulmonary collapse and cardiac failure. This complication can be avoided by intratracheal anesthesia administered with a positive pressure apparatus so that the intrapulmonary pressure can be controlled. As this type of anesthesia is equally satisfactory for the removal of the spinal portion of such tumors, it was utilized in this case.

In view of the fact that laminectomy is usually performed with the patient prone on the table and mediastinotomy preferably with the patient on one side or the other, the problem of posture was solved by placing the patient in an oblique position,

midway between the prone and the lateral position. The usual incision for laminectomy was made, and the spines and laminae of the fourth, fifth and sixth thoracic vertebrae were removed. This revealed a definite compression of the spinal cord by an extradural mass, which proved to be the intraspinal portion of the dumb-bell tumor. It had eroded the intervertebral foramina between the fifth and sixth vertebrae and was at least 2.5 cm. in diameter. The tumor was dissected until it was completely exposed and movable. At this stage in the procedure it was thought best to mobilize the intrathoracic portion, and for that reason the laminectomy wound was packed with warm saline gauze packs.

The thoracotomy was performed through a posterolateral incision parallel with and about 3 inches (7.5 cm.) from the spine and extending from the fourth to the seventh rib around the angle of the scapula. The posterior third of the fifth and sixth ribs were resected and the muscles in the fifth intercostal space were divided. This exposed the larger portion of the tumor, which presented in the posterior mediastinum, immediately beneath these ribs (fig. 2). The posterior portion of the tumor was separated from its fibrous attachment to the vertebrae and from the pleura and mediastinal structures posteriorly. The depth of the tumor anteriorly was such that it was impossible to separate its anterior attachments to the pleura. At this stage the packs were removed from the laminectomy wound, and the intraspinal portion of the tumor was transfixes with sutures of silk, the ends of which were



Fig. 1.—Shadow of tumor extending from the fifth to the seventh rib in the upper left part of the thorax adjacent to the spine and mediastinal structures.

passed into the mediastinal wound, allowing traction and rotation of the intraspinal portion of the tumor and its withdrawal into the mediastinal wound (fig. 3). This permitted the entire tumor to be elevated and withdrawn from the anterior mediastinum, so that the anterior attachments of the pleura could be separated from the tumor; separation was accomplished without rupturing the pleura or entering the pleural cavity. It was necessary to separate the tumor from its attachment to the aorta laterally under direct vision, this being done without any complication, and to separate the anterior attachment of the pleura without rupturing the pleura or causing undue bleeding, which could not have been accomplished had it not been possible to mobilize the tumor. A distinct advantage of this procedure was that we were able to remove the tumor extrapleurally under direct vision, avoiding injury to any of the mediastinal structures and particularly avoiding an open pneumothorax. This is a great advantage in an operation of this magnitude, as it eliminates the hazards of serious intrapleural complications. Another distinct advantage is the excellent exposure following the removal of the tumor, permitting complete control of hemorrhage simultaneously in the mediastinum and in the spinal canal. After the hemorrhage had been controlled, the laminectomy wound was again packed with saline sponges, and the mediastinal wound, which was closed in layers, was drained with two small Penrose drains to relieve any tension on the pleura that might result from exudation of serum. After the mediastinotomy wound had been closed, the laminectomy wound was closed in layers with interrupted catgut sutures, one Penrose drain being left in place for drainage, thus obviating pressure on the mediastinum and cord that might be transmitted through the intervertebral foramina.

Following operation, the patient was transferred immediately to the oxygen chamber, where she was kept for a period of ten days. The Penrose drain in the laminectomy wound was

removed after twenty-four hours; one of the drains in the mediastinotomy wound was removed after forty-eight hours and the second after seventy-two hours. The patient's convalescence was entirely uneventful. Her highest temperature,

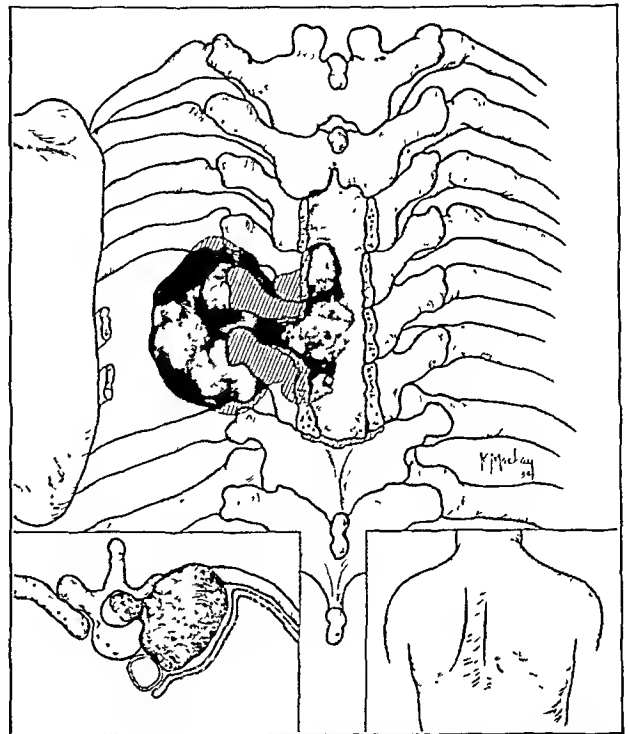


Fig. 2.—Drawing made at operation showing relation of the tumor to its contiguous bony structures. Inset at left demonstrates relation to aorta, spinal canal, and pleura; at right, incisions for a laminectomy and mediastinotomy.

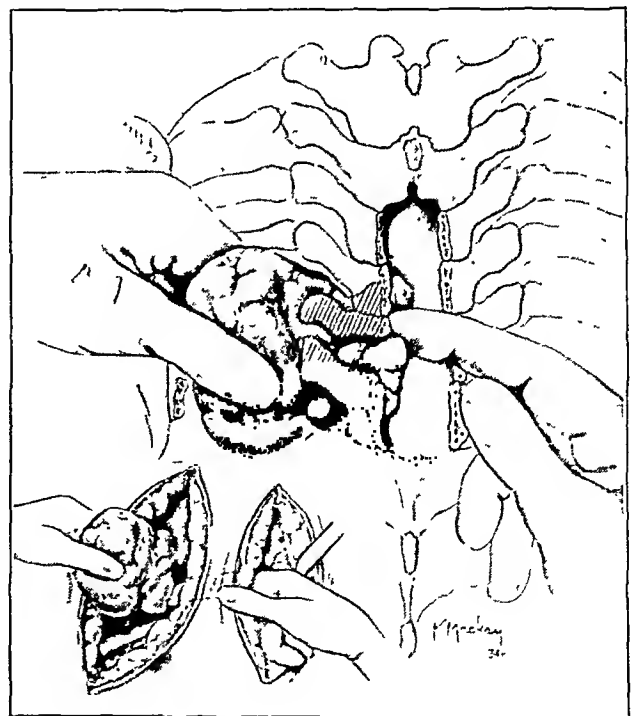


Fig. 3.—Drawing showing method of removal of tumor.

which was 100 F., was recorded on the second postoperative day; it dropped to normal on the third day and remained normal throughout the remainder of her convalescence. She had no respiratory embarrassment, nor did any pleural complications

develop. At no time during convalescence did she show any signs of compression of the cord. She was transferred to the general floor of the hospital on the eleventh day and was dismissed to her home on the twenty-fourth day after operation, at which time she was entirely free from her preoperative neurologic symptoms. A letter received four months after operation reported that her condition was excellent, that she had no subjective symptoms, and that the function of her arm was practically as good as before operation.

DIABETIC GANGRENE OF THE FACE AND EAR COMPLICATED BY FIFTH AND SEVENTH NERVE INVOLVEMENT

A. J. BRIER, M.D., TOPEKA, KAN.

This case is presented because (1) of the rarity of the occurrence of diabetic gangrene of the face and (2) because of the unique complications that occurred subsequent to the gangrenous process.

H. M., a man, aged 24, a farmer, brought to the hospital, Dec. 16, 1933, noticed a sore lump just in front of his right ear about thirty-six hours before. He was seen by his family



Fig. 1.—Gangrenous involvement after spread of process had ceased.

physician shortly after its appearance. Local application of heat was then advised. In spite of the treatment, the condition became worse. The surrounding tissue became red, hot and swollen. The pain increased. In a few hours he complained of being short of breath. Because of the rapid progress of the local symptoms and the oncoming dyspnea he was sent to the hospital. Shortly after his admission he became quite stuporous and complained of being unable to breathe on account of "gas in his stomach."

In 1927 he had influenza rather badly. From this he recovered slowly. Immediately after this illness he was told that he had sugar in the urine. On this occasion he was advised as to his diet. While his diet was watched he gained weight and strength. Although he resumed a part of his duties, he was never able to take full part of the work on the farm.

In the summer of 1932 he "began to fall off" again, when he complained of vague stomach distress, a "ravenous appetite" and an insatiable thirst. From this point on he became progressively worse. Nothing particularly was done about his condition. His diet was regulated little if at all. The family history has no bearing on his condition.

Examination at the time of admission revealed that he was poorly nourished and, though conscious, mentally sluggish. The breathing was rapid and moderately deep.

Just anterior to the right ear there was a small hardish area of a rather angry appearance. The skin surrounding this lesion was red and swollen over an irregular area extending about 1½ inches (38 mm.) in front of the ear anteriorly, above to the hair line and below to the angle of the jaw. This area was tender. No sensory or motor disturbances were present.

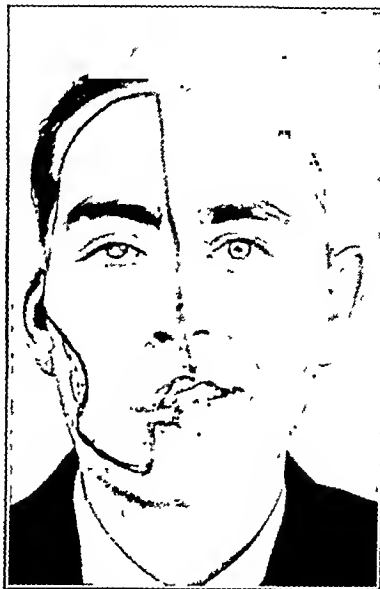


Fig. 2.—Anesthetic areas within line; also paralysis of face muscles.

The pupils were equal and active.

The tongue was dry and protruded in the midline. The teeth were in good condition.

No pathologic changes were noted in the neck.

Examination showed nothing unusual about the lungs and heart.



Fig. 3.—Outline of anesthetic areas, corneal changes, motor changes and ear destruction.

The abdomen was distended, particularly in the upper half, and tympanitic over its entire area. No masses or areas of tenderness were found.

On both hands were lacerations showing low grade infection. On both heels were darkish areas about 1½ inches in diameter.

Laboratory examination disclosed: hemoglobin (Salhi), 86 per cent; erythrocytes, 4,400,000; leukocytes, 8,900; polymor-

phonuclear neutrophils, 84 per cent; lymphocytes, 15 per cent; monocytes, 1 per cent.

The urine showed a two plus reaction for albumin and a strongly positive reaction for sugar, diacetic acid and acetone.

The blood sugar was 363 mg. per hundred cubic centimeters of blood. The carbon dioxide combining power by the Van Slyke method was 28.7 volumes per cent.

The blood Wassermann reaction two days later was negative, as was the Kahn reaction.

The patient was treated in a more or less recognized way, the acidosis being considered paramount. In four or five hours he was much more comfortable. On the following day he was much better and the blood sugar came down satisfactorily. This progress was not wholly constant for the next few days, but his progress was still satisfactory.

On about December 20 the involved skin in front of the ear showed definitely gangrenous changes. This was progressive. By December 26 or 27 one had the impression that the whole ear was involved and that the extension had gone deeply into the side of the face.

By about Jan. 5, 1934, seventh nerve changes were noted. Shortly after this the skin of the right side of the face became painful and swollen, and anesthesia of the skin of the face followed. Accompanying these changes, anesthesia of the right half of the tongue and the buccal mucous membrane was observed. The tongue on protrusion deviated to the right. At about the same time a burning and redness of the right eye was noted followed by total anesthesia of the conjunctiva.

The general condition of the patient improved and by January 30 the repair of the gangrene of the face and right ear had definitely become established. The heels had gone on to gangrene and were almost healed.

Throughout the course of the illness the patient had fever, which at times produced a temperature of from 103 to 104 F. This was relieved when some drainage from the face occurred. On one of these occasions of high fever a forceps was introduced deeply into the sinus that was just anterior to the ear, liberating a large amount of pus, followed by a marked reduction of the fever.

For the next three weeks the patient gradually improved, although for a great part of this time occasional elevations of temperature occurred but never reached the high marks previously noted. There was further improvement in the condition of the previously gangrenous area. The discharge from the sinus lessened but the eye changes became slowly worse and a corneal ulcer occurred.

On his seventy-fifth hospital day the patient was thought well enough to go home. He had been thoroughly instructed as to the preparation of his diet, the use of insulin and his general welfare. He was discharged to return for observation.

At home his progress was satisfactory. He gained weight and ultimately all lesions healed and he was able to do some light work.

From time to time he was seen and some improvement was noted, as manifest by the return of sensation over the proximal portion of the face. Motor function has never improved.

September 12 he returned, when the photographs were made from which the accompanying illustrations have been prepared. At this time he is doing full time work on the farm. He is strong and his nutrition is quite satisfactory.

September 21 the patient was seen, and the following notes were made: The tongue deviates slightly to the right and is asymmetrical. There is anesthesia of the right side of the tongue and mucous membrane of the cheek. The right arch of the soft palate is relaxed. The masseter muscle of the right side does not contract. The chin can be shifted to the right but not to the left. The gums of the right jaw are quite unhealthy compared to the normal side. Temperature changes cannot be told over the anesthetic area shown in the pictures.

The right eye cannot be closed or the eyebrow raised. The nasolabial fold is smooth. The angle of the mouth droops. The right half of the platysma does not contract.

The patient states that he does not sweat on the affected side, even under goggles worn to protect the right eye.

700 Kansas Avenue.

Special Article

THE EVALUATION OF SERODIAGNOSTIC TESTS FOR SYPHILIS IN THE UNITED STATES

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The development of a method for the evaluation of serodiagnostic tests for syphilis in the United States has recently been completed by a committee whose membership consists of two clinical pathologists appointed by the American Society of Clinical Pathologists, two syphilologists, and two officers of the United States Public Health Service. It has been the primary aim of this committee to be guided as far as possible by the most frequently employed, most practical, but also the most reliable, practices. Each step in the evaluation plan has been carefully considered with the idea of duplicating the actual procedure that occurs when the physician in private practice collects his specimens of blood and forwards them to a serologic laboratory for examination. It is believed to be the peculiar responsibility of serologists interested in the diagnosis of syphilis to develop thoroughly practical tests. They should be efficient from a diagnostic standpoint and should possess such ready adaptability that even the collection and transportation of specimens under the most unfavorable conditions that might exist in actual practice will not interfere with their efficiency. Other factors of secondary importance are the adaptability of the test to use by other technicians, rapidity of performance, and, perhaps, the cost.

The plan that has finally been decided on consists of the collection of samples of blood from donors in various categories and the distribution of these samples from central points of collection to the laboratories of participating serologists. Serologists in this country who have described an original serologic test or a modification of such a test for the diagnosis of syphilis have been invited, and with one or two exceptions all have accepted. Those who have described more than one serologic test or modification have agreed to perform only one test in their laboratory. They may, however, delegate to another laboratory in a different city the performance of the second test. It is the purpose of this study, therefore, to appraise separately the various modifications of complement fixation methods and flocculation tests. The committee feels that only in this way will it be possible to measure fairly and impartially the efficiency of independent examinations, and to determine the most valuable combination of tests.

In the collection of the specimens, sufficient blood or spinal fluid will be taken to furnish ample and comparable samples to each participating serologist. The donors for these specimens will be carefully chosen and accurate records kept of the pertinent facts in the history and physical examination of all abnormal individuals. Reasonable care will also be exerted to insure that donors will be subsequently available for clinical examination several months later in the event that disparities exist in the laboratory reports of the participants. Specimens collected under aseptic conditions in standard glass tubes will be forwarded to the participating serologists either by regular first-class mail or by special delivery air mail. The mailing of specimens will be staggered, those to serologists in cities nearest the points of collection being delayed in order that all specimens may arrive at the laboratories of all of the serologists at approximately the same time. Reports will be submitted by the serologists at regular intervals, and these reports will be immediately compared with the clinical diagnoses of the donors. The final evaluation will take place after all the serologic examinations have been completed.

The following is a detailed description of the plan that will be followed in the study to evaluate serodiagnostic tests for syphilis in the United States.

I. SELECTION OF DONORS

1. A total of approximately 1,000 donors for blood specimens and 200 donors for spinal fluid specimens will be selected. Donors for blood specimens will be chosen from the following representative groups:

- (a) Untreated early primary syphilis in the first four weeks of the disease.
- (b) Untreated secondary syphilis with cutaneous eruptions.
- (c) Late cases of syphilis with varying amounts of treatment.
- (d) Normal, presumably nonsyphilitic individuals.
- (e) Normal, presumably nonsyphilitic women, both during menstruation and in the interim between the monthly periods.
- (f) Patients with leprosy.
- (g) Patients with tuberculosis.
- (h) Patients with malignant disease.
- (i) Patients with acute febrile disease, particularly the exanthems.
- (j) Patients with malaria.
- (k) Patients with jaundice.
- (l) A group of pregnant women.

The donors for spinal fluid specimens will be drawn from two classes—nonsyphilitic patients from hospitals and clinics for nervous and mental diseases in whom nonsyphilitic disease of the central nervous system may exist, and a group of neurosyphilitic patients from similar institutions.

2. Donors of blood specimens from the early primary syphilis group shall be of the male sex and have an untreated primary syphilitic infection in the chancre stage. They must have a darkfield positive initial lesion, which has been present for a period not greater than four weeks, and the blood specimen must be taken before the appearance of any secondary manifestations of syphilis.

3. Specimens will be collected from donors with acute febrile disease only when the oral temperature is 100 F. or higher.

II. COLLECTION OF SPECIMENS

1. All blood specimens will be drawn under aseptic conditions.

2. Blood specimens will be collected in dry sterile syringes, the blood being transferred immediately to thick-walled test tubes, without lip, which will hold at least 4 cc. of whole blood. Comparable samples will be sent to each serologist in these tubes, which will be closed by a sterile cork.

3. The specimen tubes will be cleaned before sterilization as follows:

- (a) Rinsed thoroughly in cold water.
- (b) Washed thoroughly in hot soap solution.
- (c) Rinsed clear in hot water and then immersed for twenty minutes in a solution of potassium bichromate 120 Gm., concentrated sulphuric acid 600 cc., and water 800 cc.
- (d) Washed free from acid in hot water.
- (e) Ordinary wood corks will be washed well in soap and water and finally rinsed well in tap water.
- (f) Both the glass tubes and the corks will be sterilized by autoclave or by baking. The corks will then be placed in the tubes under sterile precautions and given one baking at 180 C. for one hour.
- (g) Each batch of specimen tubes prepared in the described manner will be tested for the presence of acid and to insure sterility.

4. Whole blood specimens will be sent to all participants unless several successive specimens sent to distant points are received in a hemolyzed condition.

5. All the participating serologists have agreed to perform only one test. Certain serologists who have devised two tests have designated a second laboratory in another city in which the second test will be performed.

6. Serologists performing precipitation tests will be furnished 3 cc. of whole blood; those performing complement fixation tests will be furnished 4 cc. of whole blood.

7. A maximum of 3 cc. of spinal fluid will be furnished to all participating serologists.

8. An attempt will be made to secure spinal fluid from individual patients in quantities totaling from 40 to 50 cc. This will make it possible to give every serologist a comparable sample from the same patient. In the event that it is impossible to obtain such a large quantity of spinal fluid from the entire 200 donors, specimens from several donors of known positive or negative spinal fluid will be pooled and subsequently divided into comparable samples. No dilution of spinal fluid specimens with saline solution or other foreign substances will be permitted.

III. PREPARATION OF SPECIMENS FOR SHIPMENT

1. The tubes containing specimens will be packed in double tin mailing containers, the outer to be made of tin with a screw top, lined with heavy cardboard approximately 0.25 cm. thick; the inner container to be made entirely of tin, to measure about 5 by 20 cm., and to hold twenty tubes with ample packing.

2. The name of the participating serologist will be typewritten or printed on the label, which will be pasted with ordinary commercial mucilage on the outer tin mailing container.

3. Mailing containers, holding specimens for serologists in nearby cities, the mailing of which is being purposely delayed in order to synchronize delivery time, will be kept at ordinary room temperature.

There seems to be no reason why a given bone may not present any one of a number of anatomic variations. Thus, one petrous bone may have pneumatic spaces in the antrum region only; another may have spaces about the vestibule and canals as well, and a third may, in addition, have spaces in the petrous tip. The pneumatic spaces may vary in size from those that are small to those that give the petrosa a cellular appearance. It would seem obvious that there would be no one procedure capable of handling infections of all petrous bones. In some, drainage from antral cells would be sufficient. In others, drainage would have to be maintained forward to the internal auditory meatus along the posterior border of the petrous bone. In others, with fistulous tracts already established, drainage would need to be established for the cells extending to the petrous apex above or below, or both above and below, the labyrinth.—Hagens, E. W.: *Anatomy and Pathology of the Petrous Bone*, *Arch. Otolaryng.* 19:556 (May) 1934.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SCILLONIN.—A mixture of two non-water soluble glucosides, scillonin-A and scillonin-B, derived from squill, in the proportions in which they exist in the drug; namely, about equal parts. The product is standardized so that the variation in the proportion of each glucoside is not more than plus or minus 2.5 per cent (from 50 per cent), i. e., 47.5 to 52.5 per cent. Scillonin dried in a high vacuum at 50 C. for five hours loses not more than 2 per cent of its weight.

Actions and Uses.—The cardiac action of scillonin is essentially similar to that of digitalis.

Dosage.—In cardiac decompensation, where digitalis has not been administered within one week, the average adult dose is 3 mg. (six tablets, or 3 cc., of scillonin solution) daily. The average maintenance dose is 0.5 mg. per day (one tablet, or 0.5 cc., of scillonin solution). In milder cardiac disorders, from 0.5 mg. to 1 mg. of scillonin per day (one to two tablets, or 0.5 to 1 cc., of scillonin solution) may be given.

Manufactured by the Grisard Laboratories, Inc., Winchester, Tenn. U. S. patent applied for. U. S. trademark 309,472.

Tablets Scillonin, 0.5 mg.

Solution Scillonin: Each cubic centimeter represents one milligram (1/40 grain) of scillonin, in a vehicle composed of equal volumes of glycerin and alcohol.

Scillonin occurs as a pale yellow, granular powder, possessing a slight characteristic odor and an extremely bitter taste; soluble in acetone, alcohol, ethyl acetate, glacial acetic acid, dilute alkali carbonate and hydroxide solutions, sparingly soluble in chloroform, practically insoluble in water, carbon tetrachloride, ether and purified petroleum benzene. A saturated aqueous solution is neutral to litmus. An alcoholic solution is levorotatory. Dissolve about 0.001 Gm. of scillonin in 2 cc. of acetic anhydride, followed by the addition of 0.1 cc. of sulphuric acid, agitate and cool; a rose color appears changing to violet then to green (this color reaction is due to the mixture presumably of aglucones). Dissolve about 0.2 Gm. of scillonin in 25 cc. of ethyl alcohol, add 1 cc. of sulphuric acid and heat the mixture under a reflux condenser on a steam-bath for six hours. The resinification of the presumably mixed aglucones separates in the form of yellowish brown oily droplets, which on cooling solidify into a brownish waxy mass; remove the hydrolytic residue by filtration: the filtrate contains nonhydrolyzed substances and a cleaved sugar. Boil about 2 cc. of the filtrate with 5 cc. of alkaline cupric tartrate solution: a reduction of the latter results. Dissolve about 0.1 Gm. of scillonin in 5 cc. of a 10 per cent solution of sodium hydroxide and add about 0.1 cc. of a 1 per cent solution of cupric sulphate; a violet color does not appear (absence of soluble protein). Dissolve about 0.01 Gm. of scillonin in 5 cc. of ethyl alcohol and add 0.1 cc. of a 5 per cent solution of ferric chloride; a greenish yellow color results (absence of tannins). Dissolve about 0.1 Gm. of scillonin in 5 cc. of a 10 per cent solution of sodium hydroxide solution and add 10 cc. of boiling alkaline cupric tartrate solution: no reduction of latter appears immediately (absence of free reducing sugars).

Ignite about 0.1 Gm. of scillonin, accurately weighed: the residue does not exceed 0.25 per cent. Dry about 0.2 Gm. of scillonin, accurately weighed, over sulphuric acid in a partially exhausted desiccator for forty-eight hours at 20 C.; the loss in weight does not exceed 4 per cent. Dissolve about 0.5 Gm. of scillonin, accurately weighed, in 25 cc. of 95 per cent ethyl alcohol; observe the angular rotation at 20 C.: the specific rotatory power $[\alpha]_{20/D}$ falls between -18.0 and -21.5 . Transfer about 0.5 Gm. of scillonin, accurately weighed, previously dried over sulphuric acid in a partial vacuum, to a suitable Erlenmeyer flask, dissolve in 7 cc. of alcohol, followed by the addition of 7 cc. of a mixture of 1 cc. of sulphuric acid and 25 cc. of water; connect with condenser and "reflux" on a steam-bath for six hours; disconnect the condenser; neutralize the mixture with normal sodium hydroxide solution using phenolphthalein as an indicator; add 0.1 cc. of sulphuric acid; remove the alcohol by heating on the steam-bath until reduced to about a 10 cc. volume; add 10 cc. of water, mix thoroughly and evaporate to about 10 cc.; cool and collect the separated crystalline and dark waxy resinous residue on a filter paper, wash the residue with water using three portions of 10 cc. each; dissolve the residue in warm alcohol by passing it through the filter and collecting in a tared beaker; evaporate to a pilular consistency on the steam-bath and dry for three hours at 90 C.: the amount of hydrolytic residue found is not less than 70 per cent nor more than 75 per cent.

SUPPLEE B. ACIDOPHILUS MILK.—A whole milk cultured with *Bacillus acidophilus*. It contains not less than 200 million viable *B. acidophilus* organisms at the date of manufacture and not less than 100 million at the expiration date.

Actions and Uses.—See general article, Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1934, p. 250.

Dosage.—For adults 1,000 cc. per day, increased or decreased to meet individual requirements. When employed in infant

feeding, it may be diluted with boiled water. Supplee B. acidophilus milk must be kept in a cool place and should be used prior to the expiration date stamped on the label.

Manufactured by the Cheplin Biological Laboratories, Inc., Syracuse, N. Y. (Supplee-Willis-Jones Milk Co., Philadelphia, Pa., distributor). No U. S. patent or trademark.

Fresh whole cow's milk with a butter fat content of not less than 3 per cent is sterilized at 100 C. for two hours. After cooling to 37 C. the milk is inoculated with a twenty hour seed culture of pure strains of *Bacillus acidophilus*. After inoculation the milk is kept at 37 C. for from twenty to twenty-four hours until an acidity is reached such that 10 cc. will require for neutralization 8 cc. of tenth-normal sodium hydroxide solution, phenolphthalein being used as indicator. The product is then cooled, agitated until homogeneous and transferred to one-half pint, pint and quart bottles. The strains of *Bacillus acidophilus* used are isolated by Cheplin. To insure a high degree of activity and colonization within the human alimentary tract, the organism is freshly isolated from human intestinal contents as frequently as is found necessary through actual feeding experiments.

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1934, p. 417).

The following dosage forms have been accepted:

Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer) 5 cc. Vials: Each cubic centimeter contains sodium morrhuate-N. N. R. 0.05 Gm., benzyl alcohol 0.03 Gm., and phenol 0.005 Gm., in aqueous solution. Prepared by the Ulmer Pharmacal Co., Minneapolis. No U. S. patent or trademark.

Sodium Morrhuate 5% Solution with Benzyl Alcohol (Ulmer) 20 cc. Vials: Each cubic centimeter contains sodium morrhuate-N. N. R. 0.05 Gm., benzyl alcohol 0.03 Gm., and phenol 0.005 Gm., in aqueous solution. Prepared by the Ulmer Pharmacal Co., Minneapolis. No U. S. patent or trademark.

DILAUDID (See THE JOURNAL, June 16, 1934, p. 2024).

The following dosage form has also been accepted:

Dilaudid Rectal Suppositories 1/4 grain: Each contains dilaudid 0.0026 Gm. (1/4 grain) in a cacao butter base.

PHENOBARBITAL SODIUM (See New and Nonofficial Remedies, 1934, p. 100).

Phenobarbital Sodium-Mallinckrodt.—A brand of phenobarbital sodium-N. N. R.

Manufactured by the Mallinckrodt Chemical Works, St. Louis. No U. S. patent or trademark.

GYNERGEN (See New and Nonofficial Remedies, 1934, p. 202).

The following dosage form has been accepted:

Ampules Gynergen Solution 1:2000, 0.5 cc.: Each ampule contains 0.25 mg. of gynergen in an aqueous solution containing a small excess of tartaric acid.

PROCAINE BORATE-SEARLE (See New and Nonofficial Remedies, 1934, p. 59).

The following dosage form has been accepted:

Tablets Procaine Borate and Epinephrine: Each tablet contains procaine borate-Searle 0.05 Gm. (3/4 grain) and epinephrine 0.0001 Gm. (3/40 grain).

HOLOCAINE (See New and Nonofficial Remedies, 1934, p. 59).

The following dosage form has been accepted:

Holocaine Solution, 1 per cent: An aqueous solution containing holocaine, 1 per cent., for ocular anesthesia by instillation. The product is not to be used for injection.

RABIES VACCINE (See New and Nonofficial Remedies, 1934, p. 378).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Rabies Vaccine (Phenol Killed)-Mulford (See New and Nonofficial Remedies, 1934, p. 380): also marketed in packages of seven vials, each vial (one dose) containing 0.5 cc. of a 25 per cent suspension of brain tissue.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1934, p. 60).

Procaine Hydrochloride-Squibb.—A brand of procaine hydrochloride-U. S. P.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 50 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 100 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 120 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 150 mg.

Sterile Ampules Procaine Hydrochloride-Squibb (Crystals) for Spinal Anesthesia, 200 mg.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

1. BOWEY'S DARI-RICH SYRUP
2. BOWEY'S DARI-RICH POWDER
3. BOWEY'S PASTEURIZED DARI-RICH CHOCOLATE FLAVORED SWEETENED, PARTIALLY DEFATTED MILK

Bowey's, Inc., Chicago, submitted to the Committee on Foods (1) a syrup prepared from sucrose, water, cocoa, vanilla extract and a trace of agar called Bowey's Dari-Rich Syrup; (2) a powdered mix prepared from sucrose, cocoa, water, vanilla extract and agar (U. S. P.) called Bowey's Dari-Rich Powder, and (3) a pasteurized, chocolate flavored, sweetened, partially defatted milk, called Bowey's Pasteurized Dari-Rich Chocolate Flavored Sweetened, Partially Defatted Milk, prepared by (a) mixing partially defatted pasteurized milk (2 per cent milk fat) with "Bowey's Dari-Rich Syrup" or (b) mixing partially defatted milk (2 per cent milk fat) with sugar and "Bowey's Dari-Rich Powder."

Discussion of Name.—The name "Dari-Rich" applied to the syrup and powder phonetically implies that the products are rich in milk, whereas they contain no milk; applied to the mixture of syrup or powder and skim milk, it incorrectly suggests that the liquid ingredient is whole milk. Since a food containing whole milk has broader nutritional value than one prepared from skim milk, whole milk and skim milk foods should be carefully distinguished by name and advertising in order that the purchaser may not be misinformed.

The manufacturer was informed of the judgment of the Committee but has declined to alter the name for business reasons. These products will therefore not be listed among the accepted foods of the Committee.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary.



BERKSHIRE BRAND EVAPORATED MILK

Distributor.—Reading Wholesale Grocery Company, Reading, Pa.

Packer.—The Page Milk Company, Merrill, Wis.

Description.—Canned unsweetened sterilized evaporated milk, the same as Page Brand Evaporated Milk (Sterilized, Unsweetened), (THE JOURNAL, May 30, 1931, p. 1872).

GOOD MORNING PURE FLORIDA GRAPEFRUIT JUICE

GOOD MORNING PURE FLORIDA ORANGE JUICE

Distributor.—Chas. W. Bauermeister Company, Terre Haute, Ind.

Packer.—Dr. P. Phillips Company, Orlando, Fla.

Description.—Canned Florida grapefruit and orange juices sweetened with added sucrose and retaining in large measure the original natural vitamin content; the same as Dr. P. Phillips Pure Florida Grapefruit Juice (THE JOURNAL, Jan 7, 1933, p. 43) and Dr. P. Phillips Pure Florida Orange Juice (THE JOURNAL, Dec. 3, 1932, p. 1948).

MELLOW MILK—HOMOGENIZED, PASTEURIZED

Distributor.—Wayne Creamery, Detroit.

Description.—Bottled, pasteurized, homogenized milk.

Preparation.—Milk obtained from farms licensed by the Detroit Department of Health and under the supervision of the state of Michigan is delivered cold (4 C.) to the creamery, where it is pasteurized (held at 61 C. for thirty minutes), homogenized and filled in bottles by the usual procedure (THE JOURNAL, Sept. 1, 1934, p. 681).

Analysis.—Standardized to contain not less than 3.5 per cent of milk fat.

Calories.—0.7 per gram; 20 per ounce.

Claims of Distributor.—The cream does not separate. The curd formed in the stomach is softer than that from unhomogenized milk.

KENNETT MUSHROOMS BROTH—SLICED STEMS AND PIECES—FANCY BUTTONS—SLICED BUTTONS

Manufacturer.—Kennett Square Mushroom Company, Inc., Kennett Square, Pa., subsidiary of Edward H. Jacob, Inc., West Chester, Pa.

Description.—Hothouse mushrooms; respectively broth, sliced stems and pieces, buttons, and sliced buttons; the same as Jacob Mushrooms—Broth—Fancy Buttons—Sliced—Sliced Stems and Pieces (THE JOURNAL, Sept. 15, 1934, p. 838).

IRRADIATED VITAMIN D PASTEURIZED MILK

Distributors.—

Beatrice Creamery Company, Tulsa, Okla.
Biltmore Dairy Farms, Biltmore, N. C.
Carrigan's Niagara Dairy Company, Niagara Falls, N. Y.
(Golden Guernsey and Regular).
Clover Creamery Co., Inc., Roanoke, Va.
Gardner Creamery, Gardner, Mass.
Garst Bros. Dairy, Inc., Roanoke, Va.
Hunding Dairy Company, Chicago.
International Dairy Company, Chicago.
Kitsap Dairy, Bremerton, Wash.
Laurel Hill Creamery, Gardner, Mass.
Medosweet Dairies, Inc., Tacoma, Wash.
Merriman Dairy, Waterbury, Conn. (Fernwood).
Onondaga Milk Producers, Syracuse, N. Y. (Dairyalea).
Roanoke Dairy & Ice Cream Co., Inc., Roanoke, Va.
Rosedale Dairy, Norfolk, Va.
Sanitary Farm Dairies, Inc., Houston, Texas.
Sheboygan Dairy Products Co., Sheboygan, Wis.
J. H. Story & Son Dairy, New Haven, Conn.
W. Weckerle & Sons, Inc., Buffalo.
Whiting Milk Companies, Boston and Worcester, Mass.

Description.—Bottled pasteurized vitamin D milk irradiated with ultraviolet rays.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. For description of irradiation see THE JOURNAL, Oct. 7, 1933, page 1155.

Vitamins.—Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used. Contains 135 U. S. P. X (Revised, 1934) vitamin D units per quart.

Claims of Distributors.—Irradiated antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

THAMES VALLEY TOMATO JUICE

Distributor.—The Yantic Grain & Products Co., Norwich, Conn.

Packer.—Vincennes Packing Corporation, Vincennes, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the natural vitamin content; the same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 1, 1934

THE ATLANTIC CITY SESSION

The Atlantic City session of the American Medical Association (June 10-14, 1935) will be notable in many ways and unique in one particular: The Canadian Medical Association has accepted an invitation to meet with the American Medical Association on this occasion. At a joint conference of Canadian officials with the Council on Scientific Assembly recently held in Chicago, preliminary plans were developed. The general council of the Canadian Medical Association is to hold its meetings simultaneously with those of the House of Delegates of the American Medical Association. The Canadian medical profession has many economic, social and political problems of interest, which parallel considerations now being given to these topics by our own legislative bodies.

Social functions will be participated in by both organizations. The Canadian medical profession will have a prominent part in the programs of all the scientific sessions, and a duplicate set of officers will alternate in presiding over these meetings. At the opening general meeting the presidents of both organizations will read their annual addresses. Thus the speakers on this occasion, besides the usual officers of state and local organizations, will be Dr. James S. McLester for the American Medical Association, and Dr. Jonathan C. Meakins for the Canadian Medical Association. Many Canadians will take part also in the Scientific Exhibit. Special sections are being arranged on military medicine and the history of medicine and anesthesia, and all the usual sections of the American Medical Association will have their regular programs.

Because of the unusual character of this meeting, it is anticipated that the number of distinguished guests from abroad will also be larger than usual. The success of the general scientific meetings, which take place on Monday and Tuesday before the opening of the section meetings, has led to the selection of many special lecturers for the Atlantic City session, who will have from forty minutes to an hour for complete presentation of knowledge regarding various medical and surgical sub-

jects. These general scientific meetings are of the same scope as the clinical conferences held in various parts of the country under local auspices. The selection of the speakers and of the topics for these meetings lies with the Council on Scientific Assembly.

The last annual session of the Association, in Cleveland, was noteworthy for an extraordinary attendance, for the completeness of its scientific exhibit, and for the manner in which the programs of the sections covered a vast range of subjects in every medical specialty. With the participation by the Canadians, it is anticipated that the meeting in Atlantic City will be similarly broad and will at the same time present a new aspect afforded by the points of view of our Canadian visitors. It is quite a few years since the Association last met in Atlantic City. The Auditorium, built as a municipal project, offers the greatest convenience for such a meeting. All the sections and the Scientific and Technical Exhibits will be accommodated under one roof. The golf courses, the bathing and other vacation features of Atlantic City provide opportunity for relaxation and recreation as well as scientific pabulum. The accessibility to most of the large cities and to various sections of our country insures an attendance rivaling that of some of the greatest meetings ever held by the Association in other parts of the country. It is time now to begin to plan for attendance at the Atlantic City session and for what is sure to be an epoch-making event in the history of American medicine.

BISMUTH SUBNITRATE IN HYPERTENSION

Therapeutic research based on clinical observation presents the same inherent difficulties as do other forms of clinical investigation—the problem of adequate control. Probably the individual physical and mental variations of patients as well as the almost unavoidable bias of the physician interfere with such control. These factors can be minimized, however, by a critical attitude on the part of the recorder and the employment of enough patients to counterbalance largely the error due to individual variation.

Arterial hypertension offers a good example of both favorable and unfavorable factors influencing this type of study. The frequency of the condition allows the ready accumulation of data. This favorable factor is more than counterbalanced by the uncertainties of etiology,¹ varying form and degree of the hypertension, and especially by the frequent natural changes in blood pressure and symptomatology occurring in one individual from time to time. Finally, hypertension must be considered as a symptom rather than a disease per se and hence the effect of treatment on this symptom cannot necessarily be assumed to constitute a favorable treatment of the patient.

The use of bismuth subnitrate in the treatment of arterial hypertension is based primarily on the studies

1. de Wesselow, O. L. V.: Arterial Hypertension, *Lancet* 2: 579 (Sept. 15), 636 (Sept. 22), 687 (Sept. 29) 1934.

of Stieglitz.² It is founded on the conception of arterial hypertension as an arteriolar irritation of different probable etiologies, which is at least partially perpetuated by long continued fatigue of the arteriolar musculature. Eradication of the initiating factors, therefore, even when possible, is not always sufficient. It becomes rational, then, to attempt the relief of fatigue of the arteriolar musculature. It is in fulfilling this purpose, Stieglitz believes, that bismuth subnitrate aids in permitting the vitally necessary and prolonged physiologic rest of the injured structures—the medial musculature of the smaller arteries and arterioles. The mode of action of bismuth subnitrate is, he believes, the slow but continuous liberation of nitrate ions in the bowel, which permits continuous absorption of minute quantities of nitrite, since the nitrate is reduced to nitrite by the action of *Bacillus coli*.

At first glance this course of reasoning appears wholly logical. Several factors difficult of complete proof are involved. The curative effect of giving the arteriolar musculature transient artificial rest is speculative. Even more doubtful is the adequacy of such rest when produced by the theoretical absorption of minute quantities of nitrites supposedly derived from the ingestion of bismuth subnitrate. In the absence of immediate prospects of solving these involved questions the general use of this method of therapeutics should depend on the actual clinical results, since it seems unwise to discard clinically advantageous procedures of treatment because the exact mode of action is not thoroughly understood.

As a result of his studies on patients with the spastic type of arteriolar hypertension, Stieglitz evidently believes that the clinical results corroborate the theoretically good therapeutic action of bismuth subnitrate. Ayman³ was unable to duplicate these effects on fifteen carefully controlled patients. Recently Bruen⁴ also has criticized the conclusions of Stieglitz on the ground of insufficient control periods. He feels that a standardized procedure for determining the blood pressure, uniform frequency of visits during control and experimental periods, and the effect of nonspecific therapy can be provided for, which leaves only two variables apart from the long term trend; viz., adventitious influences and therapeutic actions. The effects of the latter may be readily distinguished by alternating control periods under nonspecific medication not sensibly different from the experimental medication with experimental periods under experimental medication. Thus, any alteration in the blood pressure that occurs during a period of experimental medication may be referred either to adventitious factors or to the medication, depending on its continuance or cessation on the

resumption of nonspecific medication. This procedure, according to Bruen, makes possible the prosecution of rigorously controlled experimentation on the effects of therapeutic agents in arterial hypertension.

Patients newly assigned or carried under the diagnosis of hypertension, unselected except with regard to their maintenance of cardiac compensation and regular sinus rhythm, were entered into his experimental series as they became available. All who proved amenable to the experimental routine based on the control factors previously outlined were retained except those who registered diastolic pressures regularly below 90 or who were eliminated through the development of heart failure or prolonged intercurrent illness. The final series consisted of twenty persons, ranging in age from 27 to 73 with a median of 51 years. In all these, bismuth subnitrate was without demonstrable effect on the blood pressure. The symptoms of dyspnea, palpitation, cardiac pain, dizziness and headache also pursued an independent course without reference to the administration or withdrawal of bismuth subnitrate. He therefore concludes that bismuth subnitrate by mouth, even in the largest therapeutically practicable dosage, does not develop sufficient nitrite action to exert any demonstrable effect on the blood pressure or symptoms of arterial hypertension.

PALILALIA AND GERTRUDE STEIN

The current vogue of a play called "Four Saints in Three Acts" and current interest in the writings of Gertrude Stein have been an interesting phenomenon for observation by the psychiatrists. Those familiar with such symptoms as automatic writing, palilalia, perseveration and verbigeration are inclined to wonder whether or not the literary abnormalities in which she indulges represent correlated distortions of the intellect, or whether the entire performance is in the nature of a hoax, and that Miss Stein produces her literary effusions with her tongue in her cheek. Palilalia is a form of speech disorder in which the patient repeats many times a word, a phrase or a sentence which he has just spoken. In addition, the speech tends to be uttered more and more quickly and less distinctly. For example, one patient described by MacDonald Critchley¹ was with his wife at a motion picture theater when he found himself reading aloud the captions of the films over and over again. (It has been alleged that there are many people suffering with this manifestation.) His wife, becoming annoyed, jabbed him in the ribs and said "For God's sake, Bob, shut up." But all the patient could reply was "I can't shut up. I can't shut up. I can't shut up," until eventually he did shut up because his speech became inaudible. In this case the patient was suffering from the results of an attack of epidemic encephalitis in which parkinson-

2. Stieglitz, E. J.: Therapeutic Results with Bismuth Subnitrate in Hypertensive Arterial Disease, *J. Pharmacol. & Exper. Therap.* 46: 343 (Nov.) 1932.

3. Ayman, David: Bismuth Subnitrate in the Treatment of Arteriolar (Essential) Hypertension, *J. A. M. A.* 98: 545 (Feb. 13) 1932.

4. Bruen, C.: The Therapeutic Efficacy of Bismuth Subnitrate in Arterial Hypertension, *Am. J. M. Sc.* 188: 21 (July) 1934.

1. Critchley, MacDonald: On Palilalia, *J. Neurol. & Psychopath.* 5: 23 (July) 1927.

ism gradually supervened. Of late, palilalia has been repeatedly mentioned as a sequela of epidemic encephalitis.

An analogous condition is palilogia, a term sometimes applied to that form of rhetoric whereby the word or sentence is deliberately repeated for purposes of emphasis. Then there is also verbal perseveration, with the same word or phrase repeated as though the original idea persisted for an undue length of time in the patient's mind to the exclusion of fresh incoming ideas. Sometimes there is echolalia, in which the patient repeats the statements or questions that have been put to him. Finally there is verbigeration, a frequent symptom in dementia praecox, in which the patient repeats the same sentence over and over again.

Now it is interesting in surveying the writings of Gertrude Stein to find that Miss Stein worked at Radcliffe with Münsterberg and that she wrote a paper, later printed in the *Harvard Psychological Review* for September 1896, under the title "Normal Motor Automatism," by Leon M. Solomons and Gertrude Stein. In their experiments, Mr. Solomons and Miss Stein attempted to investigate the limits of their own normal automatism, undertaking to see how far they could split their own personalities in a deliberate and purely artificial way. They were successful, according to B. F. Skinner,² to the extent of being able to perform many acts, such as writing or reading aloud, in an automatic manner while carrying on at the same time some other activity. Miss Stein reported that spontaneous automatic writing became easy after a little practice. Thus she said:

A phrase would seem to get into the head and keep repeating itself at every opportunity, and hang over from day to day even. The stuff written was grammatical, and the words and phrases fitted together all right, but there was not much connected thought. The unconsciousness was broken into every six or seven words by flashes of consciousness, so that one cannot be sure but what the slight element of connected thought which occasionally appeared was due to these flashes of consciousness. But the ability to write stuff that sounds all right, without consciousness, was fairly well demonstrated by the experiments.

Obviously, therefore, the writing of Miss Gertrude Stein, such as appears in her plays, books and poems, is quite the same as she developed when experimenting with spontaneous automatic writing. For those who are unfamiliar with the writing of Miss Stein, we mention the following examples from the book called "Tender Buttons":

When he could not be the longest and thus to be, and thus to be, the strongest.

This long time when he did this best time, and he could thus have been bound, and in this long time, when he could be this to first use of this long time . . .

A meal in mutton mutton why is lamb cheaper, it is cheaper because so little is more.

Mr. Skinner points out that the ordinary reader cannot infer from this writing that the author possesses

any consistent point of view, because there is seldom, if any, intelligent expression of opinion. Her writing seems to be the result of a stream of consciousness of a woman without a past. The stream of consciousness is, of course, particularly well exemplified in some of the writings of James Joyce in *Ulysses*. Mr. Skinner is convinced that this spontaneous automatic writing by Miss Stein is that of a second personality successfully split off from her conscious self, and unfortunately a personality without any background, intellectual opinions or emotions. The mere fact that Miss Stein herself occasionally appears in the midst of the writings of this second personality would seem to be the proof of the opinion.

Current Comment

PERNICIOUS ANEMIA: NATURE AND THERAPY

Recently Adams has summarized¹ for the British Ministry of Health recent advances in our knowledge of pernicious anemia. In his discussion of the investigations on etiology he cites the hypothesis, partially confirmed, that the liver stores an antianemic factor (the "liver active principle"), which is produced in the stomach as a result of enzyme action between hemopoietin (the "stomach active principle") and an unknown constituent of normal diet. It appears, moreover, that the active principle of gastric tissue is more unstable than that of liver. That of gastric tissue is destroyed by temperatures greater than 45 C., by autolysis and by prolonged digestion with pepsin or trypsin. Another difference between the two principles is that, whereas the active principle of liver is always found in the filtrate after removal of the proteins, in gastric juice a protein fraction can be obtained which holds the whole of hemopoietic activity. The fact that the two principles are not identical is a point of practical importance. A considerable portion of Adams's review concerns the potency and relative cost of different preparations used in the treatment of pernicious anemia. "At present," he states, "there is only one reliable test which can be applied to ascertain the potency of a preparation intended for use in the treatment of pernicious anemia and that is the clinical one." Hence the value assigned to whole liver, liver extracts by oral and parenteral administration, gastric tissue preparations and combinations of these must be based wholly on the assessment of clinical response. There are some advantages and disadvantages of each and some indications for one or the other. He incorporates most of these facts in a table at the end of the report. The spread in cost to the patient of the different preparations is particularly striking. This spread depends primarily on the widely varying activity of the preparations. This fact probably lacks the full appreciation of most physicians but should receive considerable study, since the results of therapy as well as the cost are at stake.

1. Adams, E. W.: Recent Researches on the Nature and Therapy of Pernicious Anemia, British Ministry of Health, Public Health Reports No. 75, His Majesty's Stationery Office, 1934, Price 6 d.

2. Skinner, B. F.: Has Gertrude Stein a Secret? *Atlantic Monthly* 153: 50 (Jan.) 1934.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows.

- December 6 Keep Fighting Diphtheria, W. W. Bauer, M.D.
- December 13. Shopping for Health, W. W. Bauer, M.D.
- December 20. Social Security, Morris Fishbein, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

- December 4. The Quick Lunch, W. W. Bauer, M.D.
- December 11. Care of the Handicapped, Morris Fishbein, M.D.
- December 18. Fight Tuberculosis With Modern Weapons, W. W. Bauer, M.D.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND MEDICAL LICENSURE

Tentative Program

The Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, Feb. 18 and 19, 1935. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 18, 10 A. M.

Report of the Council on Medical Education and Hospitals

Ray Lyman Wilbur, M.D., Chairman, Stanford University, Calif.

Should the Number of Professional Students Be Restricted?

Raymond Walters, Litt.D., President, University of Cincinnati

The History of Medical Licensure

Henry E. Sigerist, M.D., Director, Institute of the History of Medicine, Johns Hopkins University, Baltimore.

Larger Social Aspects of Medical Education

Richard E. Scammon, Ph.D., Dean of Medical Sciences, University of Minnesota Medical School, Minneapolis.

MONDAY, FEBRUARY 18, 2 P. M.

Objectives of the Campaign Against Tuberculosis

Kendall Emerson, M.D., Managing Director, National Tuberculosis Association, New York

Education of Physicians in Tuberculosis

James Alexander Miller, M.D., Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York.

Some Historical Aspects of Tuberculosis

Lawson Brown, M.D., Trudeau School of Tuberculosis, Saranac Lake, N. Y.

Function of the General Hospital in the Treatment of Tuberculosis

J. A. Myers, M.D., Professor of Medicine, Preventive Medicine and Public Health, University of Minnesota, Minneapolis

TUESDAY, FEBRUARY 19, 9 A. M.

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

Symposium Should the Practice of Radiology, Pathology and the Administration of Anesthetics Be Limited to Those Who Are Licensed to Practice Medicine?

Legal Aspects

William C. Woodward, M.D., Director, Bureau of Legal Medicine and Legislation, American Medical Association, Chicago

The Point of View of the Radiologist

B. R. Kirklin, M.D., Mayo Clinic, Rochester, Minn.

The Point of View of the Pathologist

J. P. Simonds, M.D., Professor of Pathology, Northwestern University Medical School, Chicago

The Point of View of the Anesthetist

F. H. McMechan, M.D., Secretary General, International Anesthesia Research Society, Rocky River, Ohio

The Point of View of the Surgeon

Karl A. Meyer, M.D., Medical Superintendent, Cook County Hospital, Chicago

The Point of View of the Internist

James S. McLeister, M.D., President Elect, American Medical Association, Birmingham, Ala.

The Point of View of the Hospital Administrator

Arthur C. Bachmeyer, M.D., Superintendent, Cincinnati General Hospital

Administrative Aspects

A. T. McCormack, M.D., Secretary, Kentucky State Board of Health, Louisville

The Point of View of the Licensing Board

Walter L. Biering, M.D., President, American Medical Association, Des Moines, Iowa

Are Interns Practicing Medicine?

Harold Rybins, M.D., Secretary, New York Board of Medical Examiners, Albany

TUESDAY, FEBRUARY 19, 2 P. M.

Osteopathy and Licensure

Frederick Etherington, M.D., Dean, Queen's University Faculty of Medicine, Kingston, Ont.

Post-Graduate Medical Teaching

Charles Gordon Heyd, M.D., Professor of Clinical Surgery, New York Post-Graduate Medical School, New York.

Daniel J. Glomset, M.D., Des Moines, Iowa.

Uniform Standards in Licensing Examinations

Charles B. Pinkham, M.D., Secretary, California Board of Medical Examiners, Sacramento

The Annual Dinner of The Federation of State Medical Boards of the United States will be held at the Palmer House, Chicago, on Monday, February 18, at 6:30 p. m., at which an address will be delivered by Dr. Henry E. Sigerist of Baltimore.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Stanley R. Parkinson, Marysville, has succeeded Dr. James H. Barr as health officer of Yuba County. —Dr. Denver D. Roos has been named health officer of Corona, following the retirement of Dr. William S. Davis.

Cult Initiatives Defeated.—Newspapers, November 8, reported that the chiropractic initiative in California was defeated almost two to one in voting returns. A signal defeat was also indicated for the naturopathic initiative. Incomplete returns appearing in these reports showed the following figures: For the chiropractic initiative, 340,921 were in favor while 589,360 were against it, and for the naturopathic initiative, 183,809 voted for it and 307,459 against it.

Society News.—Speakers before the Los Angeles Surgical Society, November 16, included Drs. Crayton C. Snyder on "Pulmonary Abscess with Pneumothorax Complicating Partial Gastric Resection for Carcinoma of the Stomach"; Harry T. Upshaw, "Ileus Following Trauma," and John H. Breyer, "Pancreatic Injuries." All are from Pasadena.—Dr. Burrell O. Raulston spoke before the Hollywood Academy of Medicine, November 15, on "Present-Day Medical Education"—Dr. Robert R. Newell, San Francisco, addressed the San Diego Academy of Medicine, November 23, on "Recent Advances in Methods of Roentgen Diagnosis."—Dr. William L. Weber, Los Angeles, addressed the San Diego County Medical Society, November 13, on medicolegal testimony.—Dr. Clarence G. Toland addressed the Los Angeles County Medical Association, November 1, on "The Status of Medicine."

COLORADO

University News.—Dr. Oscar M. Gilbert, associate professor of medicine, University of Colorado School of Medicine, was made emeritus professor of medicine, following his recent resignation as associate professor. He has been connected with the school since 1900. Dr. Thomas D. Cunningham has resigned as assistant professor of medicine.—Dr. Philip Hillkowitz, Denver, has been appointed associate professor of chemistry at the University of Denver and will have charge of a newly established course in medical technology, Science reports.

DISTRICT OF COLUMBIA

Course in Otorhinolaryngology.—Prof. Georges Portmann, professor of otorhinolaryngology, University of Bordeaux Faculty of Medicine, will conduct a course in otorhinolaryngology in Washington, January 31-February 6. Further information may be had from Dr. James A. Flynn, 1151 Rhode Island Avenue, N.W., Washington, who is in charge of arrangements.

Society News.—At a meeting of the Washington chapter of the Pan American Medical Association, October 28, the speakers were Col. Fielding H. Garrison, Baltimore, on Spanish medicine; Dr. Fred H. Albee, New York, bacteriophage in the treatment of bone and joint infections, and Dr. Robert Gutierrez, New York, horseshoe kidney. A one minute period of silence opened the meeting in commemoration of the late Dr. Santiago Ramón y Cajal of Madrid.

GEORGIA

Science Lecture Series.—The University of Georgia Science Club is sponsoring a series of lectures to demonstrate the usefulness of laboratory work in industry and the professions, including medicine and public health. Dr. Allen H. Bunce, Atlanta, secretary of the state medical association, opened the series, October 24, with a talk on Georgia health problems.

Society News.—A symposium on anemia constituted the program of the Burke, Jenkins, Sereven Counties Medical Society at Millen, October 4; the speakers were Drs. Randall G. Brown, Garfield; Quinney A. Mulkey, Millen, and Cleveland Thompson, Millen.—Dr. George W. Fuller was elected president of the Fifth District Medical Society at its recent annual meeting, succeeding Dr. Joseph Yampolsky.—In a paper before the Fulton County Medical Society, Atlanta, November 15, Dr. Benjamin H. Clifton reviewed mortality following operation on the thyroid gland in Atlanta during the past five years. Dr. John D. Martin Jr., Atlanta, discussed "Pathologic Physiology of Burns" before the society, November 1.

ILLINOIS

Society News.—Speakers before the staff of Paris Hospital, Paris, November 1, were Drs. Harry A. Oberhelman, Chicago, and Roland M. Klemme, St. Louis, on "Tumors of the Breast" and "Diagnosis and Treatment of Brain Tumors."—Dr. Richard H. Jaffe, Chicago, addressed the Peoria City Medical Society, November 20, on endocarditis; he also addressed the dinner meeting on essential hypertension.—Dr. Oliver S. Ormsby, Chicago, gave an illustrated lecture before the Sangamon County Medical Society, Springfield, October 30, on mycotic infections of the skin.—Dr. William C. Danforth, Evanston, discussed the treatment of abortion before the Bureau County Medical Society in Spring Valley, November 6.—Dr. Ralph T. Hinton, managing officer of the Manteno State Hospital, addressed a meeting in Elgin, October 24, on "Newer Treatment for Paresis."

Chicago

Society News.—Dr. Frankwood E. Williams, New York, addressed the Illinois Society for Mental Hygiene, November 23, on "Mental Hygiene and Social Forces."—Drs. Leonard E. Markin and Irving J. Shapiro addressed the Chicago Society of Allergy, November 19, on "Role of Allergy in Genito-Urinary Diseases."—The Chicago Neurological Society was addressed, November 15, by Drs. George B. Hassin and Theodore T. Stone on "Subacute Combined Degeneration of the Spinal Cord with Epidural Hemorrhage"; Stephen W. Ranson, "Some Functions of the Hypothalamus," and Howard Zeitlin, "Unusual Tumors of the Pineal Body."—At a meeting of the Chicago Ophthalmological Society, November 19, the speakers were Drs. Palmer W. Good on "An Intranasal Operation for Restoring the Normal Function of the Lacrimal Duct"; Oscar B. Nugent, "Recession Operation with Suture Control," and Elias Selinger, "A New Treatment of Trachoma."—Dr. Bernard Myers, London, England, discussed "Essential (Thrombocytopenic) Purpura Hemorrhagica" before the Chicago Pediatric Society, November 20.—At a meeting of the Institute of Traumatic Surgery, November 20, Dr. Edson B. Fowler, Evanston, Ill., talked on "A New Operation for Habitual Dislocation of the Shoulder," and Dr. Harry R. Hoffman, "The Traumatic Neuroses."—Dr. Robert H. Crawford, Indianapolis, addressed the Chicago Society of Clinical Laboratory Technicians, November 20, on "Recent Discoveries in Anemias and Blood Volume Determination."

INDIANA

District Meeting.—At the annual meeting of the Thirteenth District Medical Society, November 7, in Michigan City, the following program was presented:

Dr. Kenneth T. Knode, South Bend, Recent Advances of Pediatrics.
Dr. George S. Bond, Indianapolis, Heart Disease in Children.
Dr. Homer G. Hamer, Indianapolis, Problems of the Prostate and the Limits of Resection.

A banquet concluded the session. Addresses were given by Dr. Everett E. Padgett, Indianapolis, on "Medical Organization from an Economic Standpoint" and Dr. Roscoe L. Sensenich, South Bend, "Present Status of Health Insurance and State Medicine."

Society News.—The Indiana State Medical Association created a section on anesthesia at its recent annual meeting.—Speakers before the Northwestern Academy of Medicine at Kendallville, October 25, included Drs. John S. Coulter,

Chicago, on "Treatment of Chronic Arthritis," and Everett E. Padgett, Indianapolis, "Medical Legislation."—Dr. Karl A. Menninger, Topeka, addressed the Terre Haute Academy of Medicine, October 5, on "Limitations in the Therapeutic Application of Psychoanalysis."—A symposium on undulant fever was presented before the Indianapolis Medical Society, November 13, by Leo P. Doyle, Ph.D., associate in animal pathology, Purdue University, and Dr. John A. MacDonald. Dr. Roy W. Scott, Cleveland, discussed vascular disease at the society's meeting, October 30.—Dr. Matthew Winters, Indianapolis, discussed "Nutritional Diseases and Infant Feeding" before the Tippecanoe County Medical Society in Lafayette, November 8.

MARYLAND

Term of Health Commissioner Extended.—Under a recent amendment to the city charter, the term of the health commissioner of Baltimore is now six years instead of the previous four year appointment. It provides that Dr. Huntington Williams' term will expire Oct. 1, 1938, instead of Oct. 1, 1935. The change was a part of the charter revision program sponsored by Mayor Jackson, and will, he expects, take the position of health commissioner out of politics. The amendment also makes it mandatory for a candidate for this office to have at least five years' actual experience in public health work performed by departments of federal, state or municipal governments.

Society News.—The Medical and Chirurgial Faculty of Maryland held a joint meeting with the Medical Society of the District of Columbia, November 16, with the following speakers: Dr. Walter Freeman, "Malaria Treatment of Neurosyphilis"; Dr. Charles Armstrong, "Etiology and Distribution of Encephalitis (St. Louis Type) in the United States"; Drs. James F. Mitchell and Alexander B. Moore, "Duodenal Ulcer: Surgical and Roentgenologic Aspects," and Dr. Henry L. Darner, "The Preliminary Care of the Cervix in Supravaginal Hysterectomy."—A recent meeting of the Allegany-Garrett County Medical Society was addressed by Drs. Lawson Wilkins and George E. Bennett, Baltimore, on "Management of Measles, with Special Reference to the Use of Convalescent Serum," and "Management and After-Treatment of Poliomyelitis," respectively.

MASSACHUSETTS

Medical Pageant.—The evolution of the concept of circulation and respiration was the theme of the 1934 medical pageant presented, November 19, by students of Tufts Medical College under the auspices of the Boston Medical History Club. The history of midwifery was portrayed by women students of the school. There was an exhibition of the texts of the characters represented, selected from the material in the Boston Medical Library. The students write their own parts in these pageants, after research into the writings of the scientists whom they are to represent. The director of the library, Mr. J. F. Ballard, does the editing. The pageants have been produced annually since 1929.

MICHIGAN

Maimonides Anniversary.—The eight hundredth anniversary of Maimonides will be observed in 1935, probably in March, in a joint celebration of the silver jubilee of the Maimonides Medical Society of Detroit. Maimonides was a physician, rabbi and sage of the twelfth century.

Society News.—Speakers before the Wayne County Medical Society, November 19, were Drs. James M. Stanton on "Problems Presented by the Constitutional Psychopath"; Harry E. August, "Newer Attitudes Toward Mental Abnormalities," and Heinrich A. Reye, "Neurotic Reactions in Marriage." All are of Detroit.—Dr. William E. Keane addressed the Bay County Medical Society in Bay City, November 14, on "Transurethral Prostatectomy."—Dr. Joseph C. Bloodgood, Baltimore, addressed a public meeting in Jackson, under the auspices of the woman's auxiliary of the Jackson County Medical Society, on cancer.

University News.—The University of Michigan Pediatrics and Infectious Disease Society met in Ann Arbor, November 23-24; speakers included Dr. Louis W. Sauer, Evanston, Ill., on "Early Diagnosis of Whooping Cough and the Use of Vaccine as a Preventive Measure"; Dr. Harold B. Rothbart, Ann Arbor, "Myasthenia Gravis in Children." The evening session, Friday, was an open forum on the endocrines with the following speakers: Drs. Elwood A. Sharp, Detroit; Robert L. Schaefer, Detroit, and John L. Law, Ann Arbor. Saturday morning was devoted to a discussion of allergy by Emma L. Wardell, Drs. David M. Cowie and Meryl M. Fenton, all of Ann Arbor, and Dr. Samuel Levin, Detroit.

Annual Clinic.—The Highland Park Physicians' Club will hold its ninth annual clinic day, December 5. According to the tentative program, the following physicians will speak:

- Dr. Edward J. Stieglitz, assistant clinical professor of medicine, Rush Medical College, Chicago, Hypertension.
Dr. John W. Carmack, associate professor of rhinology, otology and laryngology, Indiana University School of Medicine, Indianapolis, Otitis Media and Its Complications.
Dr. Arthur W. Stillians, professor of dermatology, Northwestern University Medical School, Chicago, Dermatology in General Practice.
Dr. Arthur M. Mendenhall, professor of obstetrics, Indiana University School of Medicine, Newer Things in Obstetrics.
Dr. Thomas D. Allen, associate clinical professor of ophthalmology, Rush Medical College, Chicago, Eye Manifestations of Systemic Disease.
Dr. Claud R. G. Forrester, clinical professor of surgery, Loyola University School of Medicine, Chicago, Fractures.
Dr. Edward A. W. Morgan, senior demonstrator in pediatrics, University of Toronto Faculty of Medicine, Cyanosis of the New-Born.
Dr. Ellis Fischel, associate professor of surgery, St. Louis University School of Medicine, Cancer of the Breast.
Dr. Russell L. Haden, on the staff of the Cleveland Clinic, Problem of Chronic Arthritis.

MINNESOTA

Dr. Woodworth Honored.—Dr. Elizabeth A. Woodworth, bacteriologist of the Minneapolis health department since 1913, was honorably retired on her seventieth birthday, October 30. She had been connected with the department since 1901. Associates presented her with a wrist watch. The Hennepin County Medical Society also honored Dr. Woodworth with a gift of a silver bowl bearing the following inscription: "Dr. Elizabeth A. Woodworth, for Thirty-Three Years of Unusual Service to Humanity, Hennepin County Medical Society, October 29, 1934." Dr. Woodworth is a graduate of the Minneapolis College of Physicians and Surgeons.

MISSISSIPPI

Society News.—Speakers before the South Mississippi Medical Society at a recent meeting included Drs. James S. McLester, Birmingham, Ala., President-Elect, American Medical Association, on "Deficiency Diseases as a Clinical Problem"; Eugene B. Vickery, New Orleans, "Treatment of Acute Gonorrhea"; Eugene A. Bush, Laurel, "Spontaneous Rupture of an Apparently Normal Spleen"; Thomas B. Sellers, New Orleans, "Indications for Therapeutic Abortion"; William H. Anderson, Booneville, "Appendicitis"; Van C. Temple, Hattiesburg, "Otitis Media in Infancy," and Lew Wallace, president of the Mississippi Pharmaceutical Association, "The New Pharmacy Law as It Applies to the Physicians, Druggists and the Public." Dr. Hugh L. McKinnon, Hattiesburg, conducted a round table on the toxemias of pregnancy.

MISSOURI

Tuberculosis Conferences.—The third annual clinical conferences on tuberculosis held by the St. Louis Health Department opened November 5. The first conference, November 5-22, was given over to a general consideration of tuberculosis, while the second, November 8-26, and third, November 15-December 3, were symposiums on laboratory diagnosis and on diagnosis and treatment of complications of pulmonary tuberculosis, respectively. A general consideration of the disease is the subject of the last session, November 19-December 6. The conferences were held at Isolation and Koch hospitals and were presented to interest the general practitioner.

Society News.—Speakers before the Jackson County Medical Society, November 13, were Drs. John Aull on "Vitamins A and D and the Common Cold" and John McLeod, "Trichinosis."—At a meeting of the Nodaway County Medical Society, November 7, Dr. Wilson A. Myers discussed the diagnosis and treatment of diaphragmatic hernia, and Dr. Claude J. Hunt, Kansas City, surgery of the stomach.—Dr. Richard L. Sutton, Kansas City, addressed the Cole County Medical Society in Jefferson City, October 31, on diagnosis and treatment of cancer of the skin; in the evening he gave a talk on Africa, India, Indo-China and the Arctic.

MONTANA

Society News.—Dr. Ernest D. Hitchcock, Great Falls, among others, addressed the Yellowstone Valley Medical Society in Laurel, on "Gastric Analyses."—Speakers at a meeting of the Eastern Montana Medical Association and the Northeastern Montana Medical Association at Circle in October included Drs. Everett N. Jones, Wolf Point, on "Gangrene of the Omentum with Recovery," and Malcolm D. Winter, Miles City, "Tularemia Pneumonia."—The Mount Powell Tri-county Medical Society was entertained, October 9, by Drs. Eugene G. Wilcox, Drummond, and Arthur C. Knight, Philips-

burg. In addition to the hosts, speakers included Dr. James C. Shields, Butte, and Judge D. M. Duefee, Philipsburg.—The Glacier County Medical Society is being organized, according to the *Journal-Lancet*.

NEW YORK

Program for Tuberculosis Control.—The Buffalo Board of Health has recently adopted a comprehensive, coordinated program for the control of tuberculosis. A tuberculosis division will be created in the health department, with a director who will be responsible for details concerning admission to clinics and for their clinical and nursing staffs, hospital admissions, social service, financial investigations, educational and occupational programs. The proposed program also calls for construction of a preventorium for children who show malnutrition and removal of children from homes in which there are open cases. Changes in the present arrangements for admission of patients to hospitals are also contemplated.

Society News.—Dr. Timothy B. Leary, medical examiner of Suffolk County, Boston, addressed the Medical Society of the County of Albany, November 17, on "Atherosclerosis: The Most Important Form of Arteriosclerosis, A Metabolic Disease."—Drs. Walford T. Rees, Burlington, Vt., and Leo F. Schiff, Plattsburg, addressed the Franklin County Medical Society, Malone, October 24, on "Treatment of Burns" and "Practical Management of Diabetes," respectively.—Dr. William T. Getman, Buffalo, addressed the Utica Academy of Medicine, November 15, on "Bleeding During Pregnancy and Labor—Causes, Differential Diagnosis and Treatment."—Dr. Charles J. Barone, Pittsburgh, addressed the Jamestown Medical Society, October 25, on treatment of puerperal sepsis.

Dr. Parran Resigns from Radio Advisory Council.—Dr. Thomas Parran Jr., Albany, state health officer, resigned from the public health committee of the National Advisory Council on Radio in Education, November 20, after the Columbia Broadcasting System had refused to permit him to mention control of syphilis in a radio talk on "Public Health Needs." A brief nontechnical reference to life-saving possibilities through scientific control of the disease had been approved by Levering Tyson, secretary and director of the advisory council, before the last minute ban was laid down. A bulletin from the state department of health points out that as assistant surgeon general in the U. S. Public Health Service in charge of the division of venereal diseases, as health commissioner of New York and as an official of the American Social Hygiene Association, Dr. Parran has advocated a public health attack on venereal diseases. The statement also cited the fact that a large insurance company recently ran a series of advertisements throughout the country on the menace of syphilis. Summing up the needs for public health, he mentioned syphilis as one of the problems against which a frontal attack should be made. To accomplish these results he urged a full time, well trained health officer for every city and every county; a well organized health department in each state; a simplification of the present cumbersome and disjointed federal health machinery through a federal department of health.

New York City

Third Harvey Lecture.—The third lecture of the season before the Harvey Society will be given, December 20, at the New York Academy of Medicine by Dr. Wilbur A. Sawyer, associate director, International Health Division, Rockefeller Foundation. Dr. Sawyer's subject will be "The Present Geographical Distribution of Yellow Fever and Its Significance."

Sims Statue Rededicated.—A bronze statue of Dr. James Marion Sims, eminent surgeon and gynecologist and founder of the Woman's Hospital, was unveiled in Central Park, October 21. The statue, originally dedicated Oct. 20, 1894, first stood in Bryant Park but was placed in storage several years ago when the park was torn up. Now it stands on a pedestal in the park facing Fifth Avenue and One Hundred and Third Street opposite the building of the New York Academy of Medicine. Dr. Bernard Sachs, president of the academy, Dr. George Gray Ward, representing the Woman's Hospital, John H. Finley, LL.D., editor of the *New York Times*, and W. Earle Andrews, representing the park department, made addresses at the ceremonies, and Dr. Alice Gregory, a granddaughter of Dr. Sims, unveiled the statue. Dr. Sims died in 1883.

Medical and Dental Meeting.—The fourth annual combined medical-dental meeting sponsored by the joint committee of the organized medical and dental professions of Greater New York will be held at the Hotel Pennsylvania, December 3. Papers will be presented by Drs. Samuel C. Burchell and Joseph Schroff on "The Burning Tongue" and by Dr. Isadore

Rosen on "Dermatologic Manifestations of Oral Diseases and Oral Manifestations of Systemic Diseases." At an evening session Dr. Edward C. Rosenow, Rochester, Minn., will speak on "Importance of Focal Infection as Related to Health," and Frank M. Casto, D.D.S., president of the American Dental Association, on "Transition in the Art and Science of Dentistry." Dr. Maurice O. Magid will present the results of a questionnaire sent to medical and dental colleges in the United States and Canada.

Society News.—A symposium on socialized medicine was presented before the Medical Society of the County of Queens, October 30, by Drs. Thomas Parran Jr., state health commissioner; Samuel J. Kopetzky and Nathan B. Van Etten and Goodwin Watson, Ph.D., associate professor of education, Teachers College, Columbia University. Dr. Angelo L. Soresi gave an afternoon lecture before the society, November 2, on cancer of the colon and rectum. Dr. William Bierman addressed the New York Physical Therapy Society, November 7, on "Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Disease." Dr. Mervin C. Myerson addressed the Medical Society of the County of Kings, November 20, on "Petrous Pyramid Suppuration (Petrositis)" and Alexander O. Gettler, Ph.D., "The Role of Toxicology in the Medical Legal Autopsy." At a meeting of the New York Surgical Society, November 14, Dr. Mont R. Reid, Cincinnati, presented a paper on "Vascular Diseases of the Extremities," which was discussed by Drs. Louis G. Herrmann, Cincinnati; Leland S. McKittrick, Boston, and William J. Merle Scott, Rochester. Dr. Marion E. Kenworthy addressed the Women's Medical Association of New York City, November 14, on "Emotional Factors in Physical Disorders." A symposium on various phases of psychiatry and psychoanalysis was presented at a meeting of the International and Spanish-Speaking Association of Physicians, Dentists and Pharmacists, November 16, by Drs. Frank Percy, George W. Henry and Alfred Adler; Victor E. Sears, D.D.S., and Lyon Jacobs, Montreal, Canada, attorney. Dr. Boris M. Fried addressed the New York Roentgen Society, November 19, on primary carcinoma of the lung. A symposium on nonmalignant tumors of bone was presented before the New York Pathological Society and the section of surgery of the New York Academy of Medicine, November 22, by Drs. Francis Carter Wood, Raymond W. Lewis and Bradley L. Coley.

NORTH CAROLINA

State Health Officer Appointed.—Dr. Carl V. Reynolds, Asheville, president of the state board of health, has been appointed acting state health officer to succeed Dr. James M. Parrott, who died November 7. Dr. Reynolds was health officer of Asheville for twenty years and has served as president of the Buncombe County Medical Society and the Medical Society of North Carolina. Dr. Sylvester D. Craig, Winston-Salem, succeeded Dr. Reynolds as president of the state board of health.

University News.—A two day course in fractures was presented at Duke University School of Medicine, Durham, October 12-13. Physicians who gave addresses and demonstrations included Drs. Philip D. Wilson, New York; William M. Roberts, Gastonia, and Oscar L. Miller, Charlotte; H. Earle Conwell, Fairfield, Ala.; Frank Adelbert Hoshall, Charleston, S. C.; Joseph Warren White, Greenville, S. C.; Hugh A. Thompson, Raleigh; Guy W. Leadbetter, Washington, D. C., and Claude C. Coleman, Richmond. A similar course was given for Negro physicians, October 16.

Society News.—Dr. Francis Bayard Carter, Durham, addressed the Guilford County Medical Society, Greensboro, November 1, on "Management of Breech Presentations." Dr. Robert A. Ross, Durham, among others, addressed the New Hanover County Medical Society, Wilmington, September 20, on "Functional Uterine Bleeding." The Wayne County Medical Society celebrated the thirtieth anniversary of its organization at a banquet, October 5, in Goldsboro. Dr. Claude C. Coleman, Richmond, Va., made an address on injuries to the brain. Drs. Paul H. Ringer, Asheville, president-elect of the state medical society; Charles S. Mangum, dean, University of North Carolina School of Medicine, Chapel Hill, and Wilburt C. Davison, dean, Duke University School of Medicine, Durham, made impromptu talks.

OHIO

Personal.—Dr. Max M. Zininger has been appointed assistant dean at the University of Cincinnati School of Medicine, and Lawrence O. Morgan, Ph.D., has been promoted to associate professor of anatomy.

Health Officers' Meeting.—The fifteenth annual conference of health commissioners with the state department of health was held in Columbus, November 14-16. Among speakers were Drs. Frank G. Boudreau, acting chief of the Health Section of the League of Nations, Geneva, Switzerland, formerly connected with the state department of health; Henry J. Gerstenberger, Cleveland, on "Tuberculosis in Children and the Mantoux Test"; Arthur G. Helmick, Columbus, "Nutritional Fads and Facts from the Viewpoint of the Clinician," and Clayton C. Perry, Cleveland, "Anebirosis." Dr. William G. Rhoten, Wooster, was elected president.

PENNSYLVANIA

Illegal Practitioners Prosecuted.—A list of illegal practitioners prosecuted by the bureau of law enforcement of the department of public instruction during the period January 1 to October 1 includes the following cases in which the defendants were convicted:

Mrs. M. W. Rhone, Mount Union, fined \$10 and costs.
V. M. Domke, Philadelphia, six months imprisonment.
John K. Rastakis, Greencastle, fined \$200 and costs.
G. A. Statti, McKees Rocks, fined \$50 and costs.
A. M. Bailey, Philadelphia, fined \$100 and costs.
J. F. English, Shamokin, fined \$100 and costs.

Philadelphia

Personal.—The Physicians' Square Club gave a testimonial dinner, October 30, in honor of Dr. Joseph B. Wolfe, who is resuming practice after several months' illness.

Gross Lecture.—Dr. Shields Warren, Boston, will deliver the annual Gross Lecture of the Pathological Society of Philadelphia, December 13, on "Recent Advances in the Pathology of the Thyroid Gland."

Society News.—Speakers before the Philadelphia Pediatric Society, November 13, were Drs. Milton Rappaport, on "The Antirachitic Value for Infants of Irradiated Evaporated Milk"; William H. Crawford, Highland Park, Ralph M. Tyson and Miss Katharine Enright, "Weight Loss in the New-Born," and Damon B. Pfeiffer and Jonathan K. Williams-Wood, Willow Grove, Pa., who reported a case of cancer of the transverse colon in a 7 year old boy. Asthma and sensitization were topics of a symposium presented before the Philadelphia County Medical Society, November 28, by Drs. Richard A. Kern, James A. Clarke Jr. and Harry B. Wilmer. Dr. Albert C. Furstenberg, Ann Arbor, Mich., addressed the section on otolaryngology of the College of Physicians of Philadelphia, November 21, on "Osteomyelitis of the Skull and Osteogenic Processes in the Repair of Cranial Defects." Drs. Bernard J. Alpers and Joseph C. Yaskin, among others, addressed the Philadelphia Neurological Society, November 23, on "Recurrent Subarachnoid Hemorrhage."

Pittsburgh

Society News.—Speakers at the meeting of the Allegheny County Medical Society, November 20, were Drs. Joseph S. Baird, on "Preventive Treatment of Measles"; Harry M. Margolis, "Conditions Masquerading as Arthritis," and Theodore O. Elterich, "Gonorrhea in the Child." Dr. C. Howard Marcy, among others, addressed the Pittsburgh Academy of Medicine, November 13, on "The Race Factor in Tuberculosis, with Special Reference to the Negro." Dr. John S. Lewis Jr., Youngstown, Ohio, presented a paper on multiple urograms before the Pittsburgh Urological Association, November 13.

TENNESSEE

Sectional Meeting.—The eightieth semiannual meeting of the Middle Tennessee Medical Association was held in Lawrenceburg, November 8-9. Speakers included Drs. William S. Rude, Ridgetop, on "Intestinal Tuberculosis"; Carl R. Crutchfield, Nashville, "Cancer of the Lip and Jaw"; Leonard W. Edwards, Nashville, "Indications for Surgical Treatment of Gastric and Duodenal Ulcer," and Leo C. Harris, Lawrenceburg, "Management of Typhoid Fever." The address of the president, Dr. Theodore Morford, Nashville, was on health insurance. Dr. James R. Connell, Adams, was elected president.

Society News.—Dr. Edwin L. Ellis, Maryville, was elected president of the East Tennessee Medical Association at the annual meeting in Maryville, October 2. Drs. Claude E. Tubbs, Sparta, and James Fred Terry, Cookeville, addressed the Five County Medical Society (Cumberland, Overton, Putnam, Jackson and White counties), September 20, on iritis and hemorrhage in obstetrics, respectively. At a meeting of the Dyer, Lake and Crockett Counties Medical Society, October 3, speakers were Drs. John O. Manier, Nashville, president of the Tennessee State Medical Association, on "The Program for Reorganization of the State Health Department"; Harrison

H. Shoulders, Nashville, secretary of the association, "State Medicine," and Lucius C. Sanders, Memphis, "Diseases of the Colon."—Drs John L. Cooley and Olango G. Hughes, Chattanooga, addressed the Hamilton County Medical Society, Chattanooga, November 15, on "Diseases of the Rectum" and "Intestinal Intoxication," respectively.—Dr. Albert Weinstein addressed the Nashville Academy of Medicine and Davidson County Medical Society, November 13, on "Diagnosis and Treatment of Addison's Disease."

TEXAS

Surgeons' Meeting.—Drs. Gordon B. New, Rochester, Minn., and Edwin P. Sloan, Bloomington, Ill., were guest speakers at a meeting of the Texas Surgical Society in Houston, October 8-9, discussing "Current Problems in Reconstructive Surgery of the Face and Neck" and "Procidencia," respectively. Dr. Ernst W. Bertner, Houston, was elected president and Dr. Richard J. White, Fort Worth, secretary.

Society News.—A symposium on treatment of syphilis was presented at a meeting of the El Paso County Medical Society, September 10, by Drs. Adolf W. Multhaupt, Leslie M. Smith and Chester D. Awe, El Paso; Dr. Robert B. Homan, El Paso, spoke on "The Value and Limitations of the X-Rays in the Diagnosis of Pulmonary Tuberculosis."—Drs. Byron Arthur Jenkins and Gustave E. Henschen, Sherman, addressed the Grayson County Medical Society, Sherman, September 12, on "External Heat as a Cause of Fever in Children" and "Backache," respectively.—Dr. Leonard A. Myers, Houston, among others, addressed the Harris County Medical Society, Houston, September 12, on "Gas Bacillus Infection."—Speakers before the Jefferson County Medical Society, Port Arthur, September 10, were Drs. Frank J. Beyt, Port Arthur, on "Recent Advances in Treatment of Pertussis" and Leslie C. Powell, Beaumont, "Carcinoma of the Cervix."—Mrs. Margaret Sanger, New York, addressed the Dallas County Medical Society, November 22, on "Operation of Birth Control Clinics."

WISCONSIN

Society News.—Speakers at a meeting of the Vernon-Monroe-Juneau Counties Medical Society, October 4, were Drs. Harold E. Marsh and Herbert W. Virgin Jr., Madison, on "Management of Heart Disease" and "Fractures of Hands and Feet," respectively.

Weyauwega Honors Dr. Jones.—The fiftieth anniversary of Dr. Edward H. Jones's entrance into medical practice was celebrated by the town of Weyauwega, November 4, with a reception arranged by the Lions Club and attended by more than 600 persons. Among the audience were the first child at whose birth Dr. Jones officiated, now a woman of 50, and the latest, a month old infant. Dr. Jones began his practice in Weyauwega Nov. 8, 1884, shortly after his graduation from Rush Medical College, Chicago. He has for many years been president of a local bank and for years was president of the town school board.

GENERAL

Personal.—Drs. Hugh S. Cumming, surgeon general of the U. S. Public Health Service, Washington, D. C.; Bolivar J. Lloyd of the Public Health Service and the Pan-American Sanitary Bureau, and Kendall Emerson, executive secretary of the National Tuberculosis Association and the American Public Health Association, attended the Pan-American Sanitary Conference, which opened in Buenos Aires, November 12.

New Forms for Hospital Records.—A committee of the American Sanatorium Association, assisted by the staff of the National Tuberculosis Association, has devised a set of twenty-three new forms for uniform and complete records of patients in sanatoriums for tuberculosis. It is stated that the new forms will simplify the collection of statistics by making all information about a given patient available for instant consultation. Dr. Everett Morris, Auberry, Calif., was chairman of the committee, which spent two years in its work. The forms are published by the Livingston Press, Livingston, N. Y.

Board of Psychiatry and Neurology.—In the announcement of the formation of the American Board of Psychiatry and Neurology in *THE JOURNAL*, November 17, page 1547, the names of Drs. Clarence O. Cheney, Louis Casamajor and Edwin C. Zabriskie, all of New York, were omitted. These physicians compose a committee to consider plans for examinations, credentials and forms for application blanks.

Clinical Meeting.—Dr. Cyrus C. Sturgis, Ann Arbor, Mich., was elected president of the Central Society for Clinical Research at the annual meeting in Chicago, November 2-3, and

Dr. Lawrence T. Thompson, St. Louis, was reelected secretary. The scientific program included the following speakers:

Dr. Edward L. Tuohy, Duluth, Minn., An Introduction to the Subject of Bone Marrow (Sternal) Biopsies

Dr. Adolph Sachs, Omaha, Iron and Copper in Human Blood

Dr. Willis M. Fowler and Adelaide P. Barer, Ph.D., Iowa City, Iron Retention Following the Oral Administration of Ferric Ammonium Citrate in Hypochromic Anemia

Drs. Charles A. Doan, George M. Curtis and Bruce K. Wiseman, Columbus, The Role of the Spleen and the Efficacy of Emergency Splenectomy in Acute Erythroclastic and Thromboclastic Crises and in Hypoplastic Anemia

Drs. Robert T. Porter and Walter L. Palmer, Chicago, Studies on the Intrinsic Factor (Castle) in Subacute Combined Cord Degeneration Without Anemia

Drs. J. Murray Kinsman and John Walker Moore, Louisville, Effect of Fever on the Circulation

Dr. Edwin G. Bannick, Rochester, Minn., Diagnostic Features of Acute Pancreatitis

Dr. Harold Feil, Cleveland, A Clinical Study of the Electrocardiograms and of the Phases of Cardiac Systole in Pellagra

Society News.—Dr. Buford G. Hamilton, Kansas City, was chosen president-elect of the Central Association of Obstetricians and Gynecologists at the annual meeting in New Orleans, November 1-3, and Dr. Willard R. Cooke, Galveston, Texas, was installed as president. Drs. Jean Paul Pratt, Detroit, and Ralph A. Reis, Chicago, were elected vice president and secretary, respectively. The next annual meeting will be held in Omaha in October 1935.—The American Therapeutic Society has set the date for its 1935 meeting for June 7-8, at the Hotel Traymore, Atlantic City.—The Federation of American Societies for Experimental Biology, comprising the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics and the American Society for Experimental Pathology, will hold its annual meeting in Detroit, April 10-13, 1935.—The American Institute of Nutrition will hold its second annual meeting in Detroit, April 10, 1935.—The Society of American Bacteriologists will hold its annual meeting in Chicago, December 27-29, under the presidency of Dr. Milton J. Rosenau, Boston.

Twenty-Five Years of Mental Hygiene.—The National Committee for Mental Hygiene celebrated the twenty-fifth anniversary of its founding at an afternoon meeting followed by a dinner at the Waldorf-Astoria, New York, November 14. At the afternoon session the subject of discussion was "The Challenge of Childhood," with Dr. Ira S. Wile, New York, Carleton W. Washburne, Ph.D., Winnetka, Ill., and Dr. James S. Plant, Newark, N. J., as speakers. At the dinner, speakers were Dr. Adolf Meyer, Baltimore, one of the founders of the committee, who traced the development of the organization, James R. Angell, LL.D., president of Yale University, New Haven, who spoke on mental hygiene in education; Dr. Milton J. Rosenau, Boston, mental health in the public health movement; Dr. Clarence M. Hinckes, New York, director of the committee; Dr. Arthur H. Ruggles, Providence, R. I., president of the committee; Hon. Jacob Gould Schurman, former president of Cornell University, and Mr. Clifford W. Beers, New York, founder of the mental hygiene movement and secretary of the committee. The last four discussed activities and plans for the future. In recent years the committee has given attention to preventive work, notably in the establishment of child guidance clinics in which early tendencies toward mental difficulties may be corrected. Among accomplishments of the movement have been also the amending of laws to make possible more enlightened care, planning of hospital construction and the establishment of a uniform system of statistical reporting.

HAWAII

Society News.—A symposium on roentgen rays constituted the program before the Honolulu County Medical Society, November 6. Speakers at the October meeting of the society included Lieut. Comdr. Paul P. Maher, on "X-Rays in Duodenal Ulcer"; Lieut. Comdr. Harold E. Ragle, "Histamine in Gastric Analysis," and Lieut. Bartley W. Hogan, "Forced Spinal Fluid Drainage in Pneumococcal Meningitis." Comdr. Lester L. Pratt exhibited motion picture films on thoracoplasty. This program was held at the U. S. Naval Hospital at Pearl Harbor.

CORRECTION

Grade Made in Examination.—The Wisconsin State Board of Examiners requests publication of a correction in the report of its June examination, published in *THE JOURNAL*, November 17, page 1563. The applicant from the Woman's Medical College of Pennsylvania received an average grade of 83.31 per cent, instead of 77 per cent, as at first reported.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 3, 1934.

The Present Position of Radium Therapy

The fifth annual report of the National Radium Trust and Radium Commission for 1933-1934 shows the present state of radium therapy in this country. The amount of radium owned by the trust is just over 19 Gm., which is sufficient for the needs of the various centers. Owing to change in technic, containers of a type now regarded as obsolete have been broken down and new ones substituted for them. The trust is awaiting with interest the results of a scheme of research that is being carried out at the Radium Institute under the supervision of a special governing body, concerning "beam therapy," in which use is made of a highly penetrating beam of rays directed on the malignant growth from a large quantity of radium (what used to be called a "bomb") not in direct contact with the body.

A PHYSICAL RESEARCH

Cornish radium, lent by the trust to the National Physical Laboratory, has been used in an investigation made with the object of enabling gamma-ray dosage to be measured in terms of the roentgen, the ionometric unit adopted internationally for the measurement of x-ray dosage. The roentgen represents a certain degree of ionization of air, which can be determined by suitable ionization chambers. These may be (a) small closed "air-wall" chambers in which the measured volume of ionized air is prescribed by enclosing walls composed of some light element, the whole chamber being enveloped by the beam radiation, or (b) large parallel-plate "free-air" chambers in which a narrow beam of radiation is used and the measured volume of ionized air is not prescribed by boundary walls but is wholly surrounded by air. Preliminary measurements indicate that in the case of gamma rays scattered radiation plays a prominent part and that only when a narrow beam of radiation is used and the walls of the air-wall chamber are thin do the results agree with those from the free-air chamber. If the walls are thick, or if a wide beam of radiation is used, the results from the air-wall chamber are much higher than those from the free-air chamber. It appears likely that it will be possible to specify conditions under which the roentgen can be realized in the gamma ray region with sufficient accuracy for present purposes.

THE DEVELOPMENT OF CENTERS

Both efficiency and economy require that patients should be brought to the centers, which possess fully equipped clinics and specialist staffs, rather than that radium should be taken to patients. The commission also hopes that a policy will be adopted of "pooling" the radium lent by it with that which is the property of the hospitals, and the use, in a single scheme, of the total stock within the center. Economy of radium time requires an adequate number of beds for the accommodation of a large number of patients. The modern tendency to combine treatment by x-rays with that by radium is further reason for the concentration of treatment at the centers. Finally, if the hopes of those using beam therapy are realized, this will be another reason for concentration.

THE GRADUATE SCHOOL OF RADIOTHERAPY

The efficiency of the graduate school at Mount Vernon Hospital, London, has been increased by the appointment of a physicist. The school has four resident appointments—two at the hospital and two at the Radium Institute—which afford a fine opportunity for learning the technic and possibilities of

radium treatment. In conjunction with the British Institute of Radiology, a course of radiotherapy was held and was attended by twenty-two candidates. At the request of the London School of Hygiene and Tropical Medicine, a demonstration was held for a class preparing for the Diploma in Public Health.

ONE GRAM UNIT THERAPY

In August 1932, 1 Gm. units were put at the disposal of the Cancer Hospital, the Middlesex Hospital and University College Hospital, for the purpose of ascertaining the value of this unit in the treatment of malignant disease. It has been in continuous use at these hospitals for nineteen months. In the year ended April 1, 1934, 251 cases were treated. They included growths in the tongue and mouth, lip, cheek, tonsil, pharynx, larynx, antrum, breast and penis. The commission thinks that five years must elapse before the value of the treatment can be assessed but that an interim report this year would be of value, chiefly perhaps in differentiating, without attention to variations in technic, between the results of the several methods used in various sites. An investigation directed to this end is in progress.

FUTURE DEVELOPMENTS

The technic of radium treatment has developed to standard forms. One feature of this evolution is the demand for large quantities of radium for use outside the body, preferably at an appreciable distance—several inches—from the skin. The quantity usually considered necessary for effective action when used at a distance is at least 1 Gm. This unit is in use in three hospitals. The commission learns that it is likely to serve a very useful purpose. No doubt the experience gained will enable those practicing this form of treatment to use larger units with greater confidence. Since the end of 1933 the Radium Beam Therapy Research Board has had under investigation treatment with a 5 Gm. unit.

Short Wireless Waves in the Treatment of Disease

The treatment of chronic inflammation, especially of deep-seated structures, by short waves, similar to those used in broadcasting, is already popular on the continent of Europe. The first report of their use in England has been published in the *British Journal of Physical Medicine* by Dr. W. J. Turrell, medical officer to the electrotherapy department at the Radcliffe Infirmary, Oxford. These waves are usually only from 6 to 30 meters long and are generated by thermionic valves or by a spark gap machine. They can be passed into a patient without any contact between him and the source of the current. While the surface of the body remains comparatively cool, heat is generated in the tissues within. Dr. Turrell tested the effects of these short waves on white of egg and on pieces of bullock's liver. He found that they differ from those used in diathermy, in which the electrodes are in contact with the patient's body, in the more violent oscillations of an electromagnetic nature set up in the treated tissues. He obtained the best results in the treatment of parts connected with or closely underlying bony structures and in inflammatory conditions closely beneath the surface. Pain unrelieved by other methods yielded to this method. A great difficulty is the cost of the apparatus, as the power required to produce these short waves is much greater than for longer ones.

International Congress on Life Assurance Medicine

An international congress on life assurance medicine will be held in London from July 23 to July 27, 1935. This conference is the first of the kind since 1903 and the first to be held in this country. The president will be Dr. Langdon Brown, regius professor of medicine in the University of Cambridge. The principal subjects for discussion will be methods of estimating risks, the prognosis of hypertension, the acceptance of persons with glycosuria, gastroduodenal ulceration and life

assurance, and the rôle of health service in life assurance. For physicians of Great Britain and Ireland, membership is restricted to members of the Assurance Medical Society and to such other physicians as are interested in life assurance and whose application for membership is approved by the congress committee. The honorary secretary is Dr. Otto May, 142 Holborn Bars, London, E. C. 1.

Gas Warfare

Major General C. H. Foulkes, an officer of engineers who held the position of "gas adviser" for the greater part of the war and raised, trained and commanded "the special brigade," a secret unit organized for the purpose of gas attacks, has published an interesting book entitled "Gas! The Story of the Special Brigade." He shows the horrors that may have to be guarded against in any future war. Against the well disciplined troops on the western front gas caused nearly a million casualties. What will be its effect on civilian populations ill trained and inadequately supplied with protective apparatus? He enlisted the services of the best scientific brains in the country and in the later stages of the war became the president of the Chemical Warfare Committee. Throughout the war he urged the use of gas discharged in clouds on a stupendous scale before a major attack. His plans for the unfought campaign of 1919 would probably have resulted in a decisive victory. In the latter part of the war the Germans had some minor successes with Blue Cross shells containing diphenyl chlorarsine. This was a respiratory irritant and caused sneezing. It forced the troops to remove their gas masks and expose themselves to other lethal gases. Samples of this substance were extracted from a German shell and experimented with. It was found that, when a pinch was placed on the hot plate of a stove, every one was driven out of the house and that the latest pattern of German mask, even when fitted to protect against Blue Cross shells, gave no protection against a cloud so produced. A thermogenerator was soon designed to produce this cloud. In the course of investigation an even more suitable deadly compound, diphenylamine chlorarsine, was discovered. It produced an arsenic particulate cloud that could be depended on to incapacitate the enemy completely, if only temporarily. It was discovered too late to be used in France in the war but is claimed by General Foulkes to be the most effective chemical weapon ever devised. He does not believe that future use of gas can be prevented by agreement. Its infinite possibilities in a scientific age preclude any such hope.

PARIS

(From Our Regular Correspondent)

Nov. 12, 1934.

Variations of the Syphilitic Virus

In the September issue of the *Annales de l'Institut Pasteur*, W. Nyka publishes a research on the virus of syphilis which explains some apparent discrepancies as to the etiologic rôle of *Spirochaeta pallida* in syphilis. In spite of numerous studies, since the discovery of the spirochete of syphilis by Schaudinn in 1895, many of its biologic features remain so obscure that certain authors doubt the specific rôle of the spirochete of syphilis.

Disappearance of the spirochetes is not synonymous with cure. Grave complications often present themselves, long after disappearance of the spirochetes.

Two hypotheses have been proposed to explain this discrepancy. Either these grave complications are due to a virus other than syphilis or the latter is to be found under another than the classic form. Schaudinn leaned toward the second hypothesis; that is, the existence of an invisible form. Levaditi maintains that the nonvisible form can be regarded as an ultravirus, but this view has been accepted by few. Even Levaditi

has abandoned the claim that this ultravirus, like others, possesses the property of filtrability.

Nyka studied the question on rabbits and mice inoculated with the virus of syphilis. His conclusions are that *Spirochaeta pallida* has two distinct forms, a spirochetal and a filamentous. Between the two, one finds all stages of metamorphosis.

The virus of syphilis corresponds thus to the complex "Spirochaeta-filament" with its transitional forms. Syphilis is transmitted by the spirochete, but its rôle and existence are transitional. It disappears as soon as infection of the new host is accomplished. The filamentous form is the basic or fundamental one; hence all the typical pathologic lesions of syphilis must be attributed to this filamentous form. Such a change in morphology does not necessarily carry with it a modification of the biologic properties of the parasite. In other words, the filamentous form is as capable of producing infection as the spirochetal. The latter is a cytotropic virus, that is, can penetrate into the interior of cells and multiply there, within either the nucleus or the cytoplasm. The spirochetal form loses its spiral character within the cell and becomes transformed into a filament. Such a change, however, can occur outside the cells. In its filamentous form, multiplication by transverse division takes place and the resulting filaments are able to change back again into spirochetes. The intracellular multiplication of the parasite kills the cell, but not all types of cells are equally sensitive to the syphilitic virus. Liver cells and fibroblasts are relatively more resistant than those of the nervous or lymphatic structures. Because of the difficulty of staining the filamentous form, which the author succeeded in doing, this form has thus far escaped detection.

Ingestion of Aluminum and Cancer

In view of articles in the daily press, ascribing to aluminum, lead and other substances a cancer-producing action, a recently published experimental study denying such harmful effects is of much interest.

In the July issue of the *Annales de l'Institut Pasteur*, Bertrand and Serbescu report two series of experiments on rabbits. In both series, coal tar was applied at regular intervals to the ears of rabbits in order to produce a cancer. In series A a visible cancer resulted in 78.3 per cent of rabbits living more than forty days. No aluminum was given in this series. In series B an artificial ear cancer resulted in 50 per cent of the animals living over forty days. In this series a solution of aluminum sulphate, representing 10 Gm. of aluminum metal per hundred cubic centimeters, was placed directly in the stomach with the aid of a soft rubber urethral catheter. In series B the animals received a quantity of the solution sufficient to represent 20 mg. of aluminum metal to a kilogram of the rabbits' weight.

In neither series did the necropsies reveal any visible lesion of the stomach or intestine. The authors conclude that the rôle of aluminum or its salts in the production of cancer has been greatly exaggerated. Fear of the ingestion of the minute amounts of aluminum from the use of utensils made from this metal as well as from foods or baking powders in which alum salts are used is not justified by laboratory research.

Bleeding During the Menopause

In 1933, Quénu and Claude Béchère reported forty-four cases of metrorrhagia in patients between the ages of 40 and 50. In every case a curettage (with histologic study of the scrapings) or operation was performed. The patients were reexamined at intervals of from two to eight years.

Béchère has just added fifty-six more cases, making a total of 100 observations in six Parisian hospital services. In this second series a hysterosalpingography, iodized oil being used as a routine procedure, was done. In all cases presenting lesions, following this test, either curettage or operation was done.

A study of these 100 cases reveals that objective surgical lesions existed in only one third, while in the other two thirds the changes in the uterine mucosa were not due to a local lesion but to a functional disturbance of ovarian origin. Such a cause of uterine bleeding is observed at all ages but is most likely to be found during the menopause.

The clinical picture in the majority of cases of metrorrhagia of functional (ovarian) origin presents three main symptoms: The sudden appearance of the bleeding in a woman above 40 who has previously menstruated at regular intervals is the first of the signs. The second is a period of amenorrhea lasting two or three months, which is seen only in cases of ovarian dysfunction. The third sign is metrorrhagia lasting from eight days to six weeks or longer, but there is always an interval of amenorrhea lasting from two to three months. Bèclère calls this the "triade symptomatique."

The best method of diagnosis is exploratory curettage preceded if possible by a hysterosalpingography. These will reveal the presence of lesions necessitating operative intervention in about one third of the cases. Such measures are of no avail in the other two thirds, owing to ovarian dysfunction. If medical treatment is not successful in the latter, roentgenotherapy is indicated, to induce an artificial menopause.

The New Vincent Antistreptococcus Serum

The May 22 issue of the *Bulletin de l'Académie de médecine* contains an addition to available therapeutic agents in combating streptococcal infections. Prof. H. Vincent gives the results of the use of his new serum in 136 cases of severe infection due to the more virulent forms of streptococci. All the cases were controlled by hemoculture, which method of diagnosis should be applied at as early a period as possible. The serum should be administered in large amounts subcutaneously, intramuscularly or, if possible, intravenously. The first dose should be 100 cc. given as soon as the results of the hemoculture are positive, preferably even while the report is being waited for.

In septicemia or streptococcal meningitis the daily dose of 100 cc. suffices, but in the malignant forms of diphtheria daily doses up to 250 cc. have been given. The serum should be continued as long as the symptoms of infection persist. As soon, however, as the temperature drops, one can reduce the amount of serum injected to 30 cc. and later to 20 cc. during the four or five days after cessation of the fever. Blood transfusion at intervals is the only other treatment necessary. Blood transfusion supplies the alexins that are lacking in streptococcal infections. Epinephrine, cardiac tonics, alcohol in the form of champagne and an ample diet are necessary in certain cases. In a relatively large number the serum has been given too late to be of any avail or the doses were not large enough or not given for a sufficiently long period. The drop in temperature and disappearance of symptoms usually take place between the sixth and eleventh days after the use of the serum is begun. Cases have been observed in which a moderately high temperature persisted despite recession of symptoms, and even a negative blood culture. Such a temperature may be due to the serum itself; hence it is advisable to discontinue its use for a few days while keeping close watch on the symptoms of infection, so as to be ready to resume the serum treatment.

In the report of the results, cases are included in which death occurred from delayed or inadequate administration, as well as from double pneumonia of pneumococcal origin, gangrene following injection of turpentine to produce a local reaction, and rupture of the uterus following criminal abortion.

In 136 cases of streptococcal septicemia there were 111 cures and 25 deaths, a mortality of 18.38 per cent. The list of cures includes streptococcal arthritis, meningitis complicating skull

injury throat and ear infections, sinus thrombosis following mastoiditis, septicemia due to ethmoiditis, puerperal phlebitis of severe nature, acute endocarditis (six cures in seven cases), streptococcal empyema, general peritonitis due to puerperal infection, and hemorrhagic nephritis. No other method of treatment has given such a large proportion of cures, 81.62 per cent in 136 cases, according to Professor Vincent.

Cerebral and Abdominal Syndromes in Pneumonia in Children

Professor Nobecourt, in a lecture at the Hospital for Sick Children, emphasized the necessity of being familiar with two syndromes, the meningo-encephalitic and the abdominal, which so frequently render difficult the early diagnosis of pneumonia in children. The meningo-encephalitic syndrome can occur under one of three clinical pictures. Of these, the convulsive form occurs almost always in infants aged less than 3 years. Localized or generalized convulsions may be the first evidence of an illness, accompanied by high fever and the physical evidence of a bronchopneumonia. The other two forms, delirious and somnolent, occur in older children. The delirium is more a state of confusion and lasts only a few days, being ushered in by high fever. Somnolence is a more common symptom than delirium at the onset of a pneumonia in children. These three forms, convulsive, delirious and somnolent, may or may not be accompanied by symptoms like those of an acute cerebral or cerebrospinal meningitis, which are, however, milder and of shorter duration (two or three days). One finds cutaneous hyperesthesia, rigidity of the neck and a slight Kernig sign. At times the meningitic syndrome is quite marked in the form of vomiting, hyperesthesia, and signs of Lasègue and Kernig. These more severe symptoms generally last only a few days but may persist longer.

In these cases of meningeal syndrome in pneumonia, lumbar puncture yields a clear fluid as a rule. Micro-organisms are not found. It rarely occurs that the fluid is turbid or purulent, containing polymorphonuclears and pneumococci. The meningeal or cephalomeningeal syndromes seen at the onset in pneumonias of children belong to the group of serous or attenuated meningitis. They are rarely due to a suppurative pneumococcal meningitis.

The symptoms at the onset are more cerebral than pulmonary. In some cases the physical signs of a pneumonia are well marked, in others they are widely scattered. Often, not a single physical sign is present; that is, the pneumonia is a silent factor in the clinical picture.

BERLIN

(From Our Regular Correspondent)

Sept. 9, 1934.

Food Poisoning Due to Consumption of Duck Eggs

About a year and a half ago attention was called to an outbreak of food poisoning in Westphalia after consumption of duck eggs and probably attributable to them. Among 143 persons affected, two died. In ninety-nine of these cases, bacteria capable of producing enteritis could be established in the intestinal evacuations. Breslau's bacilli were found to be the pathologic agents in many cases of enteritis, and Gärtner's bacilli in five cases. Attention was focused on salads in which duck eggs were used as well as on the preparation of mayonnaise and puddings. In two other epidemics comprising seventy cases, apparently only in the Ruhr coal mining district, similar observations were made by H. Bruns and Fromme. Meanwhile 110 more persons became sick from the end of 1932 to the beginning of 1934. Of the total number of cases known (253) there were six deaths. Many were mild cases and scarcely came to the attention of physicians, so the sum total of cases must have been higher than recorded. After an investi-

gation there was no doubt that there was a causal connection with the duck eggs, and this was strengthened by the fact that on a Dutch duck farm (many Dutch duck eggs are sent to this locality in Westphalia) an epidemic mortality of 80 per cent was reached; in several of these fowls, evidence of the Breslau enteritis bacilli were found in all the organs, in the ovary and in the yolk of the egg and in the intestine. These pathologic agents were found in fowls of the Kaki Campbell stock, which are especially good egg layers, but other stocks also were involved.

Through repeated official warnings the use of duck eggs decreased, with a corresponding decrease in the number of cases of enteritis. Abstinence from raw duck eggs did not completely set aside the danger, because baking and roasting temperatures did not suffice in every case to kill the bacilli in the interior of the egg. Nevertheless a special hygienic control of duck eggs is necessary.

Research on Twins

In a study of the influence of heredity and environment, Prof. O. von Verschuer of the Kaiser Wilhelm Institut für Anthropologie at Berlin has divided twins into three groups: (1) those with the same heredity and environment, (2) those with the same heredity but with different environment and (3) those with different heredity and the same environment. A comparison of groups 1 and 2 shows the degree of environmental influence, that of groups 1 and 3, the degree of hereditary influence.

Influence of Environment and of Heredity

	Environment	Heredity
In body weight	85 per cent	169 per cent
In chest circumference	70 per cent	165 per cent
In height	18.5 per cent	192 per cent
In cephalic index	10 per cent	72.5 per cent

The influence of environment is related to the influence of heredity:

In body weight	as 1 2
In circumference of thorax	as 1 2.4
In height	as 1 10.4
In cephalic index	as 1 5.6

According to this study the influence of heredity is greater than has been previously assumed.

Biovular twins (those with different hereditary characteristics) develop: (1) by simultaneous fertilization of two ova (by two sperms), the time of twin formation concurring with the fertilization, and (2) in the presence of a hereditary cleavage process through fertilization of the egg and by two direction bodies (by two sperms); likewise here the time of twin formation concurs with the fertilization. In both cases the chorion and amnion are doubled; the placenta is simple or double. Unioval twins (those with the same hereditary characteristics) develop from a hereditary cleavage tendency through cleavage of the embryonic anlage. The time of twin formation concurs with the cleavage. If the cleavage has occurred before the differentiation in the embryoblast and trophoblast, examination of the ovum membrane demonstrates a double chorion and amnion; the placenta is simple or double. If, on the other hand, the cleavage takes place after differentiation, that is, after formation of the embryonic nodules, a double amnion is formed with only a simple chorion. If cleavage appears even later, if therefore the embryonic area and the primary layers are already formed, a simple chorion and amnion result; in both of the latter cases the placenta is simple.

Promoting Hereditarily Healthy Families

To promote hereditarily healthy families, in line with the aim of the present administration, there has recently been established a settlement of "Germanenhof" in Altenburg, Thuringia. In this settlement, nineteen hereditarily healthy and capable families are to be given their own homes. The

applicants and their wives must assume the duty of raising their family by two within five years and of having a third and fourth child within an additional five years. Only children considered hereditarily healthy will count. Applicants who do not or cannot fulfil these requirements must leave the family homes put at their disposal within a space of three months.

The Number of War Injured in Germany

The number of war injured in Germany naturally continues to drop. In May 1934 the total number amounted to 804,505. This number is divided according to the degree of injury in the following:

Degree of War Injury	Number Injured
30 per cent	338,461
40 per cent.. . . .	121,201
50 per cent.	135,696
60 per cent.. . . .	66,406
70 per cent.. . . .	57,349
80 per cent	30,435
90 per cent.	6,291
100 per cent	45,462

Mortality in Germany During the Year 1933

The year 1933, which showed a more favorable birth rate, gave more unfavorable results with respect to mortality than 1932. Previously the numbers for all German communities with more than 15,000 inhabitants were counted; the total number of inhabitants thus came to 29,400,000, that is, 45 per cent of the total population. The number of deaths for 1933 amounted to 305,325, that is, about 15,000 more than 1932; to every thousand inhabitants, 10.4 die as against 9.9. One of the main causes of this increase is the steadily growing number of people belonging to the advanced age classes. Especially the birth years 1860-1864 show a high rate of death as do the preceding years; therefore the typical diseases of old age are prominent among the causes of death. More people died of heart disease, apoplexy and senile debility than in 1932. More than 7,500 people died of bronchitis and pulmonary inflammations; most of these belonged to the advanced age groups. In 1933, influenza played a tremendous part in the cause of death. In the course of the epidemic in January and February 1933, 8,800 persons died, while in 1932 only 2,800 died, of this disease (THE JOURNAL, May 15, 1933, p. 1948). That the influenza epidemic was essentially the cause of this rise in mortality is to be seen from a comparison of districts that were less hit by the disease: in western, northwestern and central Germany the grip raged fiercely and in these districts the mortality was 1 per thousand higher than in 1932, while the average increase for the reich amounted to only 0.5 per thousand. On the other hand, in upper Silesia and southern Germany, which remained untouched by the wave of grip, the death rate was even lower than in 1932.

Whereas these causes of death can be influenced little, it is different in the other causes. The rate of suicide, for example, has rather decreased, as has likewise the number of fatal accidents. Infant mortality showed a marked decrease.

Is There a Labyrinthine Concussion?

A complex of clinical symptoms, especially present in cranial trauma (unilateral or bilateral difficulty in hearing, deafness, ringing in the ears, vertigo and headache) is interpreted as commotio labyrinthi or labyrinthine concussion.

Professor Voss of Frankfurt-on-Main, who has been occupied with these questions, has suggested that a summary be made of all changes in the inner ear which appear as a result of trauma to the cranium or spinal column. There is the possibility of similar symptoms in injuries on a distant part of the body, as on the feet or on the buttocks, because the percussion wave is transmitted from them through the spinal column. A number of clinical observations of labyrinthine diseases in gunshot injuries of the cranium make it certain

that both types of injuries must depend on the same or similar physical phenomena. In the small "cerebral concussions," as in commotio cerebri, it is a question of a rise in pressure in the labyrinthine secretion, which, according to the laws of hydrodynamics, may be transmitted in the direction of the percussion or to all sides. Thus under certain circumstances the labyrinthine capsule may explode, as has been proved by Voss in patients having sustained war injuries. In case of weaker impacts, it is assumed that the nerve constituents enclosed within the labyrinthine capsule may be damaged or destroyed. This theory was previously not accepted by otologists, even by Voss, on the ground that the organ of Corti, because of its double embedding in fluid, is ideally protected against lesser concussions. In estimating such cases, one should treat them as traumatic neuroses. Microscopic observations, though few, which have been recently discovered, point to an organic basis for labyrinthine concussions. It is a question of degenerative processes to the nerves and to the organ of Corti. In addition, such degenerations may develop not only through impact of the fluid but also through hemorrhages, as Voss himself has observed. Labyrinthine concussions with simultaneous fracture of the labyrinthine capsule may likewise occur. Animal experimentation, undertaken by Voss, showed consistent hemorrhages, especially in the perilymphatic spaces of the cochlea and between the branches of the cochlear nerve, while the vestibular semicircular canal apparatus remained untouched.

Voss concludes that there is a concussion of the labyrinth in the sense described. Organic changes may be the basis for these labyrinthine concussions, at least of cases of more pronounced auditory disturbance or of deafness of unresponsiveness or of poor responsiveness of the vestibular apparatus.

Marriages

WILLIAM BREENE VANDEGRIFT, Baltimore, to Miss Dorothy Elizabeth Blackman of New London, Ohio, in Oakton, Va., Augusta 10.

RAYMOND CLYDE HERRIN, Madison, Ind., to Miss Mable Elizabeth Hooper of Lake Mills, Wis., in September.

PAUL H. SCHMEDICKE, Wauscon, Ohio, to Miss Irma Lois McKelvey of Attica, Ind., in Chicago, July 7.

ELLSWORTH MORTON TRACY, Providence, R. I., to Miss Ruth Memory of Maplewood, N. J., October 13.

ARCHIBALD WILLIAM FEES, Carrolltown, Pa., to Miss Juliana Connelly of Pittsburgh, September 10.

KENNETH C. PIERCE, Dowagiac, Mich., to Miss Gertrude Eckhout of Ann Arbor, October 9.

MORDECAI M. McDOWELL, Bicknell, Ind., to Miss Elizabeth Smith of Indianapolis, November 1.

JAMES LANCASTER DENAUT, KNOX, Ind., to Miss Eleanor Erickson of Chicago, September 15.

MELBOURNE JOHN COOPER to DR. JEAN MALCOLM HEAD, both of Philadelphia, September 12.

JAMES OWEN FINNEY to Miss Margaret Pride, both of Florence, Ala., November 3.

PAUL R. HOY, Detroit, to Miss Ellagene Bowen of River Rouge, Mich., August 18.

LOUIS SMITH, Lakeland, Ga., to Miss Leila Hutcheson of East Point, June 2.

FRANCIS ARND HEGARTY to Miss Louise Brieger of Taylor, Texas, August 30.

LEON S. McGOOGAN to Miss Vera M. Kelley, both of Omaha, Neb., October 20.

LESLIE J. BOONE to Miss Bronwen F. Rees, both of Kingston, Pa., October 17.

IRENE NEUHAUSER to E. L. Gustus, Ph.D., both of Kalamazoo, Mich., July 27.

HARRY E. AUGUST to Miss Helen Shetzer, both of Detroit, October 16.

Deaths

James Marion Parrott @ Raleigh, N. C.; Tulane University of Louisiana Medical Department, New Orleans, 1895; secretary of the state board of health and state health officer; past president of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; formerly member of the state board of medical examiners; at various times served as a member of the board of directors of the State Hospital, Raleigh and member of the board of trustees of the Wake Forest (N. C.) College; connected with the Parrott Memorial Hospital; aged 60; died, November 7, of heart disease.

Philipp Fischelis @ Philadelphia; Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia, 1885; demonstrator of histology and embryology, Medico-Chirurgical College of Philadelphia, 1903-1909, and associate professor, 1909-1917; professor of histology, embryology and general pathology and director of laboratories in the dental school, Temple University; member of the American Association of Anatomists; for many years on the staff of the Mount Sinai Hospital; co-author of "Anatomy and Histology of the Mouth and Teeth"; aged 76; died, October 30, of angina pectoris.

William Hewson Mook @ St. Louis; Beaumont Hospital Medical College, St. Louis, 1900; assistant professor of clinical dermatology, Washington University School of Medicine; member and past president of the American Dermatological Association; served during the World War; aged 55; on the staffs of the Barnard Skin and Cancer Hospital, Barnes Hospital, De Paul Hospital, Missouri Pacific Hospital, Missouri Baptist Hospital and St. Anthony's Hospital, where he died, November 3, of heart disease, following pneumonia.

Henry Clinton Burgess @ Canandaigua, N. Y.; Syracuse University College of Medicine, 1907; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; served during the World War; aged 51; medical superintendent of the Brigham Hall Hospital; on the staff of the Memorial Hospital, where he died, October 24, of an overdose of a narcotic.

David Walter McFarland @ Greens Farms, Conn.; University of the City of New York Medical Department, 1885; member of the American Psychiatric Association; in 1913 founded the Spring Hill Hospital, Hastings-on-the-Hudson, N. Y.; aged 76; in 1898 established the Hall-Brooke Sanitarium, where he died, October 26, of uremia, myocarditis and arteriosclerosis.

Charles Simonton Jordan, Asheville, N. C.; University of the City of New York Medical Department, 1890; member of the Medical Society of the State of North Carolina; veteran of the Spanish-American and World wars; aged 66; died, October 28, in the Veterans' Administration Facility, Oteen, of myocarditis, arteriosclerosis and nephritis.

John Duncan McMillan, Paris, Texas; Hospital College of Medicine, Louisville, Ky., 1885; member of the State Medical Association of Texas; past president of the Lamar County Medical Society; on the staffs of St. Joseph's Infirmary and the Lamar County Hospital; aged 75; died, August 10, of cerebral hemorrhage.

Sterling Buchanan Hinton, Franklin, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1916; member of the Kentucky State Medical Association; served during the World War; formerly member of the school board; aged 42; died, October 28, in the Southern Kentucky Sanatorium, of chronic nephritis.

Walter Horatio Sturgis, Hull, Mass.; Baltimore Medical College, 1895; member of the Massachusetts Medical Society; served during the World War; member of the board of health; for many years owner of a hospital bearing his name; aged 61; died, October 29, of heart disease.

Frank Wieland @ Chicago; Hering Medical College, Chicago, 1896; formerly professor of genito-urinary diseases, Hahnemann Medical College and Hospital; on the staff of the Henrotin Hospital; aged 65; died suddenly, November 18, of myocarditis and cerebral embolism.

Philip F. Gillette, Kankakee, Ill.; Northwestern University Medical School, Chicago, 1896; aged 64; formerly on the staff of the Elgin (Ill.) State Hospital; on the staff of the Kankakee State Hospital, where he died, October 27, of cerebral hemorrhage.

Manuel Fernandez y Nater, San Juan, P. R.; Bellevue Hospital Medical College, New York, 1896; member of the

Medical Association of Puerto Rico; aged 61; died, June 30, of aortic insufficiency, cardiac decompensation and pulmonary edema.

Jared Waldo Daniels @ St. Peter, Minn.; Rush Medical College, Chicago, 1889; College of Physicians and Surgeons, Medical Department of Columbia College, 1890; served during the World War; aged 67; died, October 9, of coronary occlusion.

David M. Criswell, Coshocton, Ohio; Baltimore Medical College, 1892; member of the Ohio State Medical Association; formerly member of the state legislature; city and county health officer; aged 69; died, October 21, of heart disease.

Thomas H. Baird, Otto, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1888; member of the State Medical Association of Texas; aged 75; died, September 24, in a hospital at Waco, of acute nephritis.

Alexander Charles Calisch @ Oswego, N. Y.; New York Homeopathic Medical College and Hospital, 1891; served during the World War; on the staff of the Oswego Hospital; aged 63; died, September 14, of coronary thrombosis.

Arthur Frazier Shepherd, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1893; member of the Ohio State Medical Association; formerly superintendent of the State Hospital; aged 69; died, October 29, of coronary thrombosis.

Robert Burns McKeage, Scranton, Pa.; Medico-Chirurgical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 64; died, October 2, of epithelioma of the lower lip.

Nathan Hammond @ Plainfield, Ohio; Ohio Medical University, Columbus, 1905; chairman of the county board of health; aged 61; died, October 29, in West Lafayette, of heart disease and pneumonia.

H. Francis Hunt, Jamestown, N. Y.; University of Buffalo School of Medicine, 1898; formerly on the staff of the Jamestown General Hospital; aged 66; died, October 13, of carcinoma of the liver.

Edwin A. Means, Dallas, Texas; Denver College of Medicine, 1893; member of the State Medical Association of Texas; aged 58; died, October 11, of chronic myocarditis and lobar pneumonia.

William H. Tomlinson, Swarthmore, Pa.; Hahnemann Medical College of Philadelphia, 1875; aged 89; died, October 10, of malignant papilloma of the neck and hypostatic pneumonia.

Sylvan David Kahn, Hallettsville, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1913; aged 44; died, October 13, of carbuncle of the neck and diabetes mellitus.

Winfield Scott Rowley, Indianapolis; Eclectic Medical Institute, Cincinnati, 1890; Rush Medical College, Chicago, 1891; aged 82; died, October 21, of cardiovascular renal disease.

Gifford Osborne @ Brownsville, Texas; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 61; died, September 24, of coronary sclerosis.

Charles H. Carter, Seaford, Del.; Baltimore University School of Medicine, 1895; aged 65; died, October 5, in the Delaware State Hospital Farnhurst, of ulcerative colitis.

David Orson Miner, San Diego, Calif.; University of the City of New York Medical Department, 1884; aged 74; died, October 11, in Los Angeles, of hypertrophic cirrhosis.

John W. Youngman, Paxton, Neb.; American Medical College, St. Louis, 1883; aged 79; died, July 1, in the Nebraska Masonic Home, Plattsmouth, of cardiovascular disease.

William W. Case, Nebraska, Ind.; College of Physicians and Surgeons, Keokuk, Iowa, 1886; aged 74; died, October 2, of carcinoma of the pylorus and arteriosclerosis.

Henry Frederick Gau, Cincinnati; Medical College of Ohio, Cincinnati, 1894; aged 62; died, October 21, of lymphosarcoma with metastases to the liver and lungs.

Marshall H. Galloway, Rich Pond, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; aged 82; died, October 26, of carcinoma of the spleen.

William Christopher Langhorst, Los Angeles; Northwestern University Medical School, Chicago, 1897; aged 65; died, September 26, of cerebral hemorrhage.

John Adam Quell, Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1902; aged 52; died suddenly, recently, of coronary thrombosis.

Albert Joseph Croft, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 56; died, October 31.

Philip Gouvneur Young @ Sacramento, Calif.; Drake University College of Medicine, Des Moines, Iowa, 1908; aged 56; died, September 18, of heart disease.

David P. Hueston, Jacksonville, Ill.; College of Physicians and Surgeons of Chicago, 1888; aged 84; died, October 31, as the result of injuries received in a fall.

Arthur Joseph Burgess, Deland, Fla.; Harvard University Medical School, Boston, 1882; aged 76; died, October 18, of carcinoma of the prostate and liver.

Elmer E. Polk, Muncie, Ind.; Physio-Medical College of Indianapolis, 1886; aged 70; died, October 12, of chronic myocarditis, nephritis and arteriosclerosis.

Charles Carroll Hyde, Addison, Mich.; University of Michigan Medical School, Ann Arbor, 1876; aged 81; died, October 28, of cerebral hemorrhage.

Edward W. McEssy, Fargo, N. D. (licensed in North Dakota in 1905); aged 57; died, October 15, in a hospital at Moorhead, Minn., of heart disease.

Walter Emmett Jackson, Kansas City, Mo.; Rush Medical College, Chicago, 1895; aged 64; died, October 24, of bronchopneumonia and empyema.

Thomas J. Bond, Tahlequah, Okla.; Arkansas Industrial University Medical Department, Little Rock, 1895; aged 82; died, August 23, of carcinoma.

Robert C. Liddon, Corinth, Miss.; Maryland Medical College, Baltimore, 1900; formerly bank president; aged 55; died, October 13, of heart disease.

Howard W. Quirk, Ashtabula, Ohio; Western Reserve University Medical Department, Cleveland, 1882; aged 75; died, recently, of arteriosclerosis.

William Archibald Bolling, Lexington, Ky.; University of Louisville School of Medicine, 1891; aged 67; died, October 23, of angina pectoris.

Clive Charles McCullough, New York; Albany (N. Y.) Medical College, 1889; aged 69; died suddenly, November 11, of coronary thrombosis.

Gerhard Olaus Fortney @ Zumbrota, Minn.; Rush Medical College, Chicago, 1906; aged 51; died, October 26, of carcinoma of the stomach.

Reinard Smith Keeler, Sanford, Fla.; Jefferson Medical College of Philadelphia, 1875; aged 79; died, October 29, of pneumonia and uremia.

Merwyn R. Bibb, Chicago; Harvey Medical College, Chicago, 1902; aged 58; died, October 24, of chronic nephritis and secondary anemia.

Almon Danforth Hodges @ Boston; Harvard University Medical School, Boston, 1893; aged 69; died, October 17, of lobar pneumonia.

Alfred Richard Seebass @ Denver; Denver College of Medicine, 1893; aged 66; died, November 8, of a self inflicted bullet wound.

Richard Garrison, Toms River, N. J.; Baltimore University School of Medicine, 1901; aged 75; died, October 14, of heart disease.

T. B. Gassaway, Bartlett, Tenn.; Memphis (Tenn.) Hospital Medical College, 1902; aged 54; died, October 25, of heart disease.

William Perry Clay @ Convoy, Ohio; Starling Medical College, Columbus, 1896; aged 70; died, November 4, of carcinoma.

Hiram S. Smith @ Black Diamond, Wash.; Detroit College of Medicine, 1898; aged 65; died, October 10, of heart disease.

Wilson G. Stephens, Catawba, Ohio; Eclectic Medical Institute, Cincinnati, 1889; aged 71; died, October 21, of heart disease.

Charles Arnold Wyndham, Lisbon, Maine; Medical School of Maine, Portland, 1907; aged 52; hanged himself, September 23.

Robert Garrett Lee Lumpkin, Baltimore; Baltimore Medical College, 1892; aged 63; hanged himself, October 8.

J. E. Hawkins, Lexington, Ky.; Louisville Medical College, 1872; aged 81; died, October 2, of coronary occlusion.

Simoes Blakeney, Waldron, Ark. (licensed in Arkansas in 1905); aged 81; died, October 26, of chronic myocarditis.

James S. Hibbard @ Wichita, Kan.; Kansas City Medical College, 1900; aged 61; died, October 17, of heart disease.

Harry G. Gould, McKinney, Texas; Fort Wayne (Ind.) College of Medicine, 1884; aged 71; died, recently.

Bureau of Investigation

AARON W. RAFFELSON—IMPOSTOR

A Shrewd Swindler Who Poses as a Physician

A man who calls himself, variously, Aaron W. Raffelson, Donald Clinton Raphael, Aaron Raphael, Aaron Wolf, C. S. Julian and others, is now going about the country posing as a physician, particularly as a psychiatrist, and swindling medical men and others. According to information received from state officials in New York and police officials in Santa Fe, N. M., Raffelson is about 5 feet 5½ inches tall, aged about 23 but looks older, weighs 130 pounds, is slim and wiry in build, sometimes wears his hair bright red and other times black, has dark brown eyes, a swarthy complexion, at times wears a small mustache, and invariably goes bare-headed. He has a marked acne of the face. He speaks English fluently, also German and Yiddish.

Accompanying this article is a photograph of this impostor taken Dec. 11, 1930, by the Police Department of the City of New York at the time that he was arrested for forgery. His number in the New York City police records is B-87593. His fingerprint class is $\frac{9}{21} \frac{U}{Ra} 14$

After his arrest for forgery in 1930, Raffelson was discharged and placed on probation in the custody of the complainant. At the time Raffelson was employed by the University Settlement Society. He reported to the Society for a while and made part restitution. The Society has not seen or heard from him in the past two years.

Raffelson misuses medical certificate No. 16534 issued by the State of New York. According to the New York officials, this certificate was stolen from a woman physician of New York City. Raffelson replaced the physician's name with one of the names that he uses, Aaron Warren Raphael. According to the same source of information, Raffelson has a forged diploma from New York University dated 1933, from the Department of Psychology, School of Education. (See illustration.) He is also said to wear a Phi Beta Kappa key—stolen.

While Raffelson was in New York City, he claimed to be an M. D., gave medical treatments and wrote prescriptions for a number of people in New York State. Raffelson is evidently a shrewd and plausible scamp, and was able to take in a number of people of above average intelligence. While he was in New



Photograph of Aaron W. Raffelson, alias Aaron Raphael, alias Donald Raphael, etc., etc. It was taken by the Police Department of the City of New York, Dec. 11, 1930.

York he is said to have claimed to be a teacher at New York University, University and Bellevue Hospital Medical College, and claimed, also, to be an assistant state medical examiner. Both statements, of course, were utterly false. He has also claimed to be a graduate of the University of Oregon Medical School and the State University of Iowa College of Medicine and to have served as intern in Bellevue Hospital and to have been a research worker at the Rockefeller Foundation. All of these claims are false.

Getting wind of the fact that the New York officials were about to close in on him, Raffelson left that city and went to Santa Fe, N. M., in April, 1934. By a shrewd move on the part of Raffelson, he was able to get a letter of introduction from a gentleman of high standing in New York. As soon as he reached Santa Fe a credit organization of that city began checking up with their correspondent in New York, who reported that Raffelson's credit accounts there had been paid satisfactorily (with money, it appears, that he had obtained by swindling other New Yorkers). Santa Fe is not a large city, and it was not long before Raffelson's tendency to be obtrusive

THE TRUSTEES OF NEW YORK UNIVERSITY IN THE CITY OF NEW YORK

TO ALL PERSONS TO WHOM THESE PRESENTS MAY COME GREETING
BE IT KNOWN THAT

Aaron Warren Raphael

HAVING COMPLETED THE STUDIES AND SATISFIED THE REQUIREMENTS
FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

HAS ACCORDINGLY BEEN ADMITTED TO THAT DEGREE WITH ALL THE
RIGHTS PRIVILEGES AND IMMUNITIES THEREUNTO APPERTAINING

IN WITNESS WHEREOF WE HAVE CAUSED THIS DIPLOMA TO BE
SIGNED BY THE CHANCELLOR OF THE UNIVERSITY AND BY THE DEAN OF THE
SCHOOL OF EDUCATION PHILOSOPHY PSYCHOLOGY AND PEDAGOGY
AND OUR CORPORATE SEAL TO BE HERETO AFFIXED IN THE CITY OF
NEW YORK ON THE TWENTY SECOND DAY OF MARCH IN THE YEAR
OF OUR LORD ONE THOUSAND NINE HUNDRED AND THIRTY THREE



John I. Water
DEAN
Nancy W. Chase
CHANCELLOR

Greatly reduced photographic facsimile of a "diploma" said to have been forged by Raffelson and purporting to have been issued by New York University. Its crudity and falsity is apparent.

made him rather well known. He spoke on psychiatry before local civic clubs, and he was also said to have paid marked attention to a young woman of that city and, indeed, was "cutting quite a large swath socially." When suitable occasions presented themselves, he would flash a badge which he claimed was a police badge from the City of New York. It was, however, merely an ambulance driver's badge.

On September 4 a murder was committed in Santa Fe. Raffelson immediately jumped into the investigation of the crime with a local detective. At the postmortem he was said to have testified under oath that he was a practicing physician and that he had assisted in conducting an autopsy on the deceased.

Detective H. C. Martin of the District Attorney's Office at Santa Fe, N. M., reports that the impostor is a fast talker, intelligent, and is likely to frequent the best hotels. Raffelson is said to claim that his father's estate in Oregon is being probated and that he (Raffelson) has substantial prospects therefrom. When last seen Raffelson wore a dark blue suit, white shirt with collar attached. He is also said to carry a 32-25 automatic in holster, both pistol and holster stolen while in Santa Fe.

On the morning of September 16 Raffelson is reported to have gone to a Santa Fe garage, where he deposited a worthless check and hired an automobile for the claimed purpose of driving to Portland, Ore. Instead of heading northwest, however, he went south to the Mexican border and five days later the car was recovered in a garage at El Paso, Texas, where Raffelson had left it. When he left Santa Fe, he had cashed checks aggregating almost a thousand dollars, one drawn on a bank that doesn't exist and all made out to Aaron W. Raphael by some non-existent individual. It appears that seven warrants have been sworn out against him in Santa Fe, charging him with swindling, forgery, illegal practice of medicine, obtaining money under false pretenses, larceny by bailee, and other charges.

Correspondence

EARLY REFERENCES TO PHYSICAL ALLERGY

To the Editor:—Under current comment, September 29, you discussed the importance of physical allergy and mentioned a few old references. Although you make no claim that these are the oldest references on the subject, Dr. Richard L. Sutton Jr. in a communication, October 27, corrects you with the statement that earlier reports of physical allergy are available and he cites articles published in 1883, 1881 and 1875.

The references which Dr. Sutton cites are still not the oldest. For example, Blachez (*Bull. Soc. méd. d. hôp. de Paris* 3:262, 1872) recounts an instance of angioneurotic swellings due to exposure to cold water and to cold air or to the eating of ice. Behier (*ibid.* 3:262, 1866) describes his own case of urticaria brought on by cold water. Bourdon (*ibid.* 3:259, 1866) tells of asthma due to cold.

SAMUEL M. FEINBERG, M.D., Chicago.

MORTALITY AND MORBIDITY STATISTICS

To the Editor:—I should like to call attention to a common fallacy in the presentation of mortality and morbidity statistics, which is illustrated again by an article by Grulee, Sanford and Herron on breast and artificial feeding in *THE JOURNAL*, September 8. The fallacy consists in reporting the mortality for a group under the supervision of an organization and then comparing it with the mortality of the city or state or nation as a whole.

In this article, for instance, it is stated that the mortality for the group under the care of the Infant Welfare Society of Chicago was 11.1, which was less than one fourth of the infant mortality of the same region. Now the infant mortality of the same region is made up of all the deaths of infants from the very moment of birth. The mortality of the group under the supervision of the Infant Welfare Society is made up obviously of only those infants who came under its supervision. In a communication from Dr. Grulee I learned that none of these children came under the care of the society earlier than the third week and all of them were not under its care until the second month. It is perfectly obvious therefore that, since from one half to two thirds of all the deaths among infants occurs in the first month of life, it is entirely incorrect to compare one group, in which not one of the infants was under 3 weeks of age, with another group that has to assume the responsibility for all deaths occurring in the first three weeks.

A second fallacy is found in comparing groups with different racial distribution. In chart 1 the authors indicate the racial distribution of the people in the neighborhoods. From experience with infant welfare work it is reasonable to believe that the attendance at the baby stations was not exactly in a similar proportion as the racial groups which existed in the neighborhoods. It is well known that Italian and Russian mothers are quicker to take advantage of all sorts of medical and nursing service, guidance and advice. So one would be inclined to believe that a higher percentage of babies of Russian and Italian mothers attends the baby stations than was found in the neighborhoods. Furthermore, the neonatal rate and the infant mortality rate are much lower among infants of Italian and Russian mothers. One finds, then, in this fact of different distribution of racial groups a constant error in the comparison made by organizations with the community at large.

At the Montreal session of the American Public Health Association in September 1931, I had occasion to bring to light

similar fallacies in the reports of organizations carrying on prenatal work. It is unfortunate that more attention is not paid to some of these well known factors in statistical reports. It may be that even with proper corrections Dr. Grulee and his co-workers may be able to prove statistically what most of us would like to believe—that morbidity and mortality are lowest in breast-fed babies and highest in bottle-fed infants. But in the presence of such statistical errors as I have indicated, the case cannot be considered proved.

JULIUS LEVY, M.D., Newark, N. J.

Director, Division of Child Hygiene, City
of Newark Department of Health.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SENSITIZATION TO NEOARSPHENAMINE

To the Editor:—Please outline for me a treatment for a woman about 27 years of age who has had a severe cough and bloody sputum for two years. About one year ago I made a diagnosis of bronchial spirochetosis and advised the doctor who had her in charge to give her neoarsphenamine. He did this and after four or five doses she developed a marked dermatitis. I then suggested to him that he give her a saturated solution of potassium iodide after the dermatitis subsided. Then another dose of neoarsphenamine was given in a 10 per cent solution of sodium thiosulphate. The dermatitis immediately returned. She has a good appetite but continues to lose weight and continues to have a productive cough with occasional bloody sputum. Please advise treatment. Please omit name when publishing.

M.D., Texas.

ANSWER.—Most of the articles on bronchopulmonary spirochetosis dismiss treatment by reference to the great efficacy of arsphenamine or its modifications. There are a few reports, however, of cases in which arsphenamine derivatives failed to give satisfaction or, as in the case cited, were out of the question because of sensitization of the patient. The prognosis of chronic spirochetosis is not good. Harper (in discussion of Davis, D., and Harper, E. C.: *Acute Pneumonitis Due to Infection by Vincent's Organisms, Virginia M. Monthly* 58: 95 [May] 1931) quotes Castellani, the originator of modern interest in this disease, to the effect that cases of bronchopulmonary spirochetosis of more than six months' standing cannot be cured.

In any mild sensitization to neoarsphenamine it is justifiable to try minute doses of other arsphenamine derivatives, sulpharsphenamine or silver arsphenamine for example. Sometimes they will prove helpful. In most cases, however, the patient will react unfavorably to them also.

Inorganic forms of arsenic may be used. Castellani recommends solution of potassium arsenite by mouth or sodium cacodylate subcutaneously. Recently trivalent organic arsenic in the form of acetarsone (stovarsol) or the methenamine derivative of meta-amino-para-oxyphenol-arsenic acid has proved of great value in syphilis and might be helpful in this case if tolerated by the patient. One fourth of a 0.25 Gm. tablet might be given and, if there is no untoward reaction, a full tablet. If that was well borne, the regular plan of treatment could be tried, one tablet the first day, two the second, and three the third day, the dosage for the entire day being given at once on an empty stomach. This is sufficient for one week, to be repeated each week for eight weeks. Before the treatment is begun, an examination of the eyegrounds and the visual fields, as is the rule for trypanamide, is recommended. The other precautions, frequent examination of the urine for casts and albumin and careful supervision of the general condition of the patient, must be observed.

Many other drugs have been used with more or less success. A bismuth compound alone or as an adjuvant to the arsphenamines has been given favorable mention; antimony and potassium tartrate was recommended by Castellani; emetine has been helpful in a number of cases.

From Argentina comes a report (Denis, R.; Bares, F. J., and Araóz, J. D.: *Chloroform Therapy of Bronchial Spirochetosis of Castellani, Prensa méd. argent.* 20:2005 [Sept. 20] 1933) of a case resistant to many forms of therapy which yielded to chloroform inhalation as for anesthesia. The first dose was 10 Gm. given in twenty-five minutes. The second

attempt a week later was a failure, because of spasm of the larynx. On the third attempt, seventeen days after the first, 5 Gm. of chloroform was given in thirty minutes and three more such doses were then administered at intervals of three days. Following the last treatment the spirochetes disappeared from the sputum and had not returned at the last examination five months later.

With any form of treatment, the possibility of a double infection with tuberculosis must be kept in mind, sometimes the spirochetosis engrafted on an old tuberculous infection, sometimes the reverse. After apparent cure, the cases should be kept under observation for a long time, as recurrence is common.

INCUBATION PERIOD IN RABIES

To the Editor—In your answer to the inquiry in *THE JOURNAL*, July 21, on the incubation period of rabies in dogs, I notice that you say "The average period of incubation of rabies in the dog is said to be from twenty one to forty days." I have been instructed by the director of the hygienic laboratory with which I am associated to observe carefully for ten days any dog that has caused an abrasion on the skin of any person, and if at the end of ten days the dog is in good health I can reassure the person that there is no danger of rabies developing from the abrasion. It is understood that the abrasion may be from the teeth or claws. The answer seems inconsistent with the advice I have obtained and the same advice I have given my patients. I have been observing this rule for a number of years and have not had any patient develop hydrophobia. Please omit name.

M.D., South Carolina.

ANSWER.—In the statement above no account is taken of the time when the dog himself was bitten and might have been infected. Obviously the incubation period is the time from infection until definite symptoms of rabies appear. Ten days or so after a suspected dog has bitten a human being does not under any circumstances constitute the incubation of rabies in the dog.

Rosenau (*Preventive Medicine and Hygiene*, New York and London, D. Appleton & Co., 1916, p. 40) states that in general the period of incubation of rabies varies from fourteen days to a year or more and gives the average period as follows: "man, 40 days; dogs, 21 to 40 days; horses, 28 to 56 days; cows, 28 to 56 days; pigs, 14 to 21 days; goats and sheep, 21 to 28 days; birds, 14 to 40 days."

Veranus A. Moore (*The Pathology and Differential Diagnosis of Infectious Diseases of Animals*, New York, Macmillan Company, 1916, p. 390) makes almost the same statement as Rosenau and credits the information to Ravenel. Moore also gives the following table of the period of incubation in 144 cases of rabies in the dog as determined by Peuch:

Period of Incubation of Rabies in the Dog

Number of Days of Incubation	Number of Cases	Per Cent
5 to 10..	3	2.08
10 to 15	8	5.55
15 to 20	13	9.03
20 to 25	25	17.36
25 to 30	13	9.03
30 to 35	25	17.36
35 to 40	6	4.17
40 to 45	11	7.64
45 to 50	9	6.25
50 to 55	4	2.78
55 to 60	2	1.39
60 to 65	7	4.86
65 to 70	1	.69
70 to 75	5	3.47
80 to 90	7	4.86
100 to 120..	1	.69
Total ..	144	

Kolmer (*A Practical Text-Book of Infection, Immunity and Biologic Therapy*, Philadelphia & London, W. B. Saunders Company, 1934, p. 785) quotes Reichel (*American Veterinary Review*, January 1911) as giving the incubation period of rabies as follows:

Man, fourteen to ninety days
Dogs, fourteen to sixty days.
Cats, fourteen to sixty days
Cows, fourteen to eighty days.
Horses, twenty one to ninety days
Swine, sheep and goats, twenty one to sixty days.
Birds, fourteen to sixty days.
Rabbits, fourteen to ninety days.
Guinea-pigs, eight to eighty days.

Special attention is directed to the great variation in the incubation of rabies in the dog because of the important rôle of that animal in human rabies. Variation in the incubation of rabies in general may depend on the site and character of the wound, on the amount and virulence of the virus introduced, and on other factors. Bites about the face and fingers are more dangerous than bites in the back and lower extremities, and deep, lacerated wounds are always more dangerous than the superficial.

TANNIC ACID IN BURNS

To the Editor—Please give me your opinion of the use of tannic acid in burns. Would it be safe and proper to use it in solution in case of burns? Tell me what you can as to its use and the best way to use it. Please omit name.

M.D., Iowa.

ANSWER.—Since Davidson in 1925 introduced tannic acid as a therapeutic measure in the treatment of burns, it has been generally accepted as the best method of treating the wound if the patient is seen within the first forty-eight or seventy-two hours after the injury.

Following the infliction of a burn, the patient's general condition should receive first attention. If the patient is in shock, measures to relieve pain, restore external heat and supply fluid should be instituted immediately. If no shock is present or after the patient has responded to treatment, the wound should receive attention. Clothing and débris of various kinds should be carefully removed and loose pieces of tissue carefully lifted off. The surface should then be sprayed with tannic acid solution, which should be freshly prepared. Davidson used a 25 per cent aqueous solution, but most surgeons now believe that a 5 per cent aqueous solution is the most satisfactory. Modification of the solution so that it is neutral or slightly alkaline has certain advantages. Twenty-five grams of tannic acid and 4 Gm. of sodium carbonate added to 500 cc. of water will give a neutral 5 per cent solution. The spraying should be done every fifteen minutes until a firm mahogany-brown membrane is formed. Usually this occurs in about twelve or eighteen hours. If wet dressings are used they should be saturated at regular intervals with tannic acid solution, and a small window can be cut through the dressing to determine whether or not tanning has taken place. When tanning is completed, the dressing can be removed. In very extensive burns the patient may be immersed in a tub containing tannic acid solution. When this method of treatment is used the clothing can be removed after immersion and the solution should be changed as often as necessary to keep it clean. After the area is thoroughly tanned, no dressing is necessary over the burned area. The margins of the wound should be carefully watched and any blebs that form should be opened and painted with an antiseptic solution. A warm air blower should be used over the entire area at four hourly intervals for several days after tanning in order to keep the crust thoroughly dry. It is not necessary to use a blower if the patient is kept under an electric light cradle and the temperature of the air under the cradle is maintained at about 100 F. If after four or five days symptoms of infection appear, the tanned membrane should be carefully inspected and any fluctuant or soft areas should be incised. If infection is present, wet dressings of 5 per cent sodium bicarbonate should be applied over the crust after removal of all the loose membrane over the infected areas. Wet dressings facilitate removal of the crust. If no infection is present, the crust can be allowed to remain until it gradually curls off the healing surface.

This method has the advantage of relieving pain and preventing loss of fluid from the body. The crust acts as an impervious membrane, which prevents contamination of the wound and facilitates the easy handling of patients. Tissues that are destroyed by heat are fixed in the tanning process and in this way rendered inert.

INDUSTRIAL HAZARDS IN WATER SOFTENER MANUFACTURE

To the Editor—I have a patient who is employed by a railroad in its water softening plant, which position he has held for eleven years. During the past two years he has developed a bronchitis and becomes at times asthmatic. A cardiac, renal or tuberculosis origin has been ruled out. He handles large amounts of lime, soda ash and sodium aluminate and breathes a great deal of the dust. There is no system of ventilation or any kind of protection for the men in this plant and I feel sure that his bronchitis is occupational. Kindly answer the following questions: 1. Is there any kind of a mask that can be worn for protection? 2. Is there a state law requiring ventilation of a water softening plant? 3. What is the recognized treatment of these chronic bronchitis cases due to inhalation of lime dust? Please omit name.

M.D., Illinois.

ANSWER.—Water softening with soda ash, lime and similar materials is an intermittent operation involving trivial exposure to dusts compared with such work as the manufacture of lime or soda ash. Both of these dusts are irritants, but extensive observations as to the causation of a pneumoconiosis from their action has established practically no evidence of increased fibrosis from soda ash and from lime or limestone only when the exposure has been gross and prolonged. A roentgen examination will establish the presence or absence of excessive amounts of pulmonary fibrosis such as may result from the action of some dusts. An occupational bronchitis is a possi-

bility, but exact proof can be established only with difficulty. Previous employments in dusty trades may have some bearing on the present condition. As to the specific questions appearing in the query:

1. Yes. A number of respirators are available, such as for one example the Willson No. 3 bag type.

2. No state is known to possess a law peculiarly directed to water softeners, but most states have blanket provisions requiring the rectification of any serious hazard in industry.

3. Apart from the usual treatment of bronchitis, the only special feature connected with an occupational bronchitis is the prevention of further exposure. It may prove to be necessary to remove this worker to other forms of employment, though the wearing of a respirator may suffice.

TREATMENT OF GONORRHEA IN WOMEN

To the Editor:—Can you give me any concrete information on the use of concentrated fat free milk and "manganese butyrate with benzyl alcohol 0.6 per cent" in chronic gonorrhea in the female? Please omit name and address.

M.D., Wisconsin.

ANSWER.—Injections of milk for the treatment of chronic gonorrhea in women have been used for a number of years by many gynecologists. Practically all who use this form of therapy have found it helpful. The injections produce a leukocytosis and build up the patient's general resistance. The pain and tenderness usually associated with chronic gonorrhea are quickly relieved and the inflammatory processes rapidly diminish. In some instances, operations are made unnecessary because of the milk injections. If milk is administered before operation, the latter is simplified in a fair proportion of cases. Furthermore, these injections permit more conservatism when an operation is necessary. The injections are given intramuscularly, and fresh sterilized milk is as good as commercial preparations, if not better. It is best to give only 3 cc. at the initial dose, then increase to 5 cc. and finally to 10 cc. These injections should be given twice a week until exudates diminish in size, pain and tenderness subside, and the patient's general health has improved. There is rarely any untoward reaction from the injections either locally or generally. More information on milk injections in chronic gonorrhea may be found in the following articles:

Gellhorn, George: Milk Injections for Pelvic Infections in Women, *New Orleans M. & S. J.* 78: 557 (March) 1926.

Watkins, R. E.: Milk Injections in the Treatment of Pelvic Inflammatory Disease, *Northwest Med.* 28: 70 (Feb.) 1929.

Greene, E. H.: The Effects of Milk Injections in Chronic Pelvic Inflammatory Disease, *South. M. J.* 26: 443 (May) 1933.

Manganese butyrate is rarely used for therapeutic purposes. No one has reported on its use in chronic gonorrhea in women and, judging from the present knowledge of this substance, it should not be employed as a medical remedy. It does not stand accepted by the Council on Pharmacy and Chemistry.

ALOPECIA AREATA

To the Editor:—I wish to submit this case for your consideration: I have been treating a girl, aged 11 years, for four months for alopecia areata. Her hair has been falling out over a period of fourteen months. She has had treatment for seven months, consisting of ultraviolet exposure once weekly. Additional treatment consisted of thyroid gland tabloid, one tenth grain, four to six daily for one month. Vitamin pearls, three daily for five months, applications of cantharides, olive oil, mange cure, and marrow oil to the scalp have had no appreciable result. The girl is 64 inches (162.6 cm.) tall, weighs 123 pounds (56 Kg.) and has perfect teeth, a clear skin and good health. Her menstrual period began at the age of 10 years 6 months. The hair comes in but does not grow strong and falls out. She has had three growths of hair to date. "Euresol" has been suggested.

H. L. RUDERMAN, M.D., Brooklyn.

ANSWER.—It is difficult to evaluate results of treatment of alopecia areata because of the great variability of the course of the disease, as well as of the response or lack of response of individual cases to various means of treatment. A case may defy all known methods of management and then, apparently spontaneously, clear up quite suddenly.

Because of the not infrequent association between a patchy alopecia and syphilis, either acquired or congenital, the possibility of this patient being syphilitic should be ruled out. If this is done and examination of the affected areas shows no scarring or atrophy such as might follow certain of the alopecia producing dermatoses and the extent of the involvement is not too great, the ultimate prognosis with the type of treatment used so far would probably be good. The youth of the patient, the fact that there has been new growth several times even though not strong or permanent, and the fact that the disease has been present only slightly over a year all point in this direction.

The general symptomatic and tonic treatment is important and this seems to have been well taken care of in this case. If the patient is particularly depressed or self conscious as a result of the affliction, attempts should be made to cheer her, which, as the prognosis is relatively good, seems justified.

Local stimulating preparations are usually indicated. There is a great variety of these and several have already been used in this case. Tricresol in 50 to 100 per cent strength might be applied with caution by the physician, so as to produce slight vesication in the affected areas every two weeks or so. Combined with this, a 5 per cent sulphur ointment might be used over the scalp in general one night a week, the hair being washed the next morning, and a lotion applied with a medicine dropper three times a week between applications of the ointment. The lotion might contain resorcinol monoacetate and castor oil in the following proportions: castor oil 4 cc., resorcin monoacetate 8 cc., spirit of formic acid 30 cc., and sufficient 90 per cent alcohol to make 240 cc.

PROPHYLAXIS AGAINST REPEATED PNEUMONIA

To the Editor:—A boy, aged 13, has had pneumonia five times. The physician who treated the first four attacks is not living. The last attack was treated by me last winter. In the last attack, which terminated in ten days by rather rapid lysis, only the left lower lobe was involved. The last attack was much more severe than others. The temperature ranged from 105 to 106.6 F. for five days. The boy's weight is normal; he is very active and is not fat. He is not a "delicate" child but very light complexioned and is no more prone to other diseases than other children. The tonsils are out. The throat and nose are in good condition. There is no chronic disease of the upper respiratory tract. The tuberculin test is negative. Chest roentgenograms taken several years ago are negative. The attacks always start with coryza and pharyngitis. The patient is always put to bed when he has a cold. Pneumonia develops while he is in bed treating the cold. He gets cod liver oil every fall, winter and spring, and fresh fruits daily. Possibly he does not eat sufficient meat; otherwise the diet is well balanced. Hygiene of the home is beyond reproach. His home is steam heated. The boy is always well dressed for winter weather. Cold vaccines were tried by the former physician and no results were noted. He was advised by the former physician that he would probably "outgrow" the susceptibility to pneumonia. The patient raised no sputum during the last attack. There is no history of sputum culture in the former attacks. Do you advise trying stock prophylactic vaccines in such cases? Please omit name and town.

M.D., North Carolina.

ANSWER.—An attempt should be made to immunize this patient. However, it should be borne in mind that certain individuals are refractory toward active immunization against pneumococcal infection. Insufficient knowledge of the relative activity of the various vaccines makes it impossible to advise any one kind. The important point is the study of the blood of the patient before and two weeks after the use of the vaccine to prove its effectiveness. The mouse protection test is the most sensitive. If antibodies are found in the blood, it would be advisable to vaccinate the boy every six months in the hope of finally producing a state of resistance that will reduce his apparent hypersusceptibility to pneumococcal infection. The important issue is the use of a vaccine that actually stimulates antibody production in the patient.

GRÄFENBURG RING FOR CONTRACEPTION

To the Editor:—I have been hearing rumors about an intra-uterine contraceptive device that was developed in Germany and bears the title of Gräfenburg ring. I understand that it is inserted into the uterine cavity and that it is highly efficient. I should like to find out more about this ring, the dangers that might attend its use, and any other contraindications. Of course any operation that demands dilation of the cervix and the introduction of a foreign body into the uterus always is dangerous because of the possibility of infection. What is the danger of a malignant condition developing? Is there any danger of sterility following the use of the ring for several years if a young woman uses it and then decides that she wishes to have a child? Please omit name and locality.

M.D., Hawaii.

ANSWER.—The Gräfenburg ring has been in use in Germany for several years and considerable data are available concerning its usefulness as a contraceptive device, as well as the dangers and the failures following its use.

Three types of ring have been utilized: a star of silkworm gut, a circle of silkworm gut, and a spiral silver ring. The ring is inserted into the uterine cavity after dilation of the cervix to number 5 or 6 Hegar, and the location of the ring is checked up from time to time by means of roentgen examination. Bleeding or pain necessitates its removal, which is more difficult than introduction. On the other hand, the ring may slip out accidentally or may become displaced. Pregnancy occurs rarely, and ectopic pregnancy is in no way prevented by the ring. According to Robert Meyer, who examined the endometrium in fifteen patients who wore the ring one year or

longer, no inflammatory change is caused by the presence of the ring.

Stefko and Lourié have shown that, when pregnancy occurs with the ring in the uterus, damage to the embryo occurs, resulting in deformed children. Leunbach of Copenhagen at first reported favorably on the use of the silver Grafenburg ring but in 1930 withdrew his endorsement; in 12 per cent of his patients, bleeding and pain required removal of the ring.

Grafenburg had ninety-nine had results in 1,081 cases, but these were less in the case of the silver ring than when silk-worm gut was used. There were thirty-one pregnancies in his series, four of which occurred when the ring was in the uterus and twenty-seven when the ring was lost. Inflammation resulted in seventeen cases. Replacements had to be made in 408 cases from one to eight times—a total of 1,390 replacements. No mention is made in the literature of malignant changes resulting from the use of these intra-uterine devices. In cases in which inflammation occurs, one would expect sterility as a sequel. For a complete discussion of contraceptive devices, including the Grafenburg ring, the correspondent is referred to Dickinson and Bryant's book "Control of Conception," Baltimore, Williams and Wilkins, 1931.

TUCKER'S ASTHMA SPECIFIC

To the Editor—I was called recently to see a patient who had been taking Dr. Tucker's Asthma Specific for asthma and hay fever. She had been using it almost continuously since about August 20, when her first symptoms were noticeable. When I was called she was in a state of unconsciousness, the pulse was weak and thready and she was in profound dyspnea. In spite of stimulation her condition gradually became worse and she died in less than two hours. At the time I was called, the bottle with the label could not be found; but it has now been found and it is labeled as containing 5 grains of cocaine to the ounce. I am strongly of the opinion that the continuous and prolonged use of such a strong solution of cocaine was a very important factor in the sudden heart symptoms, for the patient had at least not had enough trouble with her heart to cause her to consult a physician for it. Please give me your opinion with regard to this phase of this so called asthma specific.

J. M. STEVENSON, M.D., Brooksville, Ky

ANSWER.—The data submitted are insufficient to pronounce the case reported as one of cocaine poisoning, though the possibility of this must be entertained. Discussions of this notorious nostrum may be found in *THE JOURNAL*, May 20 and Sept. 29, 1911, and Nov. 1, 1924. As *THE JOURNAL* has pointed out at various times in the past, the sale of this product violates both the Harrison Narcotic Act and the federal Food and Drugs Act. The manufacturers have claimed that, although the original product contains 5 grains of cocaine to the ounce, the stuff is kept in stock long enough to cause the other ingredients to hydrolyze the cocaine, with the result that when the stuff reaches the consumer most of the cocaine has disappeared—as such. The label, therefore, deliberately falsifies its composition, which should bring it within the purview of the federal Food and Drugs Act. Even if it contains no cocaine, it must obviously contain a derivative of cocaine, so that by its method of sale it violates the Harrison Narcotic Act.

LICHEN PLANUS IN AGED

To the Editor.—A man, aged 72, has a skin condition affecting his ankles particularly but at times his arms and back, which I have diagnosed as a hypertrophic lichen planus. I think there is no question as to the diagnosis, but all forms of treatment that I have tried have failed to give anything except temporary relief. I have used mercuric succinimide and mercuric salicylate in one eighth to one-third grain (0.008 to 0.02 Gm) doses intramuscularly twice weekly for three months. He has been given arsenic intramuscularly and orally. Locally I have used tar and also mercury ointments. I have applied full dosages of ultraviolet rays and of x-rays several times. There was marked temporary improvement at first following the use of all these measures but the eruption returns quickly in a few hours, sometimes with an extensive bright red papular eruption extending half way to the knees. The subjective symptoms are burning and gnawing. There is no itching. During the acute exacerbations there is some secretion of clear watery fluid from small vesicles, which form on the papules. When the condition is more quiescent it involves only the skin on the front and sides of the ankles proper. The affected skin is thickened and has a blue-violaceous color. Small white striae can be seen on the surface. The patient is becoming quite nervous about the condition. I have treated him for the past year with no apparent progress. Please advise as to present methods of treatment of this disease and your opinion as to how best to handle this particular case at this time. Would neocarsphenamine injections be of any probable value?

M.D., Kan.

ANSWER.—There is some question as to the diagnosis in this case. While the violaceous color and the chronicity suggest lichen planus, the acute exacerbations with vesiculation are not typical for that disease. They suggest rather some form of chronic eczema or perhaps lichen simplex.

The treatment of hypertrophic lichen planus is very difficult and at 72 years of age can easily be hopeless as to cure. Local treatment to reduce the burning sensation would seem to be indicated. The tars, menthol and phenol are the most useful of the standard drugs. Tars may cause furuncles if kept up too long. Phenol should not be used in strength greater than 1 per cent in ointments for fear of phenol gangrene. Camphor, menthol and chloral, from 5 to 20 per cent of each, can be used in alcohol as an anesthetic lotion.

Arsphenamine or neocarsphenamine is not particularly helpful in lichen planus and not justifiable at 72 years of age without a direct indication.

"HEART WORMS"

To the Editor.—In southern Florida it is conceded by dog owners that a majority of adult dogs are infested with so called heart worms. I have seen at autopsy a heart cavity completely filled with adult worms (in the dog) that measured several inches long. A drop of blood under low power will show from one to twenty larvae that appear one-fourth inch long. They are very motile. Can you tell me what variety these filariae are? Is there any relation to *Filaria bancrofti* or *Filaria sanguinis-hominis*? Can they be transmitted to man? What mosquito transmits them? What is the incidence of *Filaria* infestation in man in southern states? The answer to these questions will be of much interest to local physicians, as we are frequently asked whether man is likely to be infested from this variety found so prevalently in dogs. Please omit name.

M.D., Florida.

ANSWER.—The worms found in the heart are undoubtedly the common heart worm *Dirofilaria immitis*, which is a filarid widely distributed in the warmer countries of the world and which occurs in the dog, cat and various wild carnivores. As it can be transmitted by a number of mosquitoes, it is difficult to name the chief carrier in Florida. The probability is that it is carried chiefly by *Culex fatigans* (quinquefasciatus) and *Culex pipiens*. *Dirofilaria* has never been found in man and there is no connection between it and human filariasis. With the exception of a few sporadic cases, the only endemic center of human filariasis (*Filaria* or *Wuchereria bancrofti*) in the United States is in Charleston, S. C. As far as is known, any human infections in Florida or the neighboring states would probably have originated in the Charleston area.

INNERVATION OF DENTAL PULP

To the Editor—I wish to direct your attention to an error in a portion of the answer to the inquiry concerning the innervation of the dental pulp appearing in *Queries and Minor Notes* in *THE JOURNAL*, October 6, page 1092. From the author's statement it might be inferred that anesthesia of the third division of the fifth nerve may be obtained by a mandibular block. This is incorrect, as such a procedure would affect only the terminal branches anterior to the point of injection; namely, the inferior dental, lingual and mental branches of this nerve. The fact is that, in order to produce anesthesia of the third or mandibular division of the fifth nerve for surgical or therapeutic purposes, it is necessary to inject the solution near or into the foramen ovale located in the greater wing of the sphenoid bone where the nerve emerges from the cranial cavity.

This particular inquiry touches on a problem that puts to test the erudition and skill of the ablest operators from time to time. A much deeper anesthesia is needed and is often more difficult to obtain for pulp extirpation than for other even more extensive surgical treatment. This is especially true in patients of middle age, particularly when the two upper bicuspid and first molar teeth are involved. In these cases failure is due entirely to the inability of the anesthetic solution to pass through the dense and thick anterior cortical plate of the superior maxillary bone, under the surface of which is located the middle superior dental (alveolar) nerve, which innervates these teeth. In this type of case other methods must be employed to obtain anesthesia, and an intraosseous block is one that gives satisfactory results. In certain other cases, when the pulp is already exposed, pressure anesthesia with procaine hydrochloride may be employed with equally good results.

EMIL L. AISON, D.D.S., Chicago.

ELECTROCARDIOGRAPHY IN PRACTICE

To the Editor.—Under *Queries and Minor Notes* in *THE JOURNAL*, September 29, you advised "M.D., Massachusetts," to install an electrocardiograph in the hospital in question and to charge a small fee for interpretation of each tracing, reimbursement for the investment to be dependent on a large volume of business. In your reply, I believe, you should have considered the cardiologist in the neighboring city who has invested in a similar machine and whose volume of business cannot be comparable with a hospital of 125 patients daily census. This cardiologist has had to spend considerable time and money for the knowledge to interpret such tracings. I believe that hospitals should not compete by reducing fees because of a greater volume of business available but should charge prevailing rates of private physicians in the community so as to avoid unfair competition. Emphasis should be made on the interpretation of the tracing rather than the mechanical factor. I hope this will be accepted as constructive criticism.

EMIL J. SUSSLIN, M.D., Bridgeport, Conn.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery, Jan 7 Sec, Dr J N Baker, 519 Dexter Ave, Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written (Group B candidates)* The examination will be held in various cities throughout the country, April 29 *Oral (Group A and Group B candidates)* New York, June 10 Sec, Dr C Guy Lane, 416 Marlborough St, Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written (Group B candidates)* The examination will be held in various cities of the United States and Canada, March 23 *Final oral and clinical examination (Group A and Group B candidates)* Atlantic City, N J, June 10 11 *Group B application lists close Feb 23 and Group A application lists close May 10* Sec, Dr Paul Titus 1015 Highland Bldg, Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 10 *Application must be filed at least sixty days prior to date of examination* Sec, Dr William H Wilder, 122 S Michigan Bld, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York, June 8 Sec, Dr W P Wherry, 1500 Medical Arts Bldg, Omaha

ARIZONA Basic Science Tucson, Dec 18 Sec, Dr Robert L Nugent Science Hall, University of Arizona, Tucson *Medical Phoenix*, Jan 23 Sec, Dr J H Patterson, 320 Security Bldg, Phoenix

CALIFORNIA Reciprocity Los Angeles, Dec 5 Sec, Dr Charles B Pinkham, 420 State Office Bldg, Sacramento

COLORADO Denver, Jan 18 Sec, Dr Wm Whitridge Williams, 422 State Office Bldg, Denver

DELAWARE Wilmington, Dec 11 13 Sec, Dr Joseph S McDaniel, Dover

DISTRICT OF COLUMBIA Basic Science Washington, Dec 27 28 *Medical* Washington, Jan 14 15 Sec Commission on Licensure, Dr W C Fowler 203 District Bldg, Washington

IOWA Des Moines, Jan 35 Dir Division of Licensure and Registration, Mr H W Grefe, Capitol Bldg, Des Moines

KANSAS Topeka, Dec 11 12 Sec, Dr C H Ewing, Larned

KENTUCKY Louisville, Dec 46 Sec, State Board of Health, Dr A T McCormack, 532 W Main St, Louisville

LOUISIANA New Orleans, Dec 68 Sec, Dr Roy B Harrison, 1507 Hibernia Bank Bldg, New Orleans

MARYLAND Regular Baltimore, Dec 11 14 Sec, Dr Henry M Fitzhugh 1211 Cathedral St, Baltimore *Homoeopathic* Baltimore, Dec 11 12 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MINNESOTA Basic Science Minneapolis, Jan 23 Sec, Dr J Charnley McKinley, 126 Millard Hall University of Minnesota Minneapolis *Medical* Minneapolis, Jan 15 17 Sec, Dr E J Engberg 350 St Peter St, St Paul

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* The examinations will be held in medical centers where there are five or more candidates Feb 13 15 Ex Sec, Mr Everett S Elwood, 225 S 15th St, Philadelphia

NEBRASKA Basic Science Omaha, Jan 89 Dir, Bureau of Examining Boards, Mrs Clark Perlins, State House, Lincoln

NORTH CAROLINA Endorsement Raleigh, Dec 3 Sec, Dr Benj J Lawrence, 503 Professional Bldg, Raleigh

NORTH DAKOTA Grand Forks, Jan 14 Sec, Dr G M Williamson, 4½ S 3d St, Grand Forks

OHIO Columbus, Dec 36 Sec, Dr H M Platter, 21 W Broad St, Columbus

OKLAHOMA Reciprocity Oklahoma City, Dec 11 Sec, Dr J M Byrum, Mammoth Bldg Shawnee

OREGON Portland, Jan 24 Sec, Dr Joseph F Wood, 509 Selling Bldg, Portland

PENNSYLVANIA Philadelphia, Jan 8 12 Sec, Board of Medical Education and Licensure, Mr W M Denison, 400 Education Bldg, Harrisburg

RHODE ISLAND Providence, Jan 34 Dir, Public Health Commission, Dr Lester A Round, 319 State Office Bldg, Providence

SOUTH DAKOTA Pierre, Jan 15 16 Dir, Division of Medical Licensure, Dr Park B Jenkins, Pierre

TENNESSEE Memphis, Dec 20 21 Sec, Dr H W Qualls, 130 Madison Ave, Memphis

VIRGINIA Richmond, Dec 12 14 Sec, Dr J W Preston, 28½ Franklin Rd, Roanoke

WASHINGTON Basic Science Seattle, Jan, 10 11 *Medical* Seattle, Jan 14 16 Dir, Department of Licensure, Mr Harry C Huse, Olympia

WISCONSIN Basic Science Milwaukee Dec 15 Sec, Prof Robert N Bauer, 3414 W Wisconsin Ave, Milwaukee *Medical* Madison, Jan 8 10 Sec, Dr Robert E Flynn, 401 Main St, LaCrosse

Illinois June Examinations

Mr Eugene R Schwartz, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, June 26-30, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and twenty-three candidates were examined, 218 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Chicago Medical School	(1933) 77, (1934) 75, 76, 77, 77, 77, 78, 79, 79, 79, 80, 81, 81, 82, 82, 82, 83, 83, 84, 84, 86, 87	(1931)	75,*
Loyola University School of Medicine	77, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 84,* 84, 84, 84, 84, 85,* 85, 85, 85, 85, 85, 85, 85, 85, 87, 88	(1934)	76,

Northwestern University Medical School	(1932)	81,
(1933) 81,* 83,* 85, 87, 88, 88, (1934) 81, 81, 81, 81, 81, 82,* 82, 83,* 83, 83, 84, 84, 84, 85, 86,* 86, 86, 88, 88		
Rush Medical College	(1933)	81,
(1934) 77, 80, 81, 83,* 83,* 83, 83, 83, 83, 84, 84, 84, 85, 85, 86, 86, 86, 87,*		
School of Medicine of the Division of the Biological Sciences	(1932) 87,* (1934) 82, 83,* 86	(1933)
University of Illinois College of Medicine	(1933)	81,
83, 85, (1934) 76, 78, 78, 78, 79, 79, 79, 79, 79, 80,* 80,* 80,* 81,* 8		

Twenty-four physicians passed the practical examination held in Chicago, June 28, for reciprocity and endorsement applicants. The following schools were represented:

School	PASSED	Year Grad	Reciprocity with
University of California School of Medicine	(1933)	(1933)	Colorado
University School of Medicine	(1910)	(1910)	California
Medical School	(1933)*	(1933)*	Ohio
College of Medicine	(1932)*	(1932)*	Kansas,
(1933), Oregon			
State University of Iowa College of Medicine	(1932)		Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)		Maryland
University of Michigan Medical School	(1930)		Michigan
St Louis University School of Medicine	(1925),		
(1931), (1933, 3)* (1933) Missouri			
Washington University School of Medicine	(1930),*		
(1932), (1933)* Missouri			
Ohio State University College of Medicine (1931),*	(1933)		Ohio
Jefferson Medical College of Philadelphia	(1930)		Penna
School	PASSED	Year Grad	Endorsement of
Northwestern University Medical School	(1933),*	(1934, 2)†	N B M Ex
Rush Medical College	(1929)†		N B M Ex
* License has not been issued			
† Verification of graduation in process			

Nevada Reciprocity Report

Dr Edward E Hamer, secretary, Nevada State Board of Medical Examiners, reports 4 physicians licensed by reciprocity at the meeting held in Reno, Aug 6, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Stanford University School of Medicine	(1933)	(1933)	California
Rush Medical College	(1933)	(1933)	California
Washington University School of Medicine	(1930)	(1930)	Missouri
University of Oregon Medical School	(1924)	(1924)	California

North Dakota July Report

Dr G M Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held in Grand Forks, July 3-6, 1934. Ten candidates were examined, all of whom passed. Two physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Number Passed
Georgetown University School of Medicine	(1932)	(1932)	1
Northwestern University Medical School	(1933),	(1934)	2
Rush Medical College	(1934)	(1934)	1
State University of Iowa College of Medicine	(1925)	(1925)	1
University of Michigan Medical School	(1933)	(1933)	1
University of Minnesota Medical School (1930), (1933),	(1934)	(1934)	3
Creighton University School of Medicine	(1933)	(1933)	1
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Northwestern University Medical School	(1933)	(1933)	Illinois
University of Nebraska College of Medicine	(1931)	(1931)	Kansas
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Rush Medical College	(1926)†	(1926)†	N B M Ex

Book Notices

Atlas Fundus Oculi. By William Holland Wilmer, M.D., LL.D., Sc.D., Professor of Ophthalmology and Director of the Department of Ophthalmology of the Johns Hopkins University School of Medicine. Introduction by Warfield T. Longcope, M.D., Professor of Medicine and Director of the Department of Medicine of the Johns Hopkins School of Medicine. Cloth. Price, \$35. Pp. 39, with 100 colored plates. New York: Macmillan Company, 1934.

The library of every student of ophthalmology should contain a copy of this work. Indeed, every one who uses the ophthalmoscope even occasionally can hardly fail to derive the utmost satisfaction from the color plates, which Annette S. Burgess has spent four years in producing. The first twenty depict normal animal and human fundi with the more frequently encountered congenital human anomalies. The last eighty set forth the pathologic changes of the human eye in most graphic fashion, from primary optic atrophy to bilateral metastatic carcinoma of the choroid before and after the use of radium. Concise but comprehensive descriptions, with brief histories, accompany each plate. Following the introductory pages the author presents an excellent monograph on ophthalmoscopic examination with valuable suggestions for the interpretation of color variations as regards race and complexion in optic nerve and retinal vessel changes. With the concluding words of Warfield T. Longcope's introduction, the book "may be regarded as a series of personal records selected with discretion and wisdom that comes with great experience, to illustrate the appearance of the fundus under normal conditions and in a great variety of pathological states. . . . It unfolds before our eyes one beautiful reproduction after another, each one of which depicts the changes of the fundus with a brilliancy and accuracy that cannot be surpassed." The work is a classic in the literature of modern ophthalmology.

La séro réaction blennorrhagique. Par Bertrand Rème. Paper. Price, 30 francs. Pp. 179. Paris: Masson & Cie, 1934.

This is a comprehensive review of the work on the complement fixation test in gonorrheal infections from 1906 to 1934. It contains abstracts from more than 300 papers published on this subject, only twenty of which were in French. Starting with the history of the test, Rème gives an exhaustive review of the technic, the serologic interpretations and the specificity of the reaction and ends with its practical value. After correlating the work done by the various authors, Rème concludes that, while more research work should be done on the complement fixation test, the test is reliable and of great value both as a diagnostic agent and in determining the question of cure. He deplores the fact that the test is so little understood and used by the medical profession. He also feels that where the test has proved unreliable the fault lies in the use of improperly prepared antigens and in faulty technic in standardizing the various reagents used in making the test. The book is written in simple French, and all persons interested in the complement fixation test in gonorrheal infections should obtain a copy.

The Elements of Experimental Embryology. By Julian S. Huxley, M.A., Honorary Lecturer in Experimental Zoology, King's College, London, and G. R. De Beer, M.A., D.Sc., Jenkinson Lecturer in Embryology, Oxford. Cloth. Price, \$7. Pp. 514, with 221 illustrations. New York: Macmillan Company; Cambridge: University Press, 1934.

The need of new concepts capable of compassing the facts of natural science—in chemistry, in physics, and especially in biology—is generally recognized and increasingly insistent. In this book these eminent English thinkers seek to formulate as far as may be at present general rules and laws that are recognizable in one small field of biology; namely, the earlier stages of embryologic development. They limit their consideration to the biology of differentiation; that is, "the production of an organized whole with differentiated parts out of an entirely or relatively undifferentiated portion of living matter." Amphibian development is selected to exemplify the phenomena from which the principles are deduced. The development is followed descriptively and experimentally in these animals through the stages of beginning differentiation—through the earliest appearance of polarity, symmetry, gradient fields, special local fields, and so on. The attempts at explanation heretofore offered are briefly sketched: preformation, determinants, par-

ticulate inheritance, the "soul" of Aristotle and the "entelechy" of Drisch, and their inadequacy is shown. The new principles suggested substitute for the verbalism and vitalism of these older theories the "organizers" of Spemann and the "gradient fields" developed mainly by Child. The authors do not offer this formulation as a complete explanation. They hope only to give a "first degree of scientific explanation of the facts." As such it will be welcomed by all who realize the need for synthesis of new concepts in natural philosophy. A brief final chapter is devoted to a summary of the principles deduced, and a penultimate chapter is devoted to a consideration of the prefunctional period of development as contrasted with the functional period. The excellent index will be of great help to the student, who will find in this book one of the best reviews of a subject to which experimental embryology has made enormous additions in recent years and which is of prime importance in biologic philosophy. The book is dedicated to two great experimental embryologists, Spemann of Freiburg and Harrison of Yale.

Essentials of Infant Feeding and Paediatric Practice. By Henry P. Wright, B.A., M.D. Cloth. Price, \$4.25. Pp. 212. London & New York: Oxford University Press, 1934.

In the small book the author presents modern teaching in a terse, practical manner "for the benefit of the trained nurse, the student of medicine and the general practitioner." He repeatedly refers to the work of numerous authorities. The first section (sixty-two pages) is devoted to general topics, as growth and development, physiology, hygiene, breast feeding, artificial feeding and stools in infancy. The second section (sixty-seven pages) deals with disturbances of nutrition, including failures to gain weight, vomiting, diarrhea, constipation, prematurity, rickets, tetany and scurvy. The third section (sixty-three pages) gives information on preventive measures, serums, isolation rules, diets, therapy, transfusion and laboratory tests. The book should appeal to "the student of medicine in a crowded curriculum, and the general practitioner in a strenuous life." In some places the text is too greatly abridged; in others there is rambling. In some respects the author is ultraconservative; in others relatively new measures and procedures are recommended. Under pyloric stenosis, for example, only surgery is mentioned as therapy. On page 148 one reads: "Add this to a pint (20 oz.)" (a pint is 16 ounces in the United States). Regarding scarlet fever antitoxin, he says: "Many firms have withdrawn their products from the market." His dosage of convalescent poliomyelitis serum is not adequate. No mention is made of enteritis, although bacillary dysentery and rules for its prevention are briefly discussed. The chief field of usefulness of this book will be as a work of handy reference.

Pubertad: Diario de una colegiala. Traducción directa del original francés por Paul Martín. Paper. Price, 5 pesetas. Pp. 246. Madrid: Javier Morata, 1934.

This is a psychoanalytic study of a diary written by a girl during the age of puberty. The behavior of girls toward persons of the opposite sex, their emotional reactions and their interpretation of love and nature, with vivid colors, as well as the instability of their character and love and other acts are explained by the development and evolution of love at that age. The book is of value for teachers and psychologists in understanding many details of the character and emotions of girls at this age.

The Twilight of Parenthood. By Enid Charles, M.A., Ph.D. Cloth. Price, \$2.50. Pp. 226, with 7 illustrations. New York: W. W. Norton & Company, Inc., 1934.

The point of view of the book is stated to be that: "When prosperous classes of industrial nations, like other ruling castes in the past, have become the victims of their own ideology. In seeking to mitigate poverty by preventing the poor from reproducing, they have molded the destiny of a civilization which has lost the power to reproduce itself." Scientific and technical progress has disproved the Malthusian theory, but the growth of population is being restricted until the world is now faced with the "menace of underpopulation." The development of new mathematical technic in the field of vital statistics has shown that within each industrial era population tends to

follow a logistic curve approaching stability. Such an upper limit is not definitely fixed, since social changes may start a new curve from the upper limit of the present one. "The conclusion which emerges most clearly from our study is that the *laissez faire* economy is a biologically self-destructive arrangement of man's social life."

Medicolegal

Workmen's Compensation Acts: Refusal to Submit to Operation.—In the course of his employment, May 9, 1927, Gidley fractured a semilunar cartilage in his right knee joint. Permanent partial loss of use of the leg followed. He first sued his employer, under the Federal Employers' Liability Act, on the theory that at the time of the injury both he and the employer were engaged in interstate commerce. In 1931 the Supreme Court of Illinois held that the parties were engaged not in interstate commerce but in intrastate commerce, and the suit was dismissed. In the meantime Gidley protected his rights under the workmen's compensation act of Illinois by filing, May 9, 1928, with the industrial commission, a petition for compensation. No hearing was held on this petition until 1932, when an arbitrator awarded compensation based on 130 weeks temporary total disability and a 35 per cent total permanent loss of use of the right leg. The industrial commission affirmed the award with respect to the permanent loss of use but determined that the temporary total disability extended only for twenty-nine weeks and two days. The superior court, Cook County, however, affirmed the award as made by the arbitrator. The employer thereupon appealed to the Supreme Court of Illinois, which affirmed the judgment of the superior court, sustaining the arbitrator's award.

The employer contended that the limitation by the industrial commission of the duration of compensable temporary total disability was correct, asserting that the total disability in excess of twenty-nine weeks and two days was due to the workman's refusal to submit to an operation. All the medical witnesses, said the Supreme Court, agreed that the temporary total disability of 130 weeks was due to the fracture of the semilunar cartilage and that there is a feasible operation for the cure of that condition. They disagreed, however, as to the advisability of such an operation and the danger involved in it. Three physicians, testifying for the workman, believed that there was danger of an infection, which might have resulted in a permanently stiff knee. Only the medical witness testifying for the defendant seemed to belittle the danger. Furthermore, continued the court, the offer or demand by the employer that the workman submit to an operation was made, according to the evidence, Nov. 20, 1927, when there was nothing in the case pending before the industrial commission. Neither the employer nor the workman had then made application for adjustment of compensation. Consequently the employer had at that time no statutory authority to make the demand, nor was it the statutory duty of the workman to submit. It is for the industrial commission, not the employer, to determine whether or not an injured workman may be required to submit to an operation, but at that time not even the industrial commission could have entered an order requiring him to do so.

The only question of law involved, said the court, is whether the workman's conduct was so arbitrary and unreasonable that his continued disability can be said to have resulted from his own misconduct rather than from the original injury. On this issue, the employer had the burden of proof and all doubts must be resolved in favor of the workman. There was evidence that the workman, in refusing the operation, acted on the advice of his physicians. An operation might have cured his knee, but it might have made it much worse. There was no showing of bad faith, and the court could see no more reason for his following the advice of the employer's physicians than the advice of those physicians of his own choice. The court therefore could not say that the workman's conduct was such as to deprive him of his right to compensation.

For the reasons stated, the Supreme Court affirmed the award of the arbitrator.—*Gidley v. Industrial Commission (Ill.)*, 189 N. E. 881.

Malpractice: Negligence Following Tonsillectomy.—The defendant-osteopath, Townsend, arranged for the performance of a tonsillectomy on the plaintiff's son, 8 years old, and undertook the postoperative care of the case. The operation was done by an osteopath from a nearby city, Hartsock, in the defendant's office. After the operation, about 10 o'clock in the morning, the patient remained in the office until 7 o'clock that evening, when he was taken to the home of an uncle, where he remained until he died on the following day. Hemorrhage followed the operation, and Hartsock, before he left the office about 12:30, gave a hypodermic injection, which he said was to coagulate the blood. The bleeding continued and was called to the attention of Townsend, who said it was all right. The patient vomited, however, irregularly, sometimes every hour and a half and sometimes less frequently, and the vomit each time contained red blood. About midnight the plaintiff, the patient's father, summoned the defendant, who administered another hypodermic injection. At 3:30 on the morning following the operation the plaintiff reported to the defendant the patient's condition. The defendant did not come to see the patient but advised the plaintiff to give the patient nourishment and promised to call in the morning. The bleeding continued through the night and was continuing at 8 o'clock the following morning, when the plaintiff went after the defendant and told him that he had better come right away and bring with him some one who knew more than he did. The defendant came, bringing with him his father, a doctor of medicine, who only advised the application of warmth and the giving of nourishment. Thereupon the plaintiff summoned a physician from a nearby town. That physician found the boy weak from loss of blood and still bleeding profusely. He advised the immediate administration of nourishment through the rectum and as soon as the necessary instruments could be procured, and after the arrival of Hartsock, who had operated in the first instance, two or three stitches were taken in the pillars of one tonsil and the hemorrhage stopped. The patient died, however, about 4 o'clock that afternoon.

The patient's father filed suit against the defendant-osteopath, Townsend, and against the nonresident operating osteopath, Hartsock. He was unable to get legal service on Hartsock, and the case therefore proceeded with Townsend as sole defendant. Damages were awarded in favor of the plaintiff and Townsend appealed to the Supreme Court of Kansas. Although the physician who was summoned by the plaintiff testified in his behalf, the defendant apparently sought to have the verdict of the trial court set aside because of the absence of expert testimony to support it. The Supreme Court pointed out, however, that results so pronounced as to be apparent and matters within the common knowledge of mankind may be testified to by any one familiar with the facts.

"It required no doctor to inform the jury," said the Supreme Court, "that when a surgical operation was had upon the throat and thereafter the patient spat up blood, that it was blood. The fact that the boy vomited, the frequency thereof, the testimony of the color, the effect on the child, were facts that any person of ordinary intelligence could discern, and evidently the jury saw fit to believe that the father vainly called the doctor about 3:30 in the morning, and a few hours later, believing the child was not being properly treated, called in another physician, who promptly saw to it that the boy was nourished, and assisted Dr. Hartsock in a second operation which stopped the bleeding. There was also the father's statement that defendant told him the boy died 'of tonsiline hemorrhage.' The plaintiff's evidence also showed that the defendant undertook the care of the boy following the operation; that he permitted the bleeding to continue, the giving of the hypodermic injection at midnight being all that was done to stop it; and that he made no effort to call Dr. Hartsock until the parents had called Dr. Newman. The above recited lay testimony, together with the medical testimony previously referred to, made a prima facie case, prevented a ruling favorable to the defendant on his demurrer, and precluded a directed verdict in his favor."

The judgment of the lower court, in favor of the plaintiff, was therefore affirmed.—*Flentie v. Townsend (Kan.)*, 30 P. (2d) 132.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, New York, Jan 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
American Association for the Study of Neoplastic Diseases, Dec 27-29. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D.C., Secretary.
Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
Radiological Society of North America, Memphis, Tenn., December 3-7. Dr. Donald S. Chiles, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
Society for the Study of Asthma and Allied Conditions, New York, Dec. 8. Dr. W. C. Spain, 116 East 53d Street, New York, Secretary.
Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
Western Surgical Association, St. Louis, December 7-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Conference on Rheumatic Diseases

First Annual Meeting, held at Cleveland, June 11, 1934

The President, DR. ERNEST E. IRONS, Chicago, in the Chair

The New Association and Its Purposes

DR. ERNEST E. IRONS, Chicago: The need for extending the work so well begun by the American committee, and the necessity for better correlation of what is known of arthritis with what is done for the patient, convinced us of the desirability of this association. We hope that this organization will be an association of those interested in obtaining and promulgating a well rounded conception of the problem of the arthritides, so that rational methods of treatment may be available to the physicians in charge of the many thousands of sufferers from arthritis. It is hoped that we may now extend membership so that all parts of this country may be represented and the number of qualified participants in the work increased.

Another activity will be the encouraging of the organization of local groups of those especially interested in the study of arthritis to stimulate individual research and promote general interest in the dissemination of knowledge of the disease and its treatment. In order that these purposes of the association may best be carried out and its discussions made accessible to as large a number of physicians as possible, meetings for the present will continue to be held on the Monday preceding the Scientific Meeting of the American Medical Association. Chronic arthritis is the greatest single cause of disability and suffering in temperate climates. The magnitude of the suffering and disability caused by arthritis offers a major challenge to the medical profession and to the public. Many etiologic factors are operative in the early and later stages of chronic arthritis. While one, such as chronic infection, may be the outstanding cause, the correction of which is sufficient to swing the balance toward recovery, it frequently happens that, in spite of the correction of perhaps this initial cause, other factors continue to be operative and the arthritis progresses. Therefore, classification or a program of treatment of chronic arthritis based on the theory of one or another causative factor must fail in clinical use and a broader view of the disease is required. The division of chronic arthritis into two clinical groups, atrophic and hypertrophic, seems to the American committee to offer the best clinical working classification for the present. The conclusions reached through many of the studies on the relation of one cause, such as infection, to chronic arthritis have been invalidated by failure of observers to take into consideration the natural history of the disease. In chronic arthritis, especially in the atrophic type, periods of spontaneous improvement occur, and conclusions as to etiology or therapy, based on treatment instituted at the beginning of a period of natural improvement, are likely to be misleading.

Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone. Each patient presents a special problem, and the employment of one procedure for all patients with a disease whose etiology and course vary

in each case seems unwarranted. One of the chief functions of this association is to furnish a forum in which, through discussion, new ideas may be evaluated and fitted in with what is already known. It is our hope that the work begun by the American committee may be continued through the widened opportunities afforded by this association.

Focal Infection and Arthritis

DR. ARTHUR STEINDLER, Iowa City: Almost 120 years has passed since Benjamin Rush emphasized the effect of dental disease on generalized arthritis, and more than twenty years has passed since Billings (1912) and Rosenow (1915) forcefully directed attention toward the problem of focal infection. Nevertheless there is still an active controversy in which such a relationship between local and systemic disease is challenged, both in principle and in fact. Considering the high incidence of focal disease on one hand, and the great fluctuations in the usual course of systemic disease on the other, it is not strange that this question of relationship should be a most difficult one to settle.

It is not yet known how foci act to produce arthritis. Is a bacteremia produced? Are the joint manifestations actually metastatic lesions or the results of some toxic agent? Is it a question of elective localization, of a special tissue affinity? What are the agencies that determine why some persons are more prone to secondary focal infection? A focus of infection may be relatively harmless to the nonrheumatic individual but serious to the rheumatic one. Therefore the evaluation of focal infection should be considered not just in the light of statistical studies on the incidence of foci but by considering the effect of the combination of a focus and an arthritic diathesis.

Of 4,339 cases of nonspecific arthritis that have been studied, 3,004 were of type 1 (atrophic arthritis), 1,335 were of type 2 (hypertrophic).

Foci of infection were present in 17 per cent (520) of the cases of atrophic arthritis and in 17.7 per cent (240) of those of the hypertrophic type. These figures may be much too low, as many of the ambulatory patients could not be subjected to complete search for foci. In those with focal infection the relative incidences were as follows: The tonsils were believed to be infected in 55 per cent of cases of the atrophic type and in 64 per cent of those of the hypertrophic type, the teeth in 17 per cent of the atrophic and in 23 per cent of the hypertrophic, and the sinuses in 46 per cent of the atrophic and in 57 per cent of the hypertrophic. The biliary or gastro-intestinal tract was believed infected in 1.5 per cent of cases of the atrophic type and in 7 per cent of the hypertrophic, and the genito-urinary tract (including the prostate gland and adnexa) was believed infected in 6 per cent of cases of the atrophic type and in 5 per cent of cases of the hypertrophic type.

The evaluation of the effect of removal of foci is as follows: In the analysis of those cases in which removal of foci was followed either by subsidence or by decided improvement within days or weeks, it was found that 35 per cent of the cases of atrophic arthritis and 20 per cent of the cases of hypertrophic arthritis acted in this manner or gave a "positive response." In children, naturally, the response was better than in adults, but there were few patients less than 10 years of age in this group. These figures would therefore represent the probable upper limit of the percentage for positive response.

Because it was found in some of the cases that improvement did not persist during the time of observation, these cases were eliminated from the former group of cases that did not evince signs of recurrence of symptoms within one year, the remaining cases showing no recurrence. These remaining cases represented 15 per cent of the atrophic type and 8 per cent of the hypertrophic type. The second group, therefore, represents the lower limit of positive responses to the removal of foci.

In other words, the figure for immediate and striking response to the removal of foci for the atrophic type was 35 per cent and for lasting response for this type 15 per cent. The figure for immediate positive response to the removal of foci for the hypertrophic group was 20 per cent and that for lasting response was 8 per cent. It therefore appears that, even on the basis of the lower percentage of lasting and striking response to the removal of foci (15 and 8 per cent, respectively), the systematic policy of removal of established foci of infection in arthritis would be justified.

Treatment of Chronic Atrophic (Rheumatoid) Arthritis with Streptococcus Vaccine on the Basis of Skin Sensitivity

DR. CHARLES W. WAINWRIGHT, Baltimore: The relation of streptococci and streptococcal infection to chronic atrophic arthritis remains in an uncertain position in spite of the many diligent investigations pursued during the past decade. Not only do students of the disease differ about the interpretation of experimental results, but the results themselves lack uniformity. If a relationship exists, it might exist in one of three ways: (1) The joint lesions may be the result of the localization of streptococci circulating in the blood stream, (2) the joint lesions may be due to toxins liberated from some focus of streptococcal infection elsewhere in the body, or (3) the joint reactions may be allergic in nature and represent hypersensitivity of the joint tissues to streptococci, resulting from low grade infections or from the persistence of foci of infection in the body. If the first relation obtains, then the nature of the joint change and the method of its production are easily understood, for it is a metastatic infection that is being dealt with. If the second obtains, then a high degree of specificity is implied; if the third, then an equally high degree of specificity exists, or else one must assume with Clawson and Wetherby that there is a species rather than a strain specificity. If the joint changes are regarded as allergic, it is at times difficult to explain just how the contact of antigen with antibody in the allergic joint comes about.

Although the lack of uniformity in results obtained from blood cultures is striking, the presence of serum agglutinins for hemolytic streptococci in a very large percentage of cases of atrophic arthritis has been reported by numerous observers. It has also been reported that patients suffering from atrophic arthritis exhibit positive skin reactions to killed streptococci and their fractions in a larger percentage than do healthy persons or those suffering from some other disease.

At the Johns Hopkins Hospital we have been unable to duplicate the results of Cecil, Nicholls and Stainsby. Ninety-four blood cultures were made in ninety-one cases of chronic atrophic arthritis. The following organisms were obtained: Streptococcus viridans in one case, and diphtheroids in four cases. In addition, staphylococci were found in four cases and gram-positive bacilli in three cases, all considered contaminations. In fourteen cases, cultures of joint tissue were made: in twelve the cultures were negative, in two cases contaminating mold was encountered. Streptococcus viridans was found once, but not again when the culture was repeated. The serums in forty-six, or 90 per cent, of fifty-one cases were found to possess agglutinins for hemolytic streptococci in dilutions varying between 1:20 and 1:1,280. Tests were made with both living and heat-killed antigens. The extent of the dilution was somewhat lower than that reported by other observers.

All of the fifty-five patients who were tested gave positive skin reactions to one or more strains of streptococci, hemolytic and green, the whole organisms being used. An area of erythema 1 cm. in diameter or larger was considered a positive reaction. In most cases it was larger (from 1 to 5 cm. in diameter). In all cases the reaction was tuberculin-like in appearance. In twenty-four cases the intradermal reactions were to hemolytic streptococci alone, in three to Streptococcus viridans alone and in twenty-eight to both types. In 90 per cent, maximal reactions were to hemolytic streptococci and in 10 per cent to viridans, but no single strain predominated in causing maximal reactions. For reasons stated no series of controls or of patients without arthritis was made. No attempt was made to interpret these results in terms of causation. Twenty-one of twenty-eight patients have shown improvement when given intravenous injections of streptococcus vaccine prepared from the strain to which they were most skin sensitive for periods of from two to more than twelve months.

The presence of agglutinins for hemolytic streptococci in the serums of patients suffering from chronic atrophic arthritis seems well established. A positive reaction does not of necessity indicate a causal relationship between hemolytic streptococci and atrophic arthritis, but it does suggest that streptococci play a rôle in the disease. Agglutination may be due to the presence of natural, not acquired, or specific agglutinins (as

Dawson, Olmstead and Boots suggest) but the frequency with which it occurs in atrophic arthritis is the most incriminating evidence thus far produced against the streptococcus in this disease.

When skin sensitivity to streptococci exists it does not necessarily indicate that there is also joint sensitivity or general sensitivity. The objections raised to the interpretation of skin reactions to autogenous vaccine, namely, that they may indicate varying irritability of the patients' skins, natural toxicity of the bacterial species, or perhaps sensitization to certain bacterial groups, must be considered. However, the effect of subsequent treatment with vaccines on the skin reactions indicates that they do represent a specific skin sensitivity to the strain used. I do not know that the diminution and disappearance of the skin reaction is a measure of desensitization, nor that the increase in the agglutinating power of the patients' serum is a measure of immunity. I do feel, however, that the skin reaction is the most definite evidence of hypersensitiveness obtainable.

DISCUSSION ON PAPERS OF DRS. STEINDLER AND WAINWRIGHT

DR. J. ALBERT KEY, St. Louis: Since it is said that no individual reaches adult life with normal tonsils and with normal teeth, it is unusual to hear that Dr. Steindler found foci in only about 17 per cent of his cases of atrophic and hypertrophic arthritis. It is noteworthy that he found foci of infection as frequently in cases of hypertrophic arthritis as in cases of atrophic arthritis. Few believe that hypertrophic arthritis is a bacterial disease. Only a small percentage of his patients were cured by removal of infected foci. Considering the natural course of the disease, it is known that this many or more get better in spite of anything that is done and under a large variety of forms of treatment from 50 to 60 per cent of patients are improved. With his vaccine Dr. Wainwright improves 75 per cent of his patients. Most physicians use vaccines in arthritis, and I use them myself with the full knowledge that there is no disease of which I can find record that has been proved cured by vaccines. It is all right to give vaccines provided one does not forget to treat the patient and his disease with additional accepted and indicated measures. With regard to cultures of blood and joints I can't confirm anybody's results, even my own. Some years ago I isolated staphylococci and diphtheroids. Sterilizing the skin better, I later failed to get the latter. The habit should be condemned of discarding all staphylococci as contaminants and considering the streptococci found as the cause of whatever disease one is studying. There is no more reason why arthritis should be due to streptococci than to staphylococci or diphtheroids. However, my own experiments convince me that the arthritis produced with streptococci and diphtheroids is more closely akin to human arthritis than that produced in animals with staphylococci.

DR. M. H. DAWSON, New York: Dr. Steindler stated that in considering the significance of infected foci in arthritis it was required to compare the incidence of foci of infection in arthritis with the general incidence of such foci in nonrheumatic diseases, but he failed to give any statistics on this important point. It is most important to distinguish between atrophic (rheumatoid) and hypertrophic (osteo) arthritis. I believe that they are two separate diseases, the latter being due to the degenerative changes of age and in no way being related to infection. The former seems associated in some way with infection. In atrophic arthritis I agree with Dr. Steindler that infected foci, especially in tonsils and sinuses, are of considerable importance and that their removal, especially early in the disease, may give excellent results. I also believe that the gastro-intestinal tract plays only a small rôle in the production of this disease; certainly the significance of its reported abnormalities remains most uncertain. Dental infection, I feel, is related more to nonarticular rheumatism than to atrophic arthritis. It is my experience also that removal of foci does not particularly affect the course of hypertrophic arthritis. Dr. Wainwright's cultural and agglutination studies are in accord with my own. The fact seems established that the serum from the majority of patients with atrophic arthritis possesses the capacity to agglutinate hemolytic streptococci. Furthermore, this agglutinating capacity is not related to the nonspecific agglutinating property exhibited by the serum in many acute febrile diseases. I

recently carried out a "blindfold" agglutination test on a large number of serums from a well known arthritis clinic. The results of this test demonstrated that it was possible to identify the serums of patients with atrophic arthritis in a high proportion of cases. More recently I have extended my agglutination studies to include precipitin tests. Various protein and carbohydrate fractions of *Streptococcus hemolyticus* have been employed. These studies indicate that there is a close approximation between the capacity of serums from patients with atrophic arthritis to agglutinate hemolytic streptococci and to precipitate various fractions of this organism. I do not believe that these immunologic reactions establish the etiology of atrophic arthritis, but, as Dr. Wainwright said, they constitute the most incriminating evidence that has been brought forward against *Streptococcus haemolyticus* in this disease. In my experience, skin reactions in atrophic arthritis are variable and difficult to interpret. In a limited series of observations I was unable to demonstrate any correlation between the degree of skin reactivity to various strains of hemolytic streptococci and the clinical condition of the patient. Furthermore, sufficient evidence has not been brought forward to indicate a relationship between skin reactivity and the reactivity of joint tissues. There is suggestive evidence, however, that patients with atrophic arthritis do, as a group, show a higher degree of skin reactivity to *Streptococcus haemolyticus* than do patients suffering from other diseases. Dr. Wainwright stated that twenty-one of a series of twenty-eight patients treated by the use of intravenous vaccines received definite benefit. However, as he mentioned, there was no control series and the treated patients received the additional benefit of from four to eight weeks' rest in bed. It has been my experience that an equally large proportion of patients show definite improvement on a regimen of adequate rest alone. During the last five years I have used hemolytic streptococcus vaccines on a large series of patients with atrophic arthritis. The methods of administration and the doses employed have been quite comparable to those just reported. The value of this form of therapy remains unproved.

DR. RUSSELL L. CECIL, New York: May I say a word about the bacteriology of atrophic arthritis? The results so far reported can be divided into three groups: (1) the work of those who find streptococci in the blood and joints of patients with atrophic arthritis but not in controls, (2) the group to which Drs. Dawson, Boots and Wainwright belong, who find practically all cultures of blood and joints sterile both in controls and in patients with atrophic arthritis, and (3) the group, represented by Dr. Callow's recent study on rheumatic fever and May Wilson's report on blood cultures in children with rheumatic fever, in which a high percentage of streptococci are found among patients with atrophic arthritis, with rheumatic fever and in controls. This situation shows how confused the whole problem is. If streptococci are only contaminations, one wants to know it. The question is far from solved. I don't think I am misquoting Dr. William H. Park in saying that he believes the streptococci I have isolated have actually been from the blood, but he is very conservative and cautious about interpretation. I recently asked Dr. William Elser to help me on this problem. Dr. G. I. Steffen took the blood cultures under the most carefully controlled conditions. In a dozen or more typical cases of atrophic arthritis he got positive blood cultures in about 50 per cent but streptococci in only one. The others contained diphtheroids. The latter may be of some interest in view of claims that they can be transmuted into streptococci. Nature would be playing a mean trick indeed if an organism that appears so frequently in blood cultures, that apparently produces immune reactions in the patient's serum, and that produces such a typical experimental arthritis in animals, would turn out to be nothing but a harmless contamination.

DR. RUSSELL L. HADEN, Cleveland: Dr. Wainwright's paper emphasizes one significant trend: Regardless of the isolation of this or that germ, or treatment by this or that method, the chief problem is to study the patient and see what happens to him. Dr. Wainwright talks of patients' hypersensitivity. In considering the problem of chronic arthritis, it would appear that certain "normal persons" are not, and perhaps never will become, sensitive or liable thereto whereas another individual will. In addition to isolating organisms and removing foci,

one must study the other underlying characteristics of the patient. The correction of his altered soil may be more important than removing a focus, which is but the beginning of treatment.

DR. JOSEPH L. MILLER, Chicago: Physicians of this country have been slow to recognize the essential differences between atrophic and hypertrophic arthritis. It seems almost certain that they are two distinct diseases, hypertrophic arthritis being merely a degenerative disease. The rapidity with which certain patients get well after removal of an infected tooth makes me think that there is at times a profound psychologic effect therefrom. I saw one patient with arthritis recently who four weeks before had had a bad tooth removed. Before she got home from the dentist she was "all well." Recently she read of somebody dying of arthritis, and now her pain is back. Regardless of such instances, however, I approve of the removal of foci and the use of vaccines in addition to other measures of recognized merit.

DR. ARTHUR STEINDLER, Iowa City: Many patients, as I have mentioned, were unable to have a complete focal check for various reasons. At least 800 did have a complete search for foci, and of this group a small but definite percentage gave a satisfactory response to removal of foci. By response I don't mean cure; I mean that they obtained subjective relief, which was maintained for a considerable length of time.

DR. CHARLES W. WAINWRIGHT, Baltimore: May I say to Dr. Key that I feel that the vaccine has more than a psychic effect. Not uncommonly patients had a degree or two of fever with the initial injection, but when this occurred the subsequent dose was lessened, or at least not increased, and no further febrile responses generally were noted. Occasionally a particularly sensitive patient would experience a febrile reaction after the first three or four injections. In such cases much small doses were used until the reactive phase disappeared.

Nutritional Factors in Chronic Arthritis

DRS. FRANK J. SLADEN, DWIGHT C. ENSIGN and CLARKE M. McCOLL, Detroit: Since 1928 we have been studying the eating habits of patients with chronic arthritis and of persons without arthritis. The dietary habits of a patient in the hospital even on a full diet cannot be considered as being his normal one, as his choice of food is not strictly within his control but lies within that of the dietitian and the markets from which she buys. We sought therefore to get a record of what such patients were eating at home under established habits. Records were kept on units of a week; thus, the normal daily fluctuations were minimized. One hundred and thirty-eight patients with chronic arthritis were studied; of these, 128 had hypertrophic arthritis and only ten had atrophic (rheumatoid) arthritis. In the study of a series of 148 persons without arthritis the average daily intake was 1,840 calories, protein 60 Gm., fat 84 Gm. and carbohydrate 211 Gm. These values are contrasted with the average intake of patients with arthritis: 1,609 calories, protein 52 Gm., fat 73 Gm. and carbohydrate 185 Gm. These figures do not suggest that people with chronic arthritis are accustomed to dietary indulgence in any respect, certainly not in carbohydrates, as we understand it is not unusual for active, normal people to consume as high as 450 Gm. of carbohydrate daily.

In spite of this, however, a craving for sweets was commonly confessed, and on closer analysis of the carbohydrate intake we found an otherwise hidden dietary error, a tendency to choose for their carbohydrate foods that may be called nonprotective foodstuffs, with resultant inadequacy in their intake of carbohydrates on the list of protective foods. Thus they favored sugars and sweets, refined cereals and pastries, potatoes and white flour and were shy on the use of unrefined cereals, dairy products, and fruits and vegetables, carbohydrates that contain large amounts of bulk and of the protective substances, minerals and vitamins. These observations were made the basis of therapeutic correction. The patients were encouraged to change the emphasis on the choice of carbohydrates used, to alter their type and not their amount. We have noted definite improvement in weight curves, bowel function, condition of the joints, and the general efficiency and well being of patients with both types of chronic arthritis.

(To be continued)

Current Medical Literature

AMERICAN

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American Journal of Medical Sciences, Philadelphia

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*Successful Method for Vaccination Against Acute Anterior Poliomyelitis: Preliminary Report. J. A. Kolmer, Philadelphia, with assistance of Anna M. Rule.—p. 510.
Poliomyelitis: Study of Four Hundred and Ten Patients at the Philadelphia Hospital for Contagious Diseases. P. F. Lucchesi, Philadelphia.—p. 515.
*Encephalitis in Children Apparently Congenital and Following Maternal Influenza. Winifred Bayard Stewart, Philadelphia.—p. 522.
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Value of Cutaneous Histamine Reaction in Prognosis of Pedal Lesions in Diabetes Mellitus. After Histories of Eighty-Nine Patients for Five Years. I. Starr Jr., Philadelphia.—p. 548.
Fatal Anuria Following Blood Transfusions: Inadequacy of Present Tests for Compatibility. E. L. DeGowin and C. W. Baldrige, Iowa City.—p. 555.
*Influence of Glycine on Creatinuria in Peripheral Neuritis. M. J. C. Allison, H. H. Henstell and H. E. Himwich, New Haven, Conn.—p. 560.
Exophthalmos of Graves' Disease: Its Experimental Production and Significance. D. Marine and S. H. Rosen, New York.—p. 565.

Yeast or Vitamin B₂ in Treatment of Pernicious Anemia.—The Lassens treated eight patients having typical pernicious anemia with various yeast preparations, given partly without additions of any kind, partly after incubation with normal gastric juice. These yeast preparations were assayed by tests on rats as to their contents of vitamins B₁ and B₂. One preparation that contained no B₁ was found to be highly

effective against experimental vitamin B₂ deficiency in rats. The extrinsic factor searched for by Castle is not identical with vitamin B₂ or B₁, and presumably not with any other fraction of the vitamin B complex. Yeast appears to be either completely without any antianemic effect or it possibly contains minimal amounts of antianemic factor. On addition of normal gastric juice it has not been practicable with any degree of certainty to ascertain an increase in the content of active antianemic principle.

Vaccination Against Acute Anterior Poliomyelitis.—Kolmer hesitates to advise the subcutaneous injection of a poliomyelitis vaccine known to contain some living virus, even though he believes it to be devitalized sufficiently with sodium ricinoleate to make it safe. He believes that three subcutaneous injections of this kind of vaccine at intervals of from five to seven days and in a dose of from 0.05 to 0.1 cc. per kilogram of weight is an effective method for vaccination against acute anterior poliomyelitis. If it is true that human beings acquire immunity to acute anterior poliomyelitis by contact with the virus even without demonstrable evidences of infection, it would appear that less vaccine may be required relatively to body weight than in the case of monkeys, especially since less antibody is probably required for the protection of human beings against small amounts of virus entering the upper respiratory tract than is required for the protection of monkeys inoculated intracerebrally with from fifteen to twenty minimal infective doses. Since these vaccines never produced the slightest evidence of infection, the author is vaccinating a group of children varying in age from 8 months to 15 years. The first dose has been 0.25 cc. for children less than 3 years of age and 0.5 cc. for older children up to 15 years. Varying amounts are being given in the second and third doses. Since the cord of a large monkey will yield about 200 cc. of vaccine, this will make sufficient vaccine for the immunization of fifty or more children.

Encephalitis in Children Apparently Congenital and Following Maternal Influenza.—Stewart reports seven cases that appear to present congenital encephalitis. The patients were born of mothers suffering with influenza in the later months of pregnancy. None of these women had symptoms suggestive of epidemic encephalitis. All survived the disease as far as can be determined, and none show any signs of the sequelae of encephalitis. The children, on the other hand, show character defects typical of postencephalitic behavior change, and in five cases there is evidence of organic involvement of the extrapyramidal system. Their symptoms have existed apparently from the time of birth. They give no history of acute illness, nor in any case did the onset of the symptoms coincide with the occurrence of one of the usual diseases of childhood. In five there is sufficient evidence of organic involvement of the extrapyramidal system to verify the diagnosis of encephalitic sequelae. Four are parkinsonian in type, while the fifth presents choreiform tremors, which are increasing in severity. The sixth case gives a definite history of lethargy, which was noticed at birth. Examination of the pupils revealed the reverse Argyll Robertson phenomenon. The seventh was the only patient in whom the physical observations were negative. Here the diagnosis was based on the type of behavior disorder. The majority of the cases, therefore, present both the behavior disorder as well as the organic signs characteristic of the sequelae of epidemic encephalitis. They appear to be congenital and follow maternal influenza. The hypothesis that the influenza bacillus may be the etiologic factor in epidemic encephalitis is suggested by the work of Crofton, as well as that of the author in collaboration with Evans.

Influence of Glycine on Creatinuria in Peripheral Neuritis.—Allinson and his associates observed a case of toxic peripheral neuritis with atrophy and creatinuria. Daily analyses were made of the urinary excretion of creatinine, creatine, nitrogen and sulphur. In contrast with other cases of secondary muscular atrophy, but like those with progressive muscular dystrophy and myasthenia gravis, the ingestion of glycine increased the creatinuria markedly. As the patient's condition improved, the creatinuria decreased and the reaction of glycine diminished correspondingly.

Archives of Surgery, Chicago

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- Clinical Use of Pentobarbital Sodium as Preanesthetic Agent O W Barlow, G L Fife and A C Hodgins, Cleveland—p 527
- *Gas Bacillus Infection Complicating Laparotomy L H Nason and A Starr, Boston—p 546
- The Breast I Lesion in Rabbits Resembling Chronic Cystic Mastitis C L Fifer, University Va—p 555
- *Primary Liposarcoma of Bone L Barnard Oakland Calif—p 560
- Changes in Bones of Extremities Amputated Because of Arteriovascular Disease H L Jaffe and M M Pomeranz, New York—p 566
- Sequences of Experimental Infarction of Femur in Rabbits G H Kistler, University, Ala—p 589
- Appendicitis and Acute Inflammatory Abdominal Conditions in Scarlet Fever Reports of Nine Cases and Review of Literature H Brandman, Whiting Ind—p 612
- Subacute Lymphogranuloma Inguinale Reports of Two Cases A Weeks, B C N O'Reilly G D Delprat and W P Stowe, San Francisco—p 628
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- Absorption of Dextrose and Water by Small Intestine and Colon Experimental Study R A Cutting, New Orleans—p 643
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- Review of Urologic Surgery A J Scholl Los Angeles E S Judd, Rochester, Minn., J Verbrugge, Antwerp, Belgium, A B Hepler, Seattle, R Gutierrez, New York, and V J O'Connor, Chicago—p 678

Gas Bacillus Infection Complicating Laparotomy.—Nason and Starr say that this condition is manifested by a fulminating clinical course, which may rapidly terminate fatally. Despite the widespread prevalence of the anaerobic bacilli, gas bacillus infection following laparotomy is relatively rare. The organisms have been identified in the discharge from abdominal drainage tracts. The gas bacillus has been isolated from the biliary tract and liver immediately after death. The infection may begin in the muscle of the abdominal wall, the peritoneal cavity or the liver. The pathologic changes are the result of the toxemia alone or of the toxemia plus the presence of organisms and gas. When muscle is involved it becomes edematous, necrotic and crepitant. The clinical picture is one of overwhelming toxemia. Within six to twelve hours after operation, certain alarming signs may appear in a patient whose postoperative recovery has been proceeding satisfactorily. If the infection involves the abdominal wall, crepitation may be elicited early. Of late the literature has contained many reports describing the clinical aspects of postoperative "liver deaths." Heyd, in discussing this entity, described three distinct types, one of which was similar to the clinical picture existing in gas bacillus toxemia and septicemia. The similarity in the clinical manifestations of gas bacillus toxemia and those of hepatorenal insufficiency indicates that actually acute insufficiency exists as a result of gas bacillus toxemia. It is conceivable that in some cases the element of hepatorenal insufficiency may be primary, with the gas bacillus infection engrafted on an already necrotizing, degenerating liver. Measures directed at lowering the temperature, combating the toxemia and supporting the circulation are indicated. Specific antitoxin should be given. Intravenous and subcutaneous infusions of large quantities of sodium chloride and dextrose solutions may be used in an attempt to offset the shock and toxemia. Concentrated solutions of dextrose are indicated because of the extensive damage to the liver and because of the need for a diuretic. At the first suggestion of this complication, large doses of gas bacillus antitoxin should be administered intravenously. The usual skin test for sensitivity should be performed. From one to four therapeutic doses of polyvalent antitoxin containing at least 10,000 units each of *Bacillus welchii* and *Vibrio septique* antitoxin per dose should serve as the initial administration. An additional therapeutic dose should be given intramuscularly. The intravenous administration of antitoxin should be repeated every two to four hours during the crucial period. If crepitation is elicited in the wound, the sutures should be removed, the wound laid open and smears of the exudate taken. Free incisions may be necessary if the process is extensive. Hydrogen dioxide or surgical solution of chlorinated soda may be instilled into the wound at frequent intervals. When the infection involves the blood

stream, peritoneum or liver, the outlook seems hopeless. The prognosis in cases of the infection localized in the abdominal wall depends on the virulence of the particular bacterial strain, the severity of the toxemia and the resistance of the patient. Death occurred in the authors' four cases.

Primary Liposarcoma of Bone.—Barnard reports a case which, from the clinical and pathologic study, suggests strongly a periosteal origin of a liposarcoma which involved the upper part of the arm. The fact that fatty tumors termed "lipoma" may undergo sarcomatous change gave at first the impression that this was such a tumor. There were, however, several factors that did not coincide with this point of view. Of the tumors that have been reported, few involved the upper extremity and did not involve the bone but arose in the fascial planes from a preexisting lipoma, which was always encapsulated, and the history of its presence preceded for long periods its malignant change. The clinical picture in the present case was more characteristic of so-called periosteal sarcomas, but the pathologic observations did not fit this classification. That this was not a benign periosteal lipoma which had undergone sarcomatous change would seem evident from the lack of encapsulation and the absence of a tumor prior to the onset of severe symptoms. The osseous involvement was apparent in the earliest roentgenogram, and at the time of biopsy there was no infiltration of the subdeltoid sheath, which would have been a more logical site for local metastases or invasion than the cortical bone if the tumor had arisen extraperiosteally. The histologic picture of the tumor both locally and in the myriad of small metastases in the lungs, which were not demonstrable roentgenologically, suggests that this was a tumor of fatty origin. There was evidence of trauma from repeated dislocations of the shoulder, which was assumed to have been a factor in the origin or spread of this new growth.

Delaware State Medical Journal, Wilmington

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- Cancer of Bladder. M L Boyd, Atlanta—p 378
- *Underlying Principles in Repair of Double Harelip F C Lee, Augusta—p 383
- Uterine Hemorrhage L C Allen, Hoschton—p 389
- Fractures Treatment of Fractures H M Michel, Augusta—p 395
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Operation for Double Harelip.—Lee stresses the necessity for early operation in double harelip but states that it is not justifiable until the baby's weight curve is definitely rising and the weight is at least as much as at the time of birth. Ether administered by a motor driven insufflation apparatus is satisfactory, after the patient has been anesthetized lightly with the ether cone. The first step to ensure symmetry is obtained by placing a single stitch of silk as a marker in the midline of the premaxilla at its free edge after a small bit of vermilion border has been removed from that region. Two other stitches as markers are placed through the upper lip at each nostril but inferior to the point where the lip is to be cut across. Both sides of the upper lip should be undercut near the alveolar process, care being taken to remain close to the bone. An incision is then made in each lateral part of the upper lip, as much as possible of the lip that is already formed being used. The incision should afford relaxation in order to bring the respective segments to the midline of the face, therefore it may be necessary to extend the incision almost parallel with the

vermillion border. It is desirable to have a slight redundancy, as the excess tissue contracts and gives a better result. The small amount of crimson border that is superior is then removed with a scalpel, care being taken not to enter far into the nostril. After the remaining thin vermillion border on the premaxilla has been removed, care should be taken to leave as much normal skin as possible, and the lateral parts of the new upper lip are brought together in the midline to see whether enough relaxation is present, since thorough and complete relaxation of these lateral pedicles is essential to the repair. The first row of sutures is of silk and is placed with a number three French needle. These sutures are placed first at the nostril of one side, and they approximate the posterior and deeper aspects of the opposing surfaces. The knots are placed on the mucous surface and the threads are cut short. The interrupted suturing is carried anteriorly to the free margin of the newly formed lip and the sutures are placed into the lip and into some of the fibrocartilage in the premaxilla if necessary. The second row of sutures consists of three interrupted sutures of 000 plain catgut: the first suture is put well into the remaining upper lip and into the premaxilla, a similar stitch is placed on the opposite side and a third stitch is placed at the apex of the premaxilla at its junction with the two flaps. The third row of sutures can be either of horsehair or of silk and consists of bringing together the skin anteriorly. In order to ensure neat approximation and a small scar, it is advantageous to use a suture like an end-on-mattress stitch. A 1 inch piece of a number eight French, soft rubber catheter is inserted into each nostril and held in place with a suture to ensure patency. Compound tincture of benzoin boiled down to a soft putty-like consistency is applied to the sutures in the skin. A Logan bow is attached by means of adhesive strips to the cheeks immediately after operation. This may be left on for two weeks and the muscles of the face should be kept at rest. To this end as much as 3 grains (0.2 Gm.) of sodium bromide every two hours may be necessary. Keeping the patient quiet after operation is more important than the use of the Logan bow. The baby should be fed at the regular intervals normal for its age by means of a medicine dropper to which the terminal portion of a soft rubber catheter has been attached. Sutures can be removed at any time after the sixth day. Minor corrective operations may have to be performed to adjust the vermillion border or to excise portions of a broad scar. These operative measures should be done within three months of the original operation. Massage of the scar and nursing should not be allowed until five weeks after operation. The author gives the results in three cases of double harelip.

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- Effect of Variations in Diet on Absorption of Food in Absence of Pancreatic Digestion. M. B. Handelsman, L. A. Golden and J. H. Pratt, Boston.—p. 479.

Effect of High Fat Meal on Respiratory Quotient.—

Bowen and his associates discuss the possibility that a qualitative metabolic variation exists in the obese person. This variation from the normal is based on the observation of a lower *postabsorptive respiratory quotient* in the obese subject. They observed the effect of a large fat meal on twelve normal subjects, six of whom were slightly underweight, twenty nondiabetic obese and eleven obese diabetic subjects. The absorptive respiratory quotients indicate that the food mixture during this absorption is approximately the same in normal and obese persons. This response in the diabetic obese group suggests that less carbohydrate was being consumed during the utilization of fat. The observations were extended long enough to demonstrate the returning trend of the respiratory quotient to the *postabsorptive level*. No correlation between the curves of the absorptive respiratory quotient and the curves of the specific dynamic action could be demonstrated. A specific dynamic action of fat was present in all groups. It was found to be approximately the same in the obese and the normal persons. This action, however, was considerably greater in the obese diabetic patients.

New England Journal of Medicine, Boston

211: 653-702 (Oct. 11) 1934

- Nuts as Bronchial Foreign Bodies. L. G. Richards and J. Walker, Boston.—p. 653.
- Incontinence of Urine Due to Ureteral Ectopia. A. Riley and E. A. Gaston, Boston.—p. 666.
- Psoas Abscess Resulting from Tuberculosis of Cervical Spine: Report of Case. L. Alpert, Middleboro, Mass.—p. 675.
- Antituberculosis Vaccination. S. A. Petroff, Trudeau, N. Y.—p. 677.
- Why Surgical Operations Benefit Patients with Pulmonary Tuberculosis. R. H. Overholt, Boston.—p. 682.

211: 703-746 (Oct. 18) 1934

- Treatment of Cancer of Breast and Results of Operation. R. H. Overholt and E. B. Eckerson, Boston.—p. 703.
- *Mesenteric Vascular Occlusion. J. E. Dunphy and R. Zollinger, Boston.—p. 708.
- Haverhill Fever Following Rat Bite. F. H. Scharles, Kansas City, Mo., and C. V. Seastone, Boston.—p. 711.
- Pancreatic Cyst. C. H. Hawes, Fall River, Mass.—p. 714.

211: 747-800 (Oct. 25) 1934

- Subacute Pick's Disease (Polyserositis) with Polyarthritis and Glomerulonephritis: Report of Two Fatal Cases. M. J. Tremaine, Chicago.—p. 754.
- Operative Relief of Extensive Cicatrization of Male Urethra and Perineum. J. D. Barney, Boston.—p. 759.
- Phrenic Neurectomy in Pulmonary Tuberculosis: Evaluation of Early Effects. H. F. Hare, Boston, and L. F. Davenport, Waltham, Mass.—p. 762.
- Health Forum. H. D. Chadwick, Newtonville, Mass., and H. L. Lombard, Boston.—p. 767.
- Cancer of Esophagus. F. L. Hoffman, Philadelphia.—p. 769.
- Spinal Fluid Dynamics During Encephalography. T. J. C. von Storch, Boston.—p. 773.

Mesenteric Vascular Occlusion.—Dunphy and Zollinger observed five cases of mesenteric vascular occlusion. The first four terminated fatally. In only two was a diagnosis of mesenteric thrombosis even considered and in only one of these was operation performed. Although the clinical picture varied considerably, several important features were recognized in

each case. 1. It was observed that regardless of the duration of the attack the clinical picture was not typical of any of the common surgical emergencies. It was not the problem of a mistaken diagnosis but of no diagnosis. However, the patients were ill obviously from an abdominal lesion that simulated obstruction. 2. The character of the pain in each case was out of proportion to the clinical picture. A significant characteristic of the pain was its persistence after the usual measures for its relief had been instituted. 3. The only constant physical observation was abdominal tenderness, more or less generalized, with rebound tenderness referred to the point of pressure. 4. All the patients had a high leukocytosis and a high or mounting pulse rate with a temperature that was normal or only slightly elevated. It was evident in each case that there was a gastrointestinal disturbance, but this was not manifested in any constant manner. Difficulty in moving the bowels without complete obstruction was seen in all cases. Vomiting was variable. Rapidly progressing shock was seen in one case. As a direct result of this study the fifth case of mesenteric vascular occlusion was recognized as such and an early and successful resection was performed. The authors do not maintain that the features outlined are essential to diagnosis, for the white count may be as misleading in this disease as in others. However, they feel that these features when present render a diagnosis much more tenable than previous observations would indicate.

New York State Journal of Medicine, New York

34: 831-864 (Oct. 1) 1934

- Neurologic Aspects and Treatment of Birth Injuries. E. R. Carlson, New York.—p. 831.
Treatment of Sinus Thrombosis. T. L. Saunders, New York.—p. 837.
Physical Therapy in Industrial Injuries. J. B. Stevens, Syracuse.—p. 841.
Study and Treatment of Amenorrhea. C. A. Elden, Rochester.—p. 845.
Calcified Vessels of Lower Extremities in Young Man: Case Report. A. S. Rothberg, New York.—p. 850.
Familial Peptic Ulcer: Family History: Case Report. A. M. Dickinson, Albany.—p. 852.

Northwest Medicine, Seattle

33: 343-378 (Oct.) 1934

- Migraine: Diagnosis, Differential Diagnosis and Treatment. R. M. Balyeat, Oklahoma City.—p. 343.
Preoperative and Postoperative Value of Luminal: Clinical Study. A. Mathieu, G. Suchow and J. D. Kindschi, Portland, Ore.—p. 351.
*The Postoperative Enema. C. W. Countryman, Spokane, Wash.—p. 355.
The Prostate Gland. J. G. Stroh, Portland, Ore.—p. 358.
Toxic Neuritis in Pregnancy. J. E. Stroh, Seattle.—p. 360.
Functional Uterine Hemorrhage, with Especial Reference to Hyperplasia Endometrii and Relation to Menstruation: Consideration of Its Etiology, Treatment. K. H. Martzloff, Portland, Ore.—p. 362.
State Medical Society Cancer Organization. A. R. Kilgore, San Francisco.—p. 369.
Gonorrheal Arthritis: Treatment with Pregl's Solution. R. L. Taylor, Bellingham, Wash.—p. 371.

The Postoperative Enema.—Countryman emphasizes the fact that the routine use of enemas postoperatively often ordered by the house physician or supervising nurse is rather a sad procedure in the light of present day knowledge of the colon. He believes that one of the most important things in assisting the postoperative patient to regain normal intestinal activity is to give the intestine some lubricant and soft bulky material to work on. For the last two years his postoperative routine has been to give, from twenty-four to thirty-six hours after operation, or as soon as the patient's stomach will tolerate it, 1 ounce (30 cc.) of liquid petrolatum with agar morning and evening. The rectal tube is used liberally from the beginning and the Levine tube is used when indicated in upper abdominal distention. The patient is encouraged to drink hot water, tea and black coffee. Cold tap water is allowed as desired unless there is considerable nausea and vomiting. A 5 per cent sodium bicarbonate and dextrose proctoclysis is used, one hour on and two hours off, until the stomach tolerates fluids. Pantopon, one-third grain (0.02 Gm.), is given as often as necessary to keep the patient comfortable. The cases in which the author has used this procedure have included gastro-enterostomy, cholecystectomy, acute intestinal obstruction, one with intestinal resection, hysterectomy and operations, such as salpingitis, both chronic and subacute, gangrenous and perforative appendicitis and the usual major abdominal surgery, both chronic and acute.

Philippine Islands Med. Association Journal, Manila

14: 329-372 (Sept.) 1934

- Etiology of Placenta Praevia. H. Acosta-Sison, Manila.—p. 329.
Brief Account of Activities of Philippine Islands Medical Association. A. S. Fernando, Manila.—p. 333.
Anopheles Maculatus Theobald, Another Malaria Vector in the Philippines. A. Ejercito, Manila.—p. 342.
Treatment of Maxillary Sinus Suppurations. H. Velarde and G. de Ocampo, Manila.—p. 347.
Anthelmintics in General Practice. V. P. Gallardo, Aparri, Cagayan Province.—p. 350.

South Carolina Medical Assn. Journal, Greenville

30: 193-216 (Oct.) 1934

- *Fracture of Hip Joint (Intracapsular): New Method of Skeletal Fixation. A. T. Moore, Columbia.—p. 199.
Indications for Surgery of Thyroid Gland. L. H. McCalla, Greenville.—p. 205.

Skeletal Fixation for Fracture of Hip Joint.—Moore describes a method of skeletal fixation for intracapsular fractures of the neck of the femur. After local preparation, from 20 to 40 cc. of a 2 per cent solution of procaine hydrochloride is injected directly into the hip joint. The needle is inserted at a point about two thirds the distance from the anterior superior spine to the top of the great trochanter. The direction is approximately toward the coccyx and enough solution is injected to fill the joint completely. The needle is withdrawn and a few cubic centimeters of the anesthetic is infiltrated into the skin and subcutaneous tissue below the greater trochanter, where a small incision is to be made. After a few minutes the hip is absolutely anesthetized. There is complete muscular relaxation, and reduction of the fracture can be accomplished by any method that the operator prefers. An incision of from 2 to 3 inches is made just below the great trochanter, exposing the lateral surface of the upper end of the femur. Three drill-pointed stainless steel pins, three thirty-seconds of an inch thick, are passed through the neck up into the head. The pins are inserted at varying angles, which fasten the head securely in position. The angle and length of the femoral neck may be determined by the Westcott technic. The average length of the drills is about 3½ inches. Protruding ends of the drills must be left so that subsequent removal is easy. These ends may vary from one-fourth to three-fourths inch or more. There is no danger of drilling through the head and acetabulum because one always stops short of the full length of the pin. After roentgenograms are taken, the pin is easily pushed in for the desired distance. The position of the reduction and of the pins is checked by roentgenogram or the fluoroscope. When the pins are in perfect position, six drill holes are made through the neck and up into the head, in addition to the holes in which the pins remain inserted, ensuring a better blood supply. A piece of wood is placed on the outer side of the femur and given a light blow with the mallet, ensuring that the fragments are driven well together. The wound is closed with two or three interrupted sutures. The patient can immediately move the hip freely in all directions, and this is encouraged so as to give the patient confidence in the strength of the fixation. The patient is put back to bed and told to turn, twist or do anything that he pleases so long as he stays in bed. The operation is almost free from shock. There has been nothing to cause shock if a gentle reduction has been done. The next day the patient may be up with assistance or using crutches. In a few days he may be dismissed from the hospital. The patient should use crutches for about six months.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

42: 555-610 (Oct.) 1934

- Carcinoma of Islands of Langerhans with Metastasis to Liver Producing Hyperinsulinism: Report of Case. E. S. Judd, Rochester, Minn., L. S. Faust and R. K. Dixon, Denver.—p. 555.
Histologic Structure of Thyroid Gland in Patients Cured of Hyperthyroidism by Surgical Treatment. W. F. Rienhoff Jr., Baltimore.—p. 558.
Bacteriology of Goiter: Study of Human Thyroid Tissue and Attempt to Produce Thyroid Hyperplasia in Rabbits: Preliminary Report. Anne M. Heyman, Ann Arbor, Mich.—p. 574.
Malignant Tumors of Parathyroid Glands. E. M. Hall and L. Chaffin, Los Angeles.—p. 578.
Encephalography: Its Diagnostic and Therapeutic Value with Some Remarks on Subdural Air. M. A. Glaser, Los Angeles.—p. 587.
Spinal Anesthesia in General, Nupercaine in Particular: Report of Fatality; Division I. P. E. Spangler, Portland, Ore.—p. 597.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

46: 341-398 (Aug.-Sept.) 1934

- Disease, Gadget of the Mind, Especially Stimulus of Skin Diseases in Development of the Mind. W. A. Pusey.—p. 341.
Malignant Melanoma in Africans. J. H. Sequeira and F. W. Vint.—p. 361.
Role of Psychotherapy in Treatment of Asthma-Eczema-Prurigo Complex in Children. C. H. Rogerson.—p. 368.

Journal of Pathology and Bacteriology, Edinburgh

39: 255-550 (Sept.) 1934

- Further Observations on Secretion of Brunner's Glands. H. W. Florey and H. E. Harding.—p. 255.
Buffering Power of Mucin Contained in Secretion of Brunner's Glands. R. E. Havard.—p. 277.
Lymphangio-Endothelioma of Heart Causing Complete Heart Block. C. B. Perry and H. Rogers.—p. 281.
Gangrene of Fingers and Toes in Case of Polyarteritis Nodosa. W. G. Barnard and W. M. Burbury.—p. 285.
Chondroma of Lung (Hamartoma Chondromatosum Pulmonis): Report of Case. N. E. Goldsworthy.—p. 291.
*Comparative Serologic Study of Streptolysins Derived from Human and from Animal Infections: Notes on Pneumococcal Hemolysin, Tetanolysin and Staphylococcus Toxin. E. W. Todd.—p. 299.
Variation in Pneumococcus. M. H. Dawson.—p. 323.
Erythrocyte Individuality in Relation to Transplantation of an Induced Fowl Sarcoma. A. Haddow.—p. 345.
*Preparation of Nutrient Agar, with Especial Reference to Pneumococci, Streptococci and Other Gram-Positive Organisms. H. D. Wright.—p. 359.
Further Notes on Tissue Culture of Gliomas, with Especial Reference to Bailey's Spongioblastoma. Dorothy S. Russell and J. O. W. Bland.—p. 375.
*Cultivation of Plague Bacillus. H. D. Wright.—p. 381.
Experiments on Portal of Entry of Bacteria and Production of Intestinal Infection. F. H. Teale.—p. 391.
Colonial Development of Organisms of Pleuropneumonia and Agalactia on Serum Agar and Variations of Morphology Under Different Conditions of Growth. Emmy Kliencherger.—p. 409.
Method for Separation of Erythrocyte Stroma and Its Effect on Blood Picture in Experimental Anemia. R. Lightwood, J. C. Hawksley and Ursula M. Bailey.—p. 421.
Biochemical Reactions of Hemolytic Streptococci from Vagina of Febrile and Afebrile Parturient Women. R. Hare and L. Colebrook.—p. 429.
Schultz Cholesterol Reaction in Suprarenal Cortex. R. Whitehead.—p. 443.
Preparation of Efficient Fat Stains from Insoluble Residues of Weakly Staining Solutions of Commercial "Sudan III." W. W. Kay and R. Whitehead.—p. 449.
Clostridium Putrificum in Association with Postoperative Tetanus. E. L. Morgan and H. D. Wright.—p. 457.
Viridans Effect of Streptococci and Production of Green Pigment from Hemoglobin by Other Reducing Systems. A. B. Anderson and P. D. Hart.—p. 465.
Pathology of Hepatolienal Fibrosis. J. McMichael.—p. 481.
White Blood Cells of Thyroidectomized Rabbits in Experimental Leukocytosis and Leukopenia. J. W. Orr.—p. 503.
Certain Practical Considerations Concerning the Hemolytic System in Complement Fixation Tests, with Note on Standardization of Droppers for Wassermann Test. E. J. Wyler.—p. 521.

Serologic Study of Streptolysins.—Todd states that hemolytic streptococci from human infections produce an antigenic streptolysin which is serologically group specific but not type specific. In addition to this antigenic form of streptolysin, which is subject to reversible oxidation and reduction, they also produce another variety of streptolysin which is not subject to reversible oxidation and reduction and which appears to have no antigenic activity. The streptolysins of hemolytic streptococci from animal infections do not appear to be antigens and they are not subject to reversible oxidation and reduction. Soluble streptolysin prepared from "pseudo-hemolytic" streptococci appears to be nonantigenic. Lancefield's groups of hemolytic streptococci each produce different varieties of streptolysin which may be distinguished from each other by their reactions to oxygen, to heat and to acid. Serums with a high titer of antistreptolysin from hyperimmunized horses neutralize tetanolysin and pneumococcal hemolysin to a limited extent. The degree of neutralization is not necessarily correlated with the antistreptolysin titer, and the different hemolysins are distinguishable by quantitative serologic methods. This partial antigenic overlapping of hemolysins can be demonstrated only by the use of hyperimmune serums; it is not seen when the comparatively low titrated antistreptolysin serums of

patients infected with hemolytic streptococci are examined and it therefore does not interfere with the use of antistreptolysin titers for the diagnosis of streptococcal infections. The hemolysin of staphylococci is not serologically related to streptolysin.

Preparation of Nutrient Agar.—Wright points out that as in broth, so also in agar, the early addition of peptone results in more stable and satisfactory mediums for certain organisms. The diameter of colonies of streptococci, pneumococci, corynebacteria and some other organisms is not affected by the omission of dextrose but is considerably affected if peptone is not present in adequate amounts. Thick layers of agar and a low concentration of agar favor the production of large colonies of pneumococci, streptococci and corynebacteria. The addition of blood or serum to agar results in the formation of large colonies; the amount required is about the same for the two. The size of the colony appears to be influenced more by the amount of the available foodstuff than by the accumulation of by-products of growth. Filtration through thick filtering layers may cause marked deterioration of broth; it has less effect on agar, but mediums filtered through glass wool or thin paper tend to yield larger colonies.

Cultivation of Plague Bacillus.—Wright observed that the growth of small inoculums of plague bacilli is sometimes suppressed by oxidized constituents of broth prepared with the late addition of peptone. The plague bacillus is destroyed moderately rapidly if exposed to more than about 1 per cent of oxygen at 37 C. For aerobic surface cultivation of small inoculums blood (0.1 per cent), serum (10 per cent) or sodium sulphite (0.05 per cent or less) needs to be added to the agar. Such mediums yield maximal growth aerobically at 37 C. Aerobic growth occurs in broth without such additions. The plague bacillus dies within twenty-four hours in solutions of sodium chloride even under anaerobic conditions, especially if exposed at a temperature of 37 C.

Journal of Physiology, London

82: 129-264 (Sept. 19) 1934

- Mechanism of Autocoid Function of Parasympathetic Nerves. A. B. L. Beznák.—p. 129.
Action of Insulin on Heart and Blood Pressure. R. K. Pal and S. Prasad.—p. 154.
Blood Volume and Oxygen Capacity of Fetal Blood in Goat. R. H. Elliott, F. G. Hall and A. St. G. Huggett.—p. 160.
Study of Mistakes in Color Matching Made by Persons with Defective Color Vision. A. B. Follows.—p. 172.
Unsegmental Reflexes in Dogfish. J. ten Cate.—p. 179.
Effect of Prolonged Hard Muscular Work on Sulphur and Nitrogen Metabolism. H. E. C. Wilson.—p. 184.
Efficiency and Performance of Vegetarian Racing Cyclist Under Different Dietary Conditions. G. M. Wishart.—p. 189.
Efficiency of Bicycle Pedaling in Trained Subject. R. C. Garry and G. M. Wishart.—p. 200.
Efficiency of Bicycle Pedaling. A. V. Hill.—p. 207.
Action of Single Vagal Volley on Rhythm of Heart Beat. G. L. Brown and J. C. Eccles.—p. 211.
Further Experiments on Vagal Inhibition of Heart Beat. G. L. Brown and J. C. Eccles.—p. 242.
Changes in "Efficiency" of Muscular Contraction During a Series of Twitches in Nitrogen. M. Cattell and J. L. Parkinson.—p. 258.

Lancet, London

2: 633-684 (Sept. 22) 1934

- Use of the Diathermy Knife in Malignant Disease of Mouth, Nose and Pharynx with Analysis of One Hundred and Nine Cases. N. Patterson.—p. 633.
Arterial Hypertension. O. L. V. de Wesselow.—p. 636.
*Agglutinin Response to Recent Antienterica Vaccination. G. Stuart and K. S. Krikorian.—p. 644.
Rheumatoid Arthritis and Its Treatment by Gold Salts. J. Forestier.—p. 646.
*Cooley's Anemia. A. Moncrieff and L. E. H. Whithy.—p. 648.
Nonspecific Protein Therapy in Asthma. T. S. Nelson and G. Duckworth.—p. 650.

Agglutinin Response to Recent Antienterica Vaccination.—Stuart and Krikorian's experiments reveal that in human beings O agglutinin formation takes place as readily and often in as high degree after inoculation with suitable antienterica vaccines as it does during the course of enteric disease. In this respect a better response has been obtained with non-phenolized vaccines than with those preserved even for a short time in low concentrations of phenol. An explanation has been sought in the apparently adverse, although admittedly unknown, effect exercised by the phenol on the heat-stable antigen. It

is known that when typhoid immune serum is brought into contact with the phenol-preserved suspension of *Bacillus typhosus* known as Ficker's diagnosticum, the O agglutination fails altogether. It is suggested that in ordinary T and TAB vaccines the exposure of the O agglutininogen to the action of phenol over varying periods of time may lead ultimately to a loss of antigenic power and thus to an absence of O agglutinins in the vaccinated persons' serums. Arkwright concludes that "the heat-stable, smooth O agglutininogen is probably identical with the antigen which produces resistance and with the smooth heat-stable agglutinable substance." It is agreed that in order to be efficient an antityphoid vaccine should produce antibodies against the stable antigen; but all antienterica vaccines do effect to a greater or lesser extent the formation of O agglutinins in the majority of human beings, provided such vaccines are of relatively recent manufacture and administered in adequately interspaced dosage. It is not, therefore, a question of finding a method of vaccination that will fulfil this demand for O agglutinin production but a method that will ensure the maximal production and persistence of these antibodies. The authors believe that antienterica vaccines issued without the addition of a preservative, and inoculated shortly after preparation, best meet the case. The appearance and persistence of O agglutinins in significant titers follow in human beings and in rabbits the use of ordinary recently prepared antienterica vaccines but would appear to be more marked in the case of vaccines to which no phenol has been added as a preservative.

Cooley's Anemia.—Moncrieff and Whitby believe that Cooley's anemia appears to be a definite clinical entity and is probably a blood dyscrasia appearing as a recessive in the Mediterranean races and that it is comparable to the sickle cell anemia of the negroid peoples. They describe a case in a child, aged 1½ years, of Greek parents, which will provide an opportunity for further observation in that the mother is again pregnant and the infant after birth can be examined to determine whether it also has inherited the condition and, if so, at what age it is first evident. The patient itself did not respond to treatment with iron, and a blood transfusion produced some definite improvement. At an attempt at a second transfusion the patient died under the anesthetic. The authors emphasize that, though Cooley has clearly defined a disease entity, the features do not express the concept of von Jaksch's anemia as understood by English pediatricians. Advances in hematology and clinical knowledge prevent the inclusion of leukemic cases in the von Jaksch category, and the syndrome is no longer a convenient dumping ground for all the unexplained anemias and splenomegalies of infancy. Von Jaksch's anemia is a useful term even though the conception of it must be somewhat elastic. The term implies that in the opinion of the clinician and hematologist the prognosis is not hopeless—a feature emphasized by von Jaksch. In contrast to Cooley's group, there is not only this relatively favorable outlook if treatment with iron or transfusion is energetically pursued but there are also no constant familial trait and no bony changes other than those due to associated rickets—a by no means invariable complication. Von Jaksch's anemia appears to be a subacute hemolytic anemia, probably the result of infection in which there is in addition to the red cell changes a definite reaction on the part of the leukoblastic tissue resulting in the appearance of myeloid cells in the blood.

Medical Journal of Australia, Sydney

2: 305-336 (Sept. 8) 1934

- Raw Apple Diet in Treatment of Dysentery. P. A. Earnshaw.—p. 305.
Early Diagnosis of Appendicitis: Clinical Use of Leukocyte Count in Patient's Home. F. S. Tange.—p. 310.
Colonic Diverticulitis. H. C. R. Darling.—p. 313.
Psittacosis in Australia. C. R. Merrillees.—p. 320.

South African Medical Journal, Cape Town

S: 629-664 (Sept. 8) 1934

- Pitfalls of Medical Examinations for Life Insurance. H. S. N. Menko.—p. 631.
Agranulocytic Angina. R. Turner.—p. 632.
Focal Sepsis in Infants. B. G. v. B. Melle.—p. 636.
Hernia and Strangulated Hernia. A. R. McLachlan.—p. 638.
Bovine Tuberculosis in Its Relation to Public Health. G. de Kock.—p. 640.

Presse Médicale, Paris

42: 1513-1528 (Sept. 29) 1934

- Seminoma of Testicle and Seminoma of Ovary. A. Bécélère.—p. 1513.
*Endocrine Roentgen Stimulation and Its Applications. P. Lehmann.—p. 1516.
Acute Postoperative Dilatation of Stomach Complicated by Perforation. J. Rousset.—p. 1518.

Endocrine Roentgen Stimulation.—Lehmann believes that the roentgen rays may stimulate the endocrine glands and that when this occurs it is a functional phenomenon entirely different from the phenomenon of cellular destruction. He used irradiations corresponding to 200 kilovolts filtered through 0.8 mm. of copper and 2 mm. of aluminum. The apparatus includes a Casel generator and a Coolidge Mégat tube. Only the trunk and head were irradiated at separate sessions. A dose of 20 roentgens was used at each session for the trunk and 30 roentgens for the head. The intervals between sessions varied from ten to fourteen days, depending on the duration of treatment. As a result of observations on animals, he believes that the roentgen produced priapism is identical with that produced by the injection of the urine of pregnancy. Clinically he has treated eleven patients affected with ovarian insufficiency. In two there were no results. In the nine others there was improvement after from three to six sessions. In eight other cases, postpuberty ovarian insufficiency existed. In six of these there was an increased abundance of the menstrual flow. He therefore concludes that roentgen therapy constitutes an excellent procedure for functional stimulation and that it offers a new means of action in endocrine therapy.

Schweizerische medizinische Wochenschrift, Basel

64: 889-912 (Sept. 29) 1934

- Anatomy as Science of Formation of Moving Organic Entity. H. Bluntschli.—p. 889.
*Problem of Vaccination Against Whooping Cough. H. Rosenbusch.—p. 894.
Postoperative Thrombo-Embolism in Surgical Department of Hospital in Zurich in Years 1910 to 1930. H. Hess.—p. 897.
Trichomonas Infection. N. Kissling.—p. 902.
*Behavior of Thyroid Tissue Under Influence of Several Simultaneously Acting Growth Stimuli. M. Silberberg.—p. 903.
Cure by Psychoanalysis. Irène Ruefenacht-Gerber.—p. 905.

Vaccination Against Whooping Cough.—According to Rosenbusch, vaccine therapy of whooping cough is still in dispute, but he thinks that the authors who observed mostly failures worked with ineffective vaccines. He administered concentrated vaccines in sixty-seven cases. In forty-six the vaccine was promptly effective, in ten the results were somewhat retarded, in three the results were doubtful, and in eight the vaccinothrapy was a failure. Many of the children who promptly responded to the vaccinothrapy were not of a suggestible age, and this, together with the fact that none of the other therapeutic measures produced such favorable results, seems to indicate the possibility of a specific action. However, it is difficult to furnish definite proof of the specificity, but the factors that are cited to disprove specificity likewise fail to convince. On the basis of his experiences, the author recommends the use of the vaccine. Failures are encountered in all forms of treatment, and only extensive use will solve the problem.

Thyroid Tissue Under Influence of Growth Stimuli.—Silberberg investigated how several simultaneously acting growth stimuli influence an organ. The thyroid of young, growing guinea-pigs served as the object of experimentation, and it was determined what influence is exerted by potassium, iodide, extract of the anterior lobe of the hypophysis and compensatory hypertrophy following ectomy of a lobe of the thyroid. In the case of simultaneous action of potassium iodide and extract of the anterior lobe of the hypophysis, histologic examination revealed the specific changes that are characteristic of these two stimuli. The extract promotes liquefaction of the colloid, while the potassium iodide counteracts rapid absorption of the softened and liquefied material. This explains the presence of greatly dilated acini and even torn acini. Thus both substances exerted their specific action, while in other portions an intermediate effect was observed in that the acini absorbed considerable amounts of fluid so that their lumens become dilated and their epitheliums somewhat flattened. The

dilatation of the acini was greater than if either extract or potassium iodide were administered alone. However, there was as a rule no summation of the actions and, under certain conditions, the potassium iodide may even reduce the reaction to the extract. If the hypophyseal extract acts as a qualitative growth stimulus on the quantitative proliferation energy of the compensatory hypertrophy of the thyroid, there is an increase in the number of cells as the result of the compensatory hypertrophy and the hypophyseal extract causes qualitative proliferation processes. For the collaboration of these two stimuli that differ in kind and in degree, the sequence of their action and the condition of the thyroid are important. The influence of the hypophyseal extract on the growth of transplanted thyroid tissue was studied on autotransplants and on homeotransplants. In a completely healed-in transplant from a thyroid that had not been treated previously, the hypophyseal extract produced the same typical changes that were produced in the normal thyroid. In homeotransplants there developed a conflict between the destructive action of the homeotoxic elements and the constructive, growth increasing action of the extract.

Archivio Italiano di Chirurgia, Bologna

37: 663-786 (Sept.) 1934

Behavior of Testicle Following Partial or Total Removal of Parietal Layer of Tunica Vaginalis. M. Montanari Reggiani.—p. 663.

Behavior of Lactic Acid in Blood in Suprarenal Insufficiency. F. Rabbioni.—p. 687.

Behavior of Nerve Cells of Part of Small Intestine Above Stenosis. G. Nicolosi.—p. 707.

*Manifestations and Surgical Complications of Ascariasis. F. Virgilio.—p. 734.

*Histologic and Experimental Research on So-Called Enteric Chromaffin Glands. F. Zanardi.—p. 749.

Surgical Complications of Ascariasis.—Virgilio refers to several cases of ascariasis with prevalently surgical manifestations. They are spastic stenosis of the duodenum with ascarids in the duodenum and the stomach, intermittent intestinal occlusion with ascarids in the small intestine, ascariasis simulating appendicitis, ascariasis of the appendix and of the liver, ascariasis with acute diverticulitis of Meckel and ascariasis complicating intestinal perforation due to trauma. The first three cases were diagnosed on roentgen examination, the remaining four on surgical exploration. The author emphasizes the importance of roentgen examination in confirming obscure and deceptive abdominal syndromes due to the presence of the ascarids. In practical surgery, ascariasis is generally diagnosed roentgenologically. In ascariasis, when the intestinal loop is full of opaque liquid, the body of the ascarid shows a streaked shadow, with well defined contours, tapered at the ends, and with a winding course. When the loop contains little barium, it adheres to the body of the parasite, which is then presented as a thin and regular streak delineated by two long parallel opaque lines, sometimes interrupted. When the loop is empty, the worm has the appearance of a long hair. The symptomatology of ascariasis of the gallbladder is the same as that of biliary lithiasis. Therefore diagnosis can only be suspected, especially in children with involvement of the general condition due probably to parasitic toxins. It is always a more delicate and doubtful diagnosis because ascariasis is present in 60 per cent of cases presenting lithiasis of the biliary tract. In cases in which lithiasis is not found it is important to examine closely the pancreas, duodenum and stomach in addition to the gallbladder and the bile tracts in such a way as not to leave unobserved the parasitic lesion that originally caused it. From the surgical point of view, in countries in which ascariasis is prevalent, administration of santonin before operative intervention is a good prophylactic measure. Such remedies as santonin and oil of chenopodium may prevent serious complications in intestinal ascariasis, especially during infancy. In hepatic and biliary ascariasis, only surgical treatment is indicated. Santonin, inducing the death of the parasites, does not aid in their expulsion, and therefore the mechanical disturbance persists. In ascariasis of the gallbladder, cholecystostomy has the advantage of draining the biliary tract, thereby eliminating the parasites found outside the gallbladder. Cholecystectomy prevents the development of numerous parasites from eggs laid in the gallbladder walls,

frequently altered by secondary chronic infection. When the ascarids penetrate into the pancreas, the best treatment is incision into the pancreas and drainage of the pancreas and of the region of the hepatoduodenal fossa. When ascarids are present in the mastoid, the lacrimal canal and the bronchi, surgical intervention is the method of choice.

Research on Enteric Chromaffin Glands.—Zanardi states that the chromo-argentaffine cells of the intestine are present throughout the enteric tube of man and of laboratory animals (dogs and guinea-pigs). They are more numerous in the large intestine and in the appendix of man, while in animals they are more numerous in the small intestine and the first part of the duodenum. They constitute a cellular species in themselves, differentiated from other epithelial elements of the intestinal mucosa by the presence of chromaffin and reductory granules, by the character of the nucleus and by the form and situation of the cell. They are present in the intestinal mucosa of the human fetus at the third month; at first they are more in evidence in the upper segments of the small intestine, but after the fifth month they appear in the large intestine and the appendix. Normally they do not exist in the human stomach or at least are scarce in that location. But they have appeared in cases of simple gastritis or gastritis associated with ulcer or carcinoma, in correspondence to the areas of intestinal metaplasia. No information has been obtained favoring the connective tissue origin of these cells either from the experimental study of regenerative processes or from the study of ulcerations, inflammations and tumors of the gastro-intestinal mucosa. The cells do not seem to take an active part in the regenerative processes of the gastro-intestinal mucosa, in that they are missing in the defect which recovers in a short time the loss of substance and that they appear only when the epithelium is perfectly differentiated; there they participate indirectly in the process of regeneration and are constantly more numerous in the zones bordering on the defect. The large chromo-argentaffine cells present in the mucosa of the chorion and in the submucosa of the large intestine of the guinea-pig (and sometimes of the human appendix) are clearly differentiated from the chromo-argentaffine cells of the epithelium by morphologic characteristics and thus may be classified as histiocytes. The author concludes that these cells may be explained as ganglionic cells, newly formed by multiplication of the preexisting ones and distinguishable from them by their argentaffine granule characteristics.

Dermosifilografo, Turin

9: 473-528 (Sept.) 1934

*Observations on Reaction of Deviation of Complement in Gonorrhea. U. Boncinelli.—p. 473.

Weltmann's Reaction in Dermatology. A. Midana and Rita Leone.—p. 494.

Syphilitic Contagion from Woman Free from Specific Manifestations and with Negative Serologic Reactions: Case. M. Tamponi.—p. 504.

Allergic Cutaneous Symptoms in Venereal Ulcer. F. Brunetti and G. Serra.—p. 513.

Deviation of Complement in Gonorrhea.—Boncinelli studied the deviation of the complement reaction with gonococcus antigen on 243 patients, the total number of serum reactions amounting to 280. One group comprised definite gonorrheal patients. A second group comprised subjects free from gonorrhea, a third, patients presenting clinically gonococcic disease forms, and a fourth, syphilitic patients showing positive or negative Wassermann reactions and being free from or affected by gonorrhea. In the first group the reaction was positive in 77 per cent of the cases; the simple gonococcus forms gave 56 per cent of positive reactions, while the more complicated forms were 89.7 per cent positive. In the group of subjects free from gonorrhea, the reaction was positive in only four cases (5 per cent), while the group in which gonorrhea was clinically evident showed 76 per cent of positive reactions. In the last group, consisting of syphilitic patients free from or affected by gonorrhea, the reactions were negative whenever gonorrhea was absent. In cases in which syphilis was accompanied by gonorrhea, the reaction was negative when the Wassermann reaction was positive and vice versa. The author concludes that the deviation of the complement reaction is sensitive and specific and that it merits wider application in diagnostic practice.

Semana Médica, Buenos Aires

41: 745-852 (Sept. 13) 1934. Partial Index

- *Gastric Cancer: Atypical Forms. J. R. Goyena and H. J. d'Amato.—p. 745.
 Calcified Primary Pyopneumocyst of Liver: Case. J. Arce and M. M. Brea.—p. 752.
 Pellegrini-Stieda Disease. P. V. Begarie and M. B. Mateos.—p. 756.
 Suppurative Acute Strumitis: Case. C. Preioni and T. Gioia.—p. 770.
 Pustulate Exophthalmos: Surgical Therapy; Case. A. J. Manes.—p. 773.

Gastric Cancer.—Goyena and d'Amato report twenty-eight cases of gastric cancer and conclude that atypical forms are frequent (36 per cent). The febrile acute form gave a frequency of 7 per cent. The fever in this form is, as a rule, of a continuous and irregular type and may not be high. The febrile acute form may be interpreted, from the anatomopathologic point of view, as an association of gastric ulcerous tumors and a permanent infection. Whether the infection is the cause or the consequence of the ulcers cannot be asserted. The most frequent atypical form of gastric cancer is the juvenile form (14 per cent). On account of its high frequency this form may be suspected even in patients less than 30 years of age. In the authors' group of the juvenile form, the two sexes were affected in the same proportion (7 per cent each in women and in men). This observation is not in agreement with the opinion of Mienter, who states that this form is more frequent in men than in women. Juvenile cancer develops at an earlier age in women than in man and its evolution is more rapid and grave in female than in male patients. If anachlorhydria is of diagnostic importance in gastric cancer, hyperchlorhydria or even the mere presence of free hydrochloric acid in the gastric secretions is not a negative sign for the diagnosis of gastric cancer. Marked hyperchlorhydria may be present in cases of pure gastric cancer without previous symptoms of peptic ulcer. The mental condition of patients suffering from the psychopathic form is probably due both to anemia, caused by a tumoral vasoconstriction and resulting in a diminished cerebral blood supply, and to the impregnation of the nervous cells by gastric toxins of tumoral origin. The form of gastric cancer with conservation of the appetite may develop in patients at any age, and not necessarily in patients with the juvenile form as Le Noir and Riege say. The appetite of patients with gastric cancer may change under various influences of mechanical or psychic nature and these influences may appear in the course of the disease and cause a transformation of the anorectic type into a type having normal appetite or even bulimia.

Archiv für Dermatologie und Syphilis, Berlin

170: 403-520 (Sept. 14) 1934. Partial Index

- *Isolated Chancre-Like Pyoderma of Face. E. Hoffmann.—p. 403.
 Cinnamic Chloroform, Corrosive Mercuric Chloride and Tincture of Iodine in Their Action on Hyphomycetes. W. Aldick.—p. 410.
 Method for Study of Deep Growth of Fungi and Remarks on Problem of Dermotropic Action of Hyphomycetes. H. Hruszek.—p. 425.
 Statistics on Complications Caused by Arspenamine. W. Burckhardt and E. Diem.—p. 435.
 Saprophytic Occurrence of Hyphomycetes on Clinically Healthy Skin, with Especial Consideration of Mosaic Fungi. W. Stumpf.—p. 449.
 *Functional Disturbances of Liver in Skin Diseases (Further Experiences with Gelatin and Water Tolerance Tests). H. Döllken.—p. 456.
 Scleroderma and Mucous Membrane. J. Sella.—p. 464.

Isolated Chancre-Like Facial Pyoderma.—Hoffmann observed a number of patients who had isolated chancre-like pyodermias on the face. In some patients the lesion appeared on the eyelid, in others on the temple or on the lip. While the genital form of the isolated pyoderma is most frequent in children, the facial type seems to predominate in adults. The chancre-like pyoderma appears nearly always as an isolated focus and presents a syphilitic or a vacciniiform aspect in that it resembles a button-like, eroded, ulcerated primary lesion. The characteristics are the firm basis of the lesion, the superficial and rather smooth ulceration, the scrous discharge, the red color of the narrow eroded rim, the yellowish or dark crust and the firm swelling of the lymph nodes. It appears that the process has an especial affinity for delicate tissue. The author considers justified the assumption that maceration with urine plays a part in the genital lesions, and he points out that the localization of the facial pyodermias indicates that tears and saliva may play a similar part. The process usually begins

with a blister and heals within four to six weeks. The differentiation from syphilitic and other specific lesions is important not only in the isolated chancre-like pyodermias that appear on the genitalia and on the oral mucous membrane but also in those that appear on the face. The absence of spirochetes, of Paschen's bodies and of Guarneri's bodies in repeated tests and the rapid disappearance of the process and of the swelling of the lymph nodes following the application of anti-impetiginous remedies are important factors in the differential diagnosis. The fact that after several months an isolated relapse may appear on a symmetrical site is worthy of note.

Functional Disturbances of Liver in Skin Diseases.—In functional tests of the liver, Döllken found that the gelatin-water tolerance test of Mancke and Rohr gave satisfactory results. He made tests on 180 persons to determine the behavior of the liver in persons who had the same disorder. A tabular report lists the various disorders in which the functional test of the liver was made, the number of patients and the outcome of the test. A disturbance of the liver was detected in about 15 per cent of the cases. The test revealed that patients with psoriasis were free from hepatic impairment. In the patients with eczema, the results of the test were too dubious to give the possibility of a more strict classification, for in more than 10 per cent the test indicated a disturbance of the liver, while in the others the test was negative. Conditions were similar in syphilis. However, liver impairment was demonstrable in all cases of dermatitis exfoliativa and in arspenamine dermatitis. In arspenamine dermatitis the behavior of the liver was especially noteworthy, because the functional disturbance of the liver was no longer demonstrable after the disappearance of the cutaneous lesion.

Klinische Wochenschrift, Berlin

13: 1377-1416 (Sept. 29) 1934. Partial Index

- Normal Urea Content in Blood and Cerebrospinal Fluid. G. Straube and R. Hofmann.—p. 1377.
 Investigation of Epinephrine-Like Substance with Circulatory Action in Liver Extracts. F. Grabe, O. Krayer and K. Seelkopf.—p. 1381.
 Lung as Blood Depot. M. Hochrein and C. J. Keller.—p. 1383.
 Determination of Vitamin C in Blood Serum. E. Gabbe.—p. 1389.
 *Bile Acid Tolerance Test for Determination of Hepatic Function. S. Nakagawa, S. Imuro and S. Suzuki.—p. 1392.
 Influence of Intracutaneous Injection and of Histamine Iontophoresis on Basal Metabolism and Blood Chemistry. W. Loewenstein.—p. 1394.
 *Atropine in Angina Pectoris. D. Scherf and P. Schnabel.—p. 1397.

Test for Determination of Hepatic Function.—The bile acid tolerance test described by Nakagawa and his associates is conducted in the following manner: On the empty stomach the patients are given 200 Gm. of bread with butter and 100 cc. of milk. This comparatively dry diet is given in order to avoid an excessive quantity of urine, which would make the test ambiguous. Within thirty minutes after this breakfast the patient completely voids the urine that serves as the control specimen. Then 1.5 cc. of a 20 per cent solution of a bile acid is slowly injected into the cubital vein. After this injection, the patient has to void every thirty minutes until the second hour. Of each of these specimens 1 cc. is put into Widal tubes, and one drop of acetic acid is added. In addition to this, Hay's test is done on the filtered urine, and the urobilinogen and the urobilin are determined by means of Ehrlich's and Schlesinger's reagents. The test is considered positive if the specimens of urine eliminated after the injection show (1) a white turbidity following the addition of acetic acid, (2) a positive Hay's test and (3) urobilinogen and urobilin in larger quantities than in the control specimen. The authors performed this test on normal persons and on patients with hepatic disorders. In cholelithiasis, chronic cholecystitis and cirrhosis of the liver the test was positive, and, since the discharge of the bile was not obstructed, it may be concluded that the positive outcome of the test is due to the reduced capacity of the diseased liver to intercept and eliminate the injected bile acid. However, the bile acid tolerance test does not indicate whether the other functions of the liver are impaired. But since this intercepting and eliminating function seems to be the one that is impaired the earliest and in the largest number of cases, the test will generally reveal whether there is an impairment of the hepatic functions or not. The test is of course without value for the differential diagnosis.

Atropine in Angina Pectoris.—According to Scherf and Schnabel, atropine increases the frequency of the heart. On the basis of observations they stress that in angina pectoris great precaution is necessary in the use of remedies that increase the cardiac frequency. They show that in arteriosclerotic and syphilitic coronary stenosis atropine, because of its accelerating influence on the heart action, may lead to dangerous disturbances in the blood perfusion of the cardiac muscle.

Monatsschrift für Kinderheilkunde, Berlin

60: 401-496 (Sept. 5) 1934

Venous Pulse in Healthy Children. W. Ochse and E. Püschel.—p. 401.

Problem of Pneumococci During Childhood. G. Joppich.—p. 407.

How Long Do Diphtheria Patients Require Rest in Bed? P. von Kiss.—p. 426.

Cause and Outcome of Salamm Convulsions. J. Schoedel.—p. 436.

***Auto-Urotherapy.** M. Krebs.—p. 442.

Desensitization Experiments in Eczema. M. Krebs.—p. 445.

Auto-Urotherapy.—Krebs shows that it is possible to influence favorably allergic and spastic conditions with the intramuscular injection of a child's own urine. He observed prompt improvement in children with hay fever and with asthma. He usually injected 0.5 cc. of the urine. The injections were repeated at intervals of from two to twelve days. The favorable results obtained in hay fever and asthma induced the author to try the treatment in spastic conditions of an entirely different type; namely, in those that were probably caused by obstetric injuries. Here too improvement was noted, but the author admits that this improvement is not a complete cure. Nevertheless, he thinks that auto-urotherapy deserves a trial in pediatrics, particularly in children with hay fever or asthma. The effective substance of urotherapy is still unknown; its efficacy is due neither to nonspecific protein bodies nor to antigen action.

Münchener medizinische Wochenschrift, Munich

81: 1411-1450 (Sept. 14) 1934

Rational Therapy? P. Martini.—p. 1411.

***Thrombo-Embolic: Its Pathology and Treatment.** P. Neuda.—p. 1416.

Foundations of Prognosis of Internal Diseases. P. Morawitz.—p. 1419.

***Strophanthin in Treatment of Angina Pectoris.** E. Edens.—p. 1424.

Treatment of Acne Vulgaris. L. Hauck.—p. 1427.

New Preparation of Sulphonated Bitumen Almost Odorless and Colorless. J. K. Mayr.—p. 1429.

Treatment of Status Epilepticus. F.-E. Kunze.—p. 1430.

Thoughts and Observations on Law for Prevention of Hereditary Diseases. Kayser.—p. 1430.

Pathology and Treatment of Thrombosis.—In studies on the predisposition to thrombosis, Neuda found that in the majority of patients with thrombosis auto-agglutinating substances are present, which agglutinate at room temperature not only their own erythrocytes but also erythrocytes of other persons of the same group and of group O. Tests prove that the substances are true auto-antibodies. Further experiments revealed that the addition of liver extract prevented the auto-antibody reaction, and this led to the introduction of liver therapy. The author employed it in thirty-five cases. With the exception of one patient, who died, all others recovered in a comparatively short time following intramuscular injections of liver extract. The liver treatment should begin as early as possible. In cases in which the sugar content of the blood is increased, the carbohydrate intake should be reduced. The fact that the agglutinating substances are active particularly at lower temperatures indicates the value of heat in the treatment of thrombosis. The injections of liver extract are continued until the pain subsides and the swelling is going down. This is usually the case after from three to six injections.

Strophanthin in Treatment of Angina Pectoris.—Edens shows that angina pectoris has lost much of its terror since the introduction of strophanthin therapy. Strophanthin is especially valuable in angina pectoris that develops in older persons with coronary sclerosis but is ineffective in angina pectoris produced by vasomotor factors. Thus strophanthin therapy may aid in the differentiation of angina pectoris of organic origin from that due to vasomotor factors. The author stresses that as a rule only the intravenous administration of digitalis preparations, particularly strophanthin, brings the desired results, while the oral and even the intramuscular administrations fail.

81: 1451-1486 (Sept. 21) 1934. Partial Index

Foundations of Prognosis of Internal Diseases. P. Morawitz.—p. 1451.

Utilization of Milk. E. Eckstein.—p. 1454.

Efficacy of Diphtheria Serum in Animal Experiment. F. von Bormann.—p. 1455.

***Toxin of Menstruation.** H. Mommsen.—p. 1458.

***New Observations in Simmond's Disease.** K. Herman.—p. 1460.

Coalescence of Labia Minora During Childhood. H. Schlack.—p. 1465.

Toxin of Menstruation.—Mommsen shows that it cannot be doubted that there is a menstrual toxin. However, he thinks that terms such as menotoxin should be avoided, because they are misleading. The menstrual toxin may be demonstrated by the arresting influence on the growth of germinating lupines and by the arrest of the yeast fermentation of dextrose. The toxin appears in considerable quantities in the milk of a lactating menstruating woman. Even if there is no genital bleeding, the toxin is eliminated at intervals of three or four weeks soon after delivery. The author considers an unfavorable effect of the menstrual toxin on persons in the environment as practically nonexistent, because even the nursing never develops serious disturbances. The slight disorders, such as diarrhea and paleness, that occasionally develop in the nursing are physiologic. The nature of the toxin is not known, but the author assumes that it is a substance originating in the lipid metabolism and belonging to the group of biogenic amines.

Simmond's Disease.—Herman describes three cases of Simmond's disease (hypophyseal cachexia). Its most important symptoms are severe cachexia and emaciation. Cachexia may be the only symptom. The author lists as the most characteristic symptoms white, pale skin, an old facial expression, rapid aging, falling out of teeth and hair, cessation of menstruation, impotence, reduced blood pressure and blood sugar, apathy, insomnia, lack of appetite, pressure and pain in the gastric region after eating, vomiting, and occasionally anacidity and constipation. The body temperature is lowered, there is a feeling of cold, particularly in the feet, also pruritus and occasionally pathologic changes in the region of the sella (calcified foci, xanthomatous infiltrations). The specific dynamic action is often lacking and the basal metabolism is reduced. Examination of the blood discloses anemia and occasionally there is eosinophilia. The author obtained favorable therapeutic results with hormones of the anterior lobe of the hypophysis. He found that these hormones had a greater effect on the metabolism than on the function of the genital glands. He emphasizes that the treatment with hormones of the anterior lobe of the hypophysis may eventually have diagnostic value, for if a cachexia quickly responds to treatment with these hormones the disorder is Simmond's disease.

Wiener klinische Wochenschrift, Vienna

47: 1129-1152 (Sept. 21) 1934. Partial Index

Diagnosis of Carcinomatous Cirrhosis. L. Hess.—p. 1129.

***Therapy of Enteritis Caused by Lambliæ.** E. Lada.—p. 1132.

Constitutional Factors in Predisposition to Embolism. G. Nobl.—p. 1133.

Cutaneous Temperature and Angina Pectoris. F. Kisch.—p. 1135.

***Sedimentation Speed of Erythrocytes in Tuberculosis.** I. Balanescu and S. Oeriu.—p. 1137.

New Methods in Treatment of Influenza. O. Löwinger.—p. 1139.

Diagnosis and Differential Diagnosis of Renal Tumors. R. Demel.—p. 1145.

Treatment of Enteritis Caused by Lambliæ.—In the stool of a patient with an enterocolitis, which had been refractory to dietary and medicinal treatment, Lada discovered Lambliæ. By means of the duodenal tube he introduced into the duodenum of the patient a solution of 0.3 Gm. of neoarsphenamine in 200 cc. of water. The diarrhea ceased at once, and two days later the stools were of normal color and consistency. On the third day the stools were entirely free from the organisms but in spite of after-treatment with acetarsone they reappeared later. However, there was no relapse of the clinical symptoms. To destroy the organisms the administration of neoarsphenamine by means of the duodenal tube was repeated several times and was followed by renewed treatment with acetarsone. As the result of these measures they disappeared completely within ten days, and the author states that ten weeks after the treatment the patient was free from symptoms, the stools were always normal and repeated search for Lambliæ always gave negative results. He points out that the literature reports other cases in which arsenic preparations produced such

favorable results but that there are also cases in which this therapy fails completely. However, he thinks that it should always be tried. To avoid relapses, the patients should be warned that dietary mistakes and colds are likely to cause a relapse.

Sedimentation Speed in Tuberculosis.—Balancescu and Oeriu review the theories of the mechanism of sedimentation of erythrocytes. They describe the technic of their modification of the Westergren method. They found that in healthy persons the Westergren method and the Balancescu-Oeriu method disclose identical values of sedimentation speed. In patients with phthisis, the Balancescu-Oeriu method is less sensitive than the Westergren method. The authors consider the lesser sensitivity of the Balancescu-Oeriu method as an advantage in that the sedimentation values are less influenced by various factors. In cases of severe pulmonary tuberculosis it is sufficient to read the reaction after thirty minutes and after one hour, but in less severe cases a reading should be taken again after two hours and in rare cases also after twenty-four hours. The authors found that the sedimentation speed runs parallel with the course of the disease; the longer the duration of the tuberculous process and the greater the sedimentation speed the more unfavorable is the prognosis, but it is not permissible to base the prognosis exclusively on the sedimentation speed. The determination of the sedimentation speed is simple and gives quick results. Together with the clinical, biochemical and bacteriologic data it is of value in the diagnosis and prognosis of tuberculosis.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

109: 265-408 (Sept. 28) 1934

Uterus as Blood Depot During Pregnancy. R. Hansen.—p. 265.
Suprarenal Cortex and Female Genitalia. E. W. Winter.—p. 273.
Biology and Diagnostic-Therapeutic Significance of Sex Hormones of Anterior Lobe of Hypophysis. W. Reiprich.—p. 285.

*Chloride Content of Blood and Rest Nitrogen in Their Relations to Hyperemesis of Pregnancy, to Ileus and to Certain Renal Diseases. H. Kretzschmar.—p. 333.

*Hidradenoma of Vulva. H.-E. Eichenberg.—p. 358.
Risk of Carcinoma of Cervical Stump Following Supravaginal Amputation. J. Fährdrich.—p. 383.

Blood Chlorides in Hyperemesis of Pregnancy.—Kretzschmar points out that hyperemesis may lead to hypochloremia and then discusses the development of hypochloremia and the cause of the increase in rest nitrogen in hypochloremia. He describes the symptoms that are common to the various disorders in which there exist hypochloremia and increase in the rest nitrogen. There is nearly always a considerable loss of fluid and of sodium chloride, which leads to dehydration and later to toxicosis. The skin as well as the other tissues is slack and withered. There is general prostration. The abdomen is drawn in so that in pregnant women the uterus may stand out. The blood pressure is reduced and the pulse is weak but rapid. The temperature increases and edemas may appear, while the renal function is insufficient. Icterus develops, the vomiting becomes continuous and diarrhea may develop in hyperemesis of pregnancy. The cause of the first nausea and vomiting is not definitely known as yet, but there are indications that changes in the central nervous system are responsible. The continuation of the vomiting, however, is frequently due to psychic factors, and during this stage it can often be arrested by suggestion. However, if manifestations of dehydration have set in, the psychotherapy must be combined with measures that refill the depleted water and sodium chloride depots. The author points out that sodium chloride is an old folk remedy in the treatment of vomiting and states that enemas of physiologic solution of sodium chloride and the intravenous injection of sodium chloride have been found helpful in cases of hyperemesis. He thinks that the interruption of pregnancy is justified only if the hyperemesis and severe toxic symptoms persist in spite of the administration of fluid and of sodium chloride.

Hidradenoma of Vulva.—Eichenberg describes twelve cases of hidradenoma of the vulva. The nodules were in the subcutaneous tissue and varied in size from that of a pea to that of an almond. In ten cases the growth was on the large labium and in two cases on the small labium. The author describes the histology of the growths, and he states that they are not always benign. He states that the hidradenoma of the vulva is a congenital malformation of the sweat glands. The

dilated sweat glands in the surroundings, the concurrence of a cystic hyperplasia of the sweat glands with a hidradenoma and anomalies of the regional striated muscles indicate developmental disturbances. The most common form of the hidradenoma is the intracystic papilloma. Large pale epitheliomas, which are a characteristic of mammary tumors, are also found in hidradenoma. A carcinoma may develop on the basis of a hidradenoma, but this is a comparatively rare occurrence. Indefinite demarcation, multistratification of the epithelium, strands of pavement epithelium and horny pearls occur quite frequently and as such do not justify the diagnosis of carcinoma; however, the transition to carcinoma is gradual and purely quantitative, and only experience gained by the comparison of clinical with anatomopathologic aspects will make the dividing line clear. The author thinks that in all cases the nodules should be extirpated and histologically examined and the patients reexamined.

Hospitalstidende, Copenhagen

77: 921-948 (Aug. 28) 1934

Röntgenologic Studies of Male Urethra and Apparatus Closing Bladder Together with Mechanism of Micturition Under Normal and Pathologic Conditions. K. K. Ortmann and II. Christiansen.—p. 921.

*Effects of Extract of Anterior Lobe of Pituitary on Elimination of Water Through Kidneys. P. Iversen and T. Bjerling.—p. 940.
Investigations on Direct Poisonous Action of Some Metals on Cells, with Especial Regard to Suture Materials and Osteosynthesis (Report of Some Recent Investigations). H. Okkels.—p. 946.

Effect of Extract of Anterior Lobe of Pituitary on Elimination of Water Through Kidneys.—Iversen and Bjerling find that the extract has two effects on the kidneys, the action which checks filtration being presumably vasogenic, and that which increases concentration, cellular. The two effects are believed to depend on two different hormones. The differing results obtained by different investigators are ascribed in part to the use of different preparations in different doses.

77: 949-976 (Sept. 4) 1934

*Gastric Achylia in Chronic and Subchronic Polyarthrititis. O. Moltke and A. S. Ohlsen.—p. 949.
Barbital and Injury to Parenchyma of Liver. P. Gerlach and G. V. Bredmose.—p. 963.

Determination of Urinary Sedimentation According to Addis: I. Technic. A. Næraa.—p. 969.

Gastric Achylia in Polyarthrititis.—Moltke and Ohlsen's examination of the gastric secretion in sixty-nine patients with chronic and subchronic polyarthrititis by means of Ewald's test meal and fractional aspiration of the secretion after injection of histamine revealed achylia refractory to histamine in 36 per cent of the patients with primary chronic polyarthrititis, while the number of achylia among the other polyarthritides corresponded to the usual results in ordinary hospital material. The frequency of the achylia in the first group cannot be explained. The achylia is apparently not connected with any special subgroup of primary chronic polyarthrititis.

77: 977-1004 (Sept. 11) 1934

*Renal Rickets. Elisabeth Svendsgaard.—p. 977.
III. Experimental Investigations on Effect of Corpus Luteum Extract and Anterior Pituitary-like Principle on Breasts of Infantile Guinea-Pigs Given Preliminary Treatment with Estrogenic Substance. E. Dahl-Iversen.—p. 988.

*Congenital Dystrophia Brevicollis: Case. T. E. H. Thaysen.—p. 998.

Renal Rickets.—Svendsgaard describes three cases of chronic nephritis, dwarfism and rachitic changes in the bones, in a boy aged 15, a boy aged 3 and a girl aged 20 months, respectively. In the last two cases, uremia caused death; necropsy disclosed renal atrophy and atrophy of the thymus, together with rachitic changes in the bones. She asserts that the actual theories as to the cause of renal rickets fail to explain all cases.

Congenital Dystrophia Brevicollis.—Thaysen's patient, a woman aged 24, has the typical deformity of the neck without synostosis of the cervical vertebrae that is seen in Klippel-Feil's disease. He says that the abnormal shape of the cranium and the asymmetry of the face indicate defective development of the cranium during fetal life. The anomaly has caused a hypoplasia of the hypophysis by a contracting sella turcica, and this abnormality is regarded as the cause of the patient's dwarfism, genital atrophy, osteoporosis and delayed closing of the epiphyses. Her retarded mental development is believed to be due to the abnormal cranial development.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 23

CHICAGO, ILLINOIS

DECEMBER 8, 1934

PRACTICAL MEASURES IN THE PREVENTION AND TREATMENT OF PUERPERAL SEPSIS

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The cause, prevention and treatment of puerperal sepsis have been discussed since obstetrics began to have a literature of its own. It is held as a reproach to the medical profession that puerperal sepsis still continues to take such a large toll of human life and that efforts for its prevention and cure have fallen far short of success. Of late years there has been much criticism in the lay press regarding the present state of affairs. Such publicity is good so far as it stimulates improvement, but, since much that is written distorts the facts or puts them in the wrong perspective, it is harmful. That the medical profession is alive to the problem is evidenced by the vast amount of work being done on it in every part of the world, and by the voluminous literature that has accumulated in the past ten years.

Space will not permit of even a partial review of that literature, so for the purposes of this communication it will be referred to only as it has a bearing on present conceptions of etiology and on practical measures of prevention and treatment.

PREVENTION

Puerperal sepsis is the disease *par excellence* to which the dictum "prevention is better than cure" is applicable; for when once a virulent organism has gained access to the puerperal uterus with its large venous sinuses, its abundant, dilated lymphatic channels and its constant muscular activity, the chances of a massive invasion of the blood and lymph streams are very great, and the patient may quickly be overwhelmed in spite of any means of treatment that are available at the present time.

Relative to the prevention of puerperal sepsis, a distinction must be made between the exogenous method of infection by organisms from without and the endogenous method of infection by organisms already present in the body of the patient. In exogenous infection the most common invading organism is one of the streptococcus group, and the most virulent of these is the hemolytic streptococcus.

How do such organisms gain access to the uterus? Obviously, they may be conveyed directly to the genital tract by the fingers of the attendant if he has a streptococcal lesion on his hands when he makes a vaginal examination. One must not lose sight of the possibility

of the patient herself introducing her fingers into the vagina during the course of labor, or of coitus occurring shortly before. Such occurrences are probably much more frequent than is generally assumed. There must be few instances today of a physician with an obvious infective lesion on his hand taking an active part in the conduct of a labor. The wrongfulness of such a proceeding is so obvious that nothing more need be said about it.

There are, however, more subtle ways in which the streptococcus may gain access to the uterus. It is a widely distributed organism and it can reach the human organism through various channels, causing in one case tonsillitis, in another mastoiditis, pneumonia or scarlet fever. It is impossible to determine the manner in which the individual inoculation takes place, and so it may be with uterine infection. There is general agreement that the same streptococcus which is responsible for all these diseases is responsible also for puerperal sepsis, and there is accumulated evidence showing that streptococcal puerperal infections are most frequent when these other diseases are prevalent in the community.

The hemolytic streptococcus does not survive long outside the body, so that it is seldom possible to recover it even from the immediate environs of an infected patient. It is, however, very frequently found in the nose and throat of individuals in attendance on such patients and of many persons who have had no known direct contact. The proportion of apparently healthy individuals who harbor the hemolytic streptococcus in the nose or the throat is put as high as 45 per cent by Davis,¹ and the occurrence in individuals with tonsillar crypts is placed at 100 per cent by Pilot and Davis.² Hare³ has recently shown that virulent streptococci are obtained from the throats and the noses of individuals with infection of the respiratory tract, even though there are few symptoms. His test of virulence is the power of the organisms to resist phagocytosis in normal human blood.

There are now many recorded instances in which by agglutinin absorption tests the organism in the throat and the nose of the attendant and that recovered from a case of puerperal sepsis have been proved to be identical.

One of the most striking instances of this kind was recorded recently by Smith.⁴ A physician attended three patients in their own homes, situated three miles apart. Streptococcal septicemia developed in all three and all of them died. In regard to this instance, Smith writes:

Serological examination showed that all strains obtained from the uteri and blood of the three patients were identical with that obtained from the doctor's throat. Not only so, but during

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Davis, D. J.: J. Infect. Dis. 29: 524 (Nov.) 1921.

2. Pilot, L., and Davis, D. J.: J. Infect. Dis. 24: 386 (April) 1919.

3. Hare, Ronald: J. Path. & Bact. 38: 129 (March) 1934.

4. Smith, J.: J. Obst. & Gynaec. Brit. Emp. 40: 991 (Oct.) 1933.

her brief illness at home Mrs. J. S., was attended by her sister, Mrs. G., and this woman developed a severe tonsillitis on the day following the removal of Mrs. J. S. The tonsillitis was followed by an acute otitis, and from the pus a hemolytic streptococcus serologically identical with the other strains was also cultured.

Smith records other almost equally striking cases, and the literature of the past few years recounts many more. One is therefore driven to the conclusion that the nose and throat carrier of *Streptococcus haemolyticus* is the cause of the great majority both of the sporadic form and of the epidemic form of hemolytic streptococcal puerperal infections.

In order to emphasize the practical measures that can be taken to prevent or minimize the danger of hemolytic streptococcal infections, I shall outline briefly the routine carried out in my service in the Sloane Hospital for Women.

1. *Detection of Carriers.*—Cultures from the throat and nose are taken in a routine manner from all persons, including the physicians, students and nurses who may come in contact with women in labor or in the puerperium. All pupil nurses must bring with them from their respective schools a certificate of a negative hemolytic streptococcus culture from the nose and throat. Individuals from whom positive cultures are obtained are excluded from the direct care of patients, and the throat and nose are treated with 2 per cent solution of neosilvol. Duty is resumed when two successive cultures are negative.

2. *Use of Masks.*—Thorough masking of the nose and mouth is obligatory on every one who comes in contact with a woman at any stage of labor or during the puerperium. The mask is of four thicknesses of gauze and must completely cover the nose as well as the mouth. It must be worn by every one in the labor and delivery rooms, and by every nurse doing a perineal dressing in the wards. I believe that many patients are infected in the early puerperium and I lay great stress on the masking of the nurses in the wards. This insistence on masking savors of fussiness and is apt to be "pooh-poohed" and resented at first. However, it very quickly becomes a routine and is taken as much for granted as is the masking of the nurses, operator, assistants and spectators in the surgical operating room.

One of the hazards of hospital obstetrics is the number of contacts for each patient during labor and during the puerperium. For the past year we have kept a record of the contacts of each individual patient; by contacts is meant individuals who actually come in physical contact with the patient. In the case of ward patients the number of contacts during the course of labor has been as high as twenty-five; the average number is eleven. It should be stated that ours is a teaching institution.

With such potentialities for infection, the minimum precaution requires the effective masking of all such contacts.

3. *Isolation of Infected Cases.*—In the prevention of exogenous infection the isolation of frankly infected cases is obviously of great importance. Isolation should also be extended as will be detailed later, to all patients who may be carriers of the streptococcus in the genital tract, even though such patients are free of symptoms. The personnel in contact with these patients should not contact well patients, as such individuals are very likely to be carriers.

It may seem to some that undue emphasis has been placed on the carrier as the responsible agent in puer-

peral infection of exogenous origin, but from my personal experience and from a study of the literature of recent years I am convinced that the carrier is the major menace. Recognized carriers should, therefore, be excluded from attendance on obstetric patients, and as any one at any time may unwittingly be a carrier, proper masking should be used to protect the attendants' hands, gloves, dressings, instruments and external genitalia of the patients from that fine spraying from the mouth and nose which always occurs when one speaks or even breathes.

VAGINAL EXAMINATION

With this protection of the sterile field surrounding the patient, I do not believe that properly executed vaginal examinations are a menace to the patient. Penner and Gegerson, two members of this year's graduating class of the Columbia University College of Physicians and Surgeons, made a study of the morbidity of the patients in Sloane Hospital who had and who had not had a vaginal examination in the course of labor. They used for the study only strictly comparable cases. These studies indicated that there was no increased morbidity in those examined vaginally. I have never approved of rectal examinations during labor and this study encourages me to continue the use of vaginal examinations in the cases in which the procedure is necessary.

The vaginal examination must be made only with full exposure of the vulva and perineum, with thorough sponging off of the area surrounding the vaginal orifice, complete separation of the labia, and the absolutely direct introduction of the examining fingers without outside contamination. In this way, providing the gloves are sterile and the examiner is properly masked, the danger of introducing pathogenic organisms is reduced to a minimum. At the same time, the risk of introducing into the cervix and lower uterine segment organisms already present in the vagina is less than when the vaginal wall itself is pushed up into the cervix, as must occur during a rectal examination.

PLACE OF DELIVERY

A statistical investigation by Robinson, a member of the graduating class of the Columbia University College of Physicians and Surgeons, shows that the proportion of deaths from puerperal sepsis in relation to the total deaths is highest in the states in which the largest number of births takes place in hospitals, and that it is lowest in the states in which there is a larger percentage of home deliveries. Deaths from accidents of labor are lowest in the states with the highest percentage of hospitalization and highest in the states with the highest percentage of home deliveries. This would seem to prove that the hospital would be the safest place for the obstetric patient if sepsis could be controlled. There is, undoubtedly, a greater risk of contagion and of infection by carriers in the hospital, especially if the hospital is not properly planned, has no provision for isolation of infected cases and has an uncontrolled staff.

During the present year, we have made, for the first time, systematic cultures from the vagina of every patient in labor. During the months of January, February, March and April sixteen patients out of a total of 500 on whom cultures were made showed a hemolytic streptococcus in the vagina. None of these patients were febrile at the time, but all were isolated. Nine continued to harbor the streptococcus in the vagina during the puerperium but fever developed in

only one, and that was very mild. Three of the other seven patients had a mildly morbid puerperium, although the streptococcus could not be recovered after delivery.

During the spring months of this year streptococcal infections of all kinds have been prevalent in New York, but we have not had a single case of serious streptococcal infection in the Sloane Hospital. It may be mere coincidence, but it may be possible that our isolation of these nonfebrile streptococcus carriers has prevented other serious infections. The results of the work being done emphasize the need of constant watchfulness in every hospital in which obstetric patients are treated. Without proper control and without a proper structural arrangement an obstetric hospital may well be a less safe place for a patient than even the meanest home. It seems to me that the time is ripe for a revaluation of scope of home delivery for the normal case, and I would commend attention to the exhibit arranged by Dr. Plass in the Scientific Exhibit.

PREVENTION OF ENDOGENOUS INFECTION

The vagina of every pregnant woman and of every woman in labor contains organisms. These vaginal organisms ascend into the cervix and lower uterine segment in the later stages of labor and continue to do so in the early puerperium, so that by the third day the normal puerperal uterine cavity is heavily invaded, and it does not become sterile until the tenth or twelfth day.

Most of these organisms are not pathogens, but in a certain percentage of women there are present in the vagina during labor, and in the uterus in the early puerperium, organisms which by ordinary cultural tests are identical with those obtained from definite inflammatory lesions; yet, these women may show no febrile reaction. The potential pathogens most commonly found are various types of the nonhemolytic aerobic streptococcus: the anaerobic streptococcus, the staphylococcus and *Bacillus coli*. The hemolytic streptococcus is found in only from 1 to 3 per cent of individuals.

As I have previously mentioned, this organism was found in 3 per cent of the cases in the Sloane Hospital. The fact that no serious infection developed in any of our patients is in accord with reports from other clinics. Is this so because the individual patient has developed an immunity to her own organisms or is it because of the fact that the organisms are really nonvirulent?

According to Hare,⁵ these vaginal streptococci found in nonfebrile cases are nonvirulent, as evidenced by their feeble resistance to phagocytosis in normal blood. It is known that the pathogenicity of the anaerobic streptococci as tested in laboratory animals is very small and in many instances altogether absent, and yet they may cause a very extensive and sometimes fatal puerperal sepsis. As more and more work is being done on these anaerobes, it would seem that they are responsible for the majority of the cases of mild and moderate puerperal infection, for many of the cases of thrombophlebitis and for not a few true septicemias.

There must be circumstances, therefore, under which all these apparently nonvirulent pathogens may become virulent and cause infection. The problem of the prevention of these infections must, therefore, be approached in two ways: (1) the elimination of the organisms from the genital tract before or during labor and (2) the avoidance of conditions that favor their acquisition of virulence.

Vaginal Antiseptics.—Douching of the vagina with antiseptic solutions during labor was suggested and

practiced many years ago. The method was discarded when it was shown that the agents employed destroyed the vaginal bacillus of Döderlein, which by maintaining an acid environment inhibited the growth of other organisms. In the last ten years there have been renewed attempts to render the parturient canal sterile. Mayes⁵ has been the chief proponent. He uses a solution of mercurochrome, which is instilled into the vagina at regular intervals during labor. He states that the septic death rate has practically been halved since the method was used. I have always felt that there were other factors responsible for the results which he undoubtedly obtained, especially the more careful supervision of all technic in the cases in which mercurochrome was used. This opinion is supported by the fact that it has been shown by Garrod⁶ and others that mercurochrome is a very feeble germicide, in no way comparable with, for instance, brilliant green or iodine.

Colebrook⁷ criticizes the indirect evidence of lowered morbidity and mortality rates. He has carried out experiments on five women, using mercurochrome and other antiseptics, checking bacterial content of the vagina, before, during and after the treatment.

In regard to the results of these experiments he says:

These five records show that the genital tract was not sterilized in any instance, following the repeated application of mercurochrome, crystal violet and brilliant green, or dettol. In two cases there were approximately as many organisms grown three hours after the first treatment as before. In all probability this failure is attributable to multiplication of the bacteria somewhere, perhaps, in the glands of the cervical canal, out of reach of the antiseptic.

The outstanding feature of the results is that in four of the five cases the bacterial species originally present, species believed to be of little or no pathogenicity, were replaced or joined by other species of definitely greater pathogenicity; e. g., *B. coli*, *B. proteus*, hemolytic staphylococcus and fecal streptococcus. It would seem probable that the introduction of the chemical agent had so altered the mucosal cells or their secretions as to permit these species, which are not normally present, to establish themselves.

Although the number of cases is admittedly small this investigation suggests the tentative conclusion that it is inadvisable to attempt to improve upon nature's arrangements for keeping the genital tract free from pathogenic bacteria.

Holding the view expressed by Colebrook, I have never systematically used vaginal antiseptics, but I have an open mind on the subject and am more than willing to adopt any method when it is proved to be efficacious.

Control of Conditions Favoring Endogenous Infection.—In studying the cases of febrile morbidity in the Sloane Hospital for Women we find that the three most commonly associated conditions are prolonged labor, extensive lacerations and excessive hemorrhage. These are all conditions which in their inception and in their control favor exogenous infection; but with a uniform technic for all cases it is fair to assume that the consistently higher incidence of infection under the circumstances mentioned is due, at least in part, to the activation of organisms already present in the vagina.

The avoidance of these three prime factors can be accomplished only by the exercise of the best obstetric judgment and technical skill. An increased morbidity does not follow a high incidence of low forceps deliveries if these are done with skill and gentleness, but it does follow a high incidence of mid forceps and

5. Mayes, H. W.: *Am. J. Obst. & Gynec.* 10: 1 (July) 1925; *ibid.* 23: 627 (May) 1932; *Surg., Gynec. & Obst.* 54: 529 (Oct.) 1932.

6. Garrod, L. P.: *Brit. M. J.* 1: 572 (April 4) 1931.

7. Colebrook, L., and Maxted, W. R.: *J. Obst. & Gynaec. Brit. Emp.* 40: 966 (Oct.) 1933.

high forceps deliveries, and it does follow a high incidence of prolonged labors, whether these ultimately terminate normally or are completed by operation.

Given a definite indication for operative delivery and given the conditions necessary for its proper performance, the sooner it is done the better. The proved parallelism between increased operative intervention and increased septic morbidity and mortality is due to that intervention being performed, in many instances, on wrong indications, at the wrong time and by unskilled operators. General improvement will result only when it is recognized by every practitioner that a large number of obstetric procedures are of major surgical importance, that they can be undertaken with impunity only by one who has had special training, and that even in skilled hands the results will be disastrous if the procedure is attempted at the wrong time or in the wrong case.

TREATMENT OF PUERPERAL INFECTIONS

I confess that I approach this part of my subject with a sense of futility for, like the late Whitridge Williams, I am more or less of a fatalist so far as the outcome of a case of puerperal infection is concerned. That outcome depends mostly on the virulence and invasiveness of the infecting organism, and to a lesser extent on the tissue reaction and resistance of the individual. So far, no specific has been found that will act with certainty on the organism or its toxins, so one must fall back on the second line of defense and do everything possible to increase the resistance of the tissue. Elsewhere,⁸ I have summarized the present day knowledge regarding antibacterial and antitoxic serums, vaccines and nonspecific therapy. Space will not permit a recapitulation of these, so I shall limit myself to a short summary of the method of treatment we employ in cases of puerperal infection in my service.

When a puerperal patient shows an oral temperature of 100.4 F. or higher on two readings at intervals of four hours, she is transferred to the isolation unit and individualized in all details of nursing care in one of the glass-screened cubicles in a ten-bed ward. A thorough general examination of the throat, lungs, heart and kidneys is made. The uterus is palpated abdominally, the lochia is examined, a culture is taken from the vagina and a blood culture is made. If the uterus is tender and larger than it ought to be, an ice-bag is placed over it and the patient is given three oral doses of 5 grains (0.3 Gm.) of quinine sulphate daily. If the lochia is profuse or foul, the shoulders are elevated in the Gatch frame. The diet is light and nourishing; a small enema is given daily and, if necessary, a mild cathartic, such as magnesia magma, is used. In the majority of cases beginning in this way the condition is an endometritis, which may be due to a variety of organisms with a probable preponderance of the anaerobic streptococcus. Most of these patients make a rapid recovery with no other treatment, so that in a few days the temperature falls to normal, the uterus begins to involute normally, and the lochia becomes less profuse and loses its odor. With this probable outcome we are careful to do nothing that might favor an extension of the infection beyond the uterus. No pelvic examination is made other than to inspect any perineal lacerations and take a culture from just within the vaginal introitus. The uterus is not manipulated from the abdomen.

If the temperature does not fall, one of four things is happening: (1) The infection in the uterus is continuing but remaining localized. (2) Extension has taken place to the pelvic cellular tissue. (3) Infection has extended to the pelvic veins (septic thrombophlebitis). 4. There is invasion of the blood stream. Cultures of the blood are made regularly so long as fever persists. If the patient shows a progressive anemia, or is losing ground, a blood transfusion of 500 cc. is given by the direct method. This may be repeated every three or four days, the amount given each time being from 250 to 400 cc. No vaginal or bimanual examination is made, unless the culture from the vagina has been indeterminate, in which case, with the utmost gentleness, a culture is taken from within the cervix.

If it appears from the negative blood culture and from the absence of the signs of thrombophlebitis, that the infection is still limited to the uterus, we continue to pursue a course of masterly inactivity. We do not use glycerin injections into the uterus nor the introduction of drains with irrigation, as advocated by some, because we believe that in most cases they may do more harm than good. I can still recall the frequency of chills following intra-uterine irrigations during my intern days.

A thrombophlebitis will be indicated by costovertebral tenderness and tenderness over one or both sides of the pelvic brim, a fluctuating temperature, high leukocytic count and sometimes definite chills. Many cases of thrombophlebitis, however, show only a low grade temperature, perhaps not over 100 F., over a period of a week or ten days, and at the end of that time declare themselves by the occurrence of an embolus and a pulmonary infarct. We have observed this so often that we are highly suspicious of all such low grade temperatures unless something definite can be found to account for them. Therefore, we keep such patients in bed until the temperature has been normal for several days.

In cases in which an embolus occurs there is usually marked dyspnea and orthopnea. The patient is propped up and given a hypodermic injection of morphine. In severe cases an oxygen tent may be necessary. Enemas are stopped and she is kept quiet with codeine, from one-half to 1 grain (from 0.03 to 0.065 Gm.), every four hours. Small meals are given every two hours. The patient is kept in bed until the white cell count of the blood is normal and the temperature has been normal for a week.

The majority of these patients with thrombophlebitis, even with an embolus, recover. So far I have not undertaken any of the formidable operative procedures recommended and practiced by obstetricians in this and other countries, such as transperitoneal or extraperitoneal ligation of the pelvic veins, excision of the thrombosed veins and removal of the uterus with drainage through the vagina. In two cases I was very much tempted to operate but forebore, and the patients recovered.

Our operative treatment of puerperal infections at Sloane Hospital is limited. A pelvic abscess is opened, but we are never in a hurry to explore those massive cellulitic exudates which are sometimes found, until there is definite evidence of softening and fluctuation. Most of these exudates absorb without suppuration. We drain the peritoneum through the posterior fornix or through a small incision above the pubes in cases of early peritonitis following septic abortion, and in the rare early case following full term delivery. The peri-

8. Watson, B. P., in Curtis, A. H.: *Obstetrics and Gynecology*, Philadelphia, W. B. Saunders Company 2, 1933.

tonitis developing late in a case of puerperal sepsis is usually just one expression of the wide hematogenous and lymphatic extension, and operation is useless. We never explore or curet the uterus in cases of septic incomplete abortion until the temperature has been normal for three days and we know that the organism is not a hemolytic streptococcus. Cases in which there is excessive hemorrhage, the control of which may necessitate taking the risk of emptying the uterus, constitute the one exception to this rule. I perform a hysterectomy in the rare cases of uterine abscess and of necrosis of a uterine fibroid encountered during the puerperium.

When a definite hematogenous infection is present the case is by no means hopeless. Many patients with a bacteremia recover. It is this fact that makes it so difficult to assess the value of any therapeutic measure employed. We have used various intravenous medications, many types of streptococcus serum, both supposedly antibacterial and antitoxic, and I have not been able to satisfy myself that any one has been of real value in saving a life that would otherwise have been lost.

Hope for the future lies in the work of Warnekros,⁹ Lash and Kaplan¹⁰ and many others who are trying to produce a specific antitoxic serum.

Meantime, blood transfusion has come to be our standby used in the way already mentioned. I have had no experience with immunotransfusion, but those who have used it believe that it may be more efficacious than transfusion from the untreated donor.

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ABSTRACT OF DISCUSSION

DR. J. C. LITZENBERG, Minneapolis: Any contribution leading to the lessening of the mortality of puerperal sepsis is timely. The author has established the thesis that the curative treatment cannot be relied on, it being necessary to direct one's efforts almost exclusively to prevention. The greatest statistical progress in the prevention of puerperal sepsis followed a few years after the work of Semmelweis and Holmes. Since that time, however, the statistics have remained more or less stationary. I wish to emphasize that Dr. Watson has made a distinct contribution by declaring that sepsis due to the hemolytic streptococcus, has been proved by his investigations to be due in a vast majority of cases to a carrier. When rubber gloves were introduced and actually sterile hands became available for the conduct of labor, it was thought that the question of puerperal sepsis would now be solved. Disappointment resulted because of the overconfidence in sterile hands. It was found that the germs were carried in just as frequently by the sterile glove because the genitalia could not be rendered sterile, and that the infection would come from a clean hand carrying germs from outside in. Dr. Watson has emphasized the point that even a sterile hand may carry the infection upward. The carrier, by speaking or even by breathing may bring a fine spray of germs on the genitalia. The author therefore has urged a method of preventing this which he says may appear fussy. However, in the question of puerperal sepsis it is well to be fussy, because results have been entirely unsatisfactory and more or less a reproach on the medical profession. The taking of cultures from carriers in the prevention of all infectious disease has been one of the greatest advances in modern medicine. Dr. Watson has emphasized that there may also be the carrier of the hemolytic streptococcus, which is the most virulent organism and the principal cause of mortality in sepsis. Therefore, I commend his emphasis on this most valuable addition to the prevention of puerperal sepsis, for

prophylaxis is the only solution. The treatment after the infection has occurred is most unsatisfactory.

DR. JOSEPH B. DE LEE, Chicago: Some years ago I collected authentic reports of twenty-nine epidemics of puerperal infections in hospitals, and of the twenty-nine only one hospital had the nerve, the scientific love for verity, to report the epidemic, and that hospital was Dr. Watson's.

DR. A. F. LASH, Chicago: I wish to speak of the statistics in Cook County Hospital in Chicago, which in a sense is comparable in its population to that of New York. In a review of 500 cases of puerperal sepsis last fall it was found that the mortality in home deliveries was four times that of the hospital deliveries; secondly, 35 per cent of the septic patients had operative deliveries, as compared to an incidence of only 6 per cent of operative deliveries in the nonseptic patients. Dr. Watson has well emphasized the importance of bacteriology in reference to infection. I think, as he has demonstrated, that the bacteria may be present and yet the woman will not develop an infection. The explanation is to be found in the patient's healthy local and general immunity, the local immunity consisting of a normal epithelial layer throughout the uterovaginal tract, while the general immunity is made up of the various types of antibodies. I was much surprised not to hear Dr. Watson speak of any experience with the antitoxic streptococcus serum. If there is anything that may improve the patient's general immunity it is the antitoxic serum if it is used early. As in all streptococcal infections, serum is of value only when administered early. If the diagnosis of puerperal sepsis is made early from the typical course of puerperal fever and the presence of a hemolytic streptococcus in the cervix, and if serum is given, the incidence of fatal cases will certainly decrease. I am sure that every one who has had any extensive experience with puerperal sepsis knows that there is a certain group of patients that will develop puerperal sepsis no matter how careful or how skilled the obstetrician is, and it is in such cases that I feel that serum is especially indicated. It has been our experience in the Cook County Hospital that most of our deaths have occurred from puerperal infection following septic abortion in which peritonitis occurs very early in the course.

DR. J. I. HOFBAUER, Cincinnati: Experience in the university clinic of Koenigsberg fully bears out the significance of carriers of streptococci in the conveyance of infection. Masking certainly plays an important part in the prevention of transmission of infection. But the mask must be properly applied. As to the benefit derived from serums in the treatment of puerperal infection, I am rather skeptical. On the other hand, transfusion of between 300 and 400 cc. of blood repeated at proper intervals represents an important element in the treatment. The question why puerperal infections occurring during the early months of pregnancy exhibit a severer course, quite often, than following labor at term may be accounted for by the presence in the parametrium, at term of a well developed defensive mechanism, which is lacking at previous stages of pregnancy.

DR. WILLIAM H. VOGT, St. Louis: So far as the treatment of puerperal sepsis is concerned, I do not believe that physicians are any further today than they were years ago, except perhaps for the use of blood transfusions. Therefore, the prime thing is prevention. In July of last year I took over the service at St. Mary's Hospital in St. Louis and being aware of Dr. Watson's work, namely, the careful masking of the entire personnel and the culturing of noses and throats, I carried this out in detail. It was surprising to see the large number of noses and throats of the nurses, doctors and students that harbored *Streptococcus haemolyticus*. All who showed positive cultures for *Streptococcus haemolyticus* were eliminated from the service and were treated and were not allowed to come back into the department until the condition had entirely cleared up. Furthermore, the entire personnel who go into the nursery have been masked as well, so as to prevent any infections in the respiratory tract of new-born infants. It is, however, interesting to see today what objections are still encountered, and I can readily see what difficulties Semmelweis had in his time when today among the men visiting hospitals some still object to following out the method of masking, gowning and capping themselves for routine examinations. Dr. Watson also

9. Warnekros, K.; Lowros, N., and Becker, N.: München. med. Wehnschr. 73:2155 (Dec. 17) 1926.

10. Lash, A. F., and Kaplan, Bertha: Puerperal Fever; *Streptococcus haemolyticus* Toxin and Antitoxin, J. A. M. A. 86:1197 (April 17) 1926.

brought out another important thing; namely, the masking of the nose as well as the mouth. It is always interesting to me to go into operating rooms and see only the mouth of the operator covered. I dare say that in 75 per cent of operating rooms only the mouth is masked. If it is important to mask the mouth and the nose in obstetrics it would seem to me that it is equally important to do the same thing in surgical work.

DR. B. P. WATSON, New York: There is a good part of my paper which I was unable to read and in which I did enter into some discussion as to the use of serum, especially the antitoxic serum, in the treatment of puerperal sepsis. I think it is only along the line of the work of Warnekros that any strides are likely to be made in the treatment of the disease and in the development of a puerperal antitoxic serum, which, as Dr. Lash says, must be given very early if it is going to do any good at all. The question of whether the patient who harbors hemolytic streptococci in the vagina has a true immunity to that organism, or whether the organism is actually a nonvirulent organism, is still debated. The recent work of Hare would seem to show that most of these organisms in the vagina of nonfebrile patients are really not virulent, but it is not known whether the transfer of that organism to another individual might not make it virulent. I am in entire agreement with Dr. Hofbauer with regard to the defensive mechanism in the periuterine tissue in the later stages of pregnancy, as manifested by the development there of the clasmatoocytes. I am especially grateful to Dr. Vogt for supporting me in the emphasis I have tried to place on the importance of the carrier and the necessity for masking whenever one comes in contact with a woman in labor. Like Dr. Vogt, I also insist on every woman masking in the nursery.

THE MANAGEMENT OF PERFORATED APPENDICITIS

JOHN F. GILE, M.D.

AND

JOHN P. BOWLER, M.D.

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In hands of average competence and ability, inflammation of the appendix represents a surgical condition that should not and usually does not involve mortality. Yet owing to the lack of appreciation of the significance of early symptoms and because of "home treatment" and delayed surgery, a simple surgical condition progresses to the stage of complications that are ultimately responsible for a tremendous death rate. This is especially appalling when one observes its incidence in the younger age groups. Because of this incidence and the fact that the primary lesion carries no significant danger into later life, appendicitis represents a far more satisfying field for organized educational efforts than do malignant conditions.

We are presenting a review of our cases of appendicitis for the six years from Jan. 1, 1928, to Jan. 1, 1934. Those years have been chosen because with the beginning of that period occurred the opening of Dick Hall's House, the Dartmouth College student infirmary. This is operated as a wing of the Mary Hitchcock Memorial Hospital, which in turn serves a wide rural area. The great majority of the patients of Dick Hall's House are college students who should be expected to have more than average ability to recognize the need of medical attention. They are not surrounded by experts in "home treatment," early medical observation is insured by a system under which janitors report sick students to the medical director, and they are seen from

the beginning by members of our own staff. While it is obvious that this group of cases may be termed preferred risks, it also falls largely within the greatest age incidence of appendicitis, although there are included graduate students and faculty members. We shall consider this as the controlled group. The more miscellaneous patients of the Hitchcock Hospital are referred from distances up to 75 miles and may be considered as the uncontrolled group. And so we discuss two groups of appendicitis cases—controlled and uncontrolled—the only common factor in the management of which is that they have been operated on by the same surgeons.

The controlled group comprises 110 cases with no mortality; the uncontrolled group is one of 791 cases with 17 deaths, a mortality of 2.15 per cent. The total series, therefore, constitutes 901 cases in which operations were performed for appendicitis, with 17 deaths, a mortality of 1.89 per cent.

For the purpose of discussing the cases of perforation, our series has been classified in the following manner:

1. Uncomplicated appendicitis.
2. Acute appendicitis with exudate and local peritonitis.
3. Gangrenous appendicitis with local peritonitis, with or without perforation.
4. Appendiceal abscess.
5. Perforated appendicitis with general peritonitis.

The incidence according to this classification is given in the accompanying table.

It is perfectly apparent that classifications of appendicitis are of little value for comparative purposes, because classification on a basis of conditions found at operation is as variable as the personal interpretation of these conditions by the operating surgeon. It is equally obvious that classification based on the preoperative duration is still more erroneous in assuming that the pathologic process is constant under all conditions and in all individuals. All physicians have seen too many instances in which a six-hour history presents a more serious process in one case than a thirty-six hour duration in another.

Of the total of 901 cases, drainage was done in 235, or 26 per cent, for varying degrees of peritoneal involvement, with sixteen deaths, a mortality of 6.8 per cent. Group 1 is uncomplicated and drainage is not done, and in each series is made up of acute, subacute and chronic cases of operation primarily and solely for appendicitis. All of the ninety patients in the second group were given local drainage with but one fatality, resulting from cerebral embolus in a man, aged 73. While the results of such a conservative attitude toward drainage in the early cases seem satisfactory, one postoperative obstruction occurred in this group, possibly as a result of the presence of drains, but recovery occurred following jejunostomy. In ninety-three cases of gangrenous appendicitis with peritonitis with or without perforation there were six deaths, representing 6.45 per cent. In thirty cases of perforation with local abscess there was one fatality. Of 235 drained cases, we have classified twenty-two as perforated appendicitis with general peritonitis. With such a small number in this group we may have been severe on ourselves, but certainly there is no dilution of the group by false inclusions or by exclusion of any of the six deaths in group 3.

In many previously reported series of appendicitis, divided into two main groups of cases with and with-

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

out drainage, from 30 to 50 per cent of the total cases in which drainage has been done have been listed as perforation with diffuse peritonitis. According to our criteria we feel that this incidence is high. Under the heading of perforation with general peritonitis we include only those cases with perforation usually of some duration, which beyond any question has resulted in a widespread peritonitis with obvious and extreme toxemia. These cases constitute less than 10 per cent of our cases in which drainage was done. Early perforations with local processes are classified in group 3. But in the latter group we feel that our inability to detect a gross perforation is no guide to the extent or severity of the peritonitis. In other words, bacterial penetration of a gangrenous appendix can produce as profound effects as actual rupture of the wall.

The wide variation in the mortality rate in these groups makes quite clear the effect of the factor of operability or time of operation. There are three stages at which operation is relatively without risk—when the process is limited within the appendix, in the early stages of peritoneal involvement, and after local abscess formation. Early local peritonitis accompanying gangrene with or without perforation carried a mortality rate of 6.45 per cent in a group of ninety-three cases. It could be said that delayed operation in this group might transfer these cases to group 4, appendiceal abscess, in which operation was performed with one half the risk. But there seems no possible assurance that an early process will remain local or that, having become general, it will return to the status of a local process. In delaying surgical intervention in early peritonitis, as in our group 3 with a rate of 6.45 per cent, we have no preoperative basis for prophesying whether the transfer will be to group 4 with abscess formation and a mortality rate of $3\frac{1}{2}$ per cent or to group 5 (that of general peritonitis) with a rate of 36.4 per cent. The only cases in which delay has been a part of the program are those presenting a palpable mass. Twelve of these were delayed from one to three days for preoperative preparation.

We would concede that a program of immediate surgery may have led to operation in cases of already long-established general peritonitis at a time when they represented an almost hopeless risk, which might have been lowered by temporary, supportive medical treatment. But by the same token we would refuse to delay operation in cases of early peritonitis on the basis that it will become a localized abscess. Too many factors of which one can have no preoperative knowledge are concerned. The location of the perforation in one case may be at the tip of a free appendix to be met early by a freely moving omentum; in the next case it may be in the base of an appendix in a field in which bands have fixed surrounding structures in such a position as to allow no mobility for the formation of barriers.

In the last four years we have chosen spinal anesthesia in the great majority of these acute cases. We have used the McBurney incision, which brings one immediately over the site of involvement, permits of no undue exposure or handling of viscera, lends itself to any necessary enlargement, and is best located for the purpose of drainage. As little manipulation of the intestine as possible is carried out and an attempt is always made to remove the appendix in the early cases.

We will take up first those cases in group 3, those with gangrene and local peritonitis, associated in most instances with early perforation. Operation in all cases

in this group was carried out immediately after hospitalization, for reasons not so much concerned with the duration of the process but because the degree of spasm as opposed to distention was by far the predominating sign and because absorption and the resulting toxemia were not presenting a serious risk. Except in the presence of a beginning mass formation, we feel that removal of the appendix in this group and at this time is important and necessary in that it concerns the obliteration of the focal point of the process, which would continue only if the appendix was not removed. In only one in this group of ninety-three cases was the appendix allowed to remain. Although there may be but little fluid in the immediate region of such an appendix, it is often found that there is a considerable collection in the pelvis, and in all these cases drainage has been done with either a tube or a Penrose cigaret in the pelvis. Good care is taken that the omentum lies under this drain, which should not be in contact with or draining through loops of small bowel. A Penrose drain is placed on the stump of the appendix and a third one in the flank. The wound is closed in layers or with through-and-through sutures to the drains. The postoperative care is the same as in the case of general peritonitis and continues as long as necessary on that

Incidence of Appendicitis in Five Groups

	Hospital			Dick Hall's House			Total		
	Cases	Deaths	Mortality Rate, per Cent	Cases	Deaths	Mortality Rate, per Cent	Cases	Deaths	Mortality Rate, per Cent
1.	589	1	0.17	77	0	0	666	1	0.15
2.	70	1	1.43	20	0	0	90	1	1.11
3.	82	6	7.3	11	0	0	93	6	6.45
4.	29	1	3.45	1	0	0	30	1	3.33
5.	21	8	38.0	1	0	0	22	8	36.4
Total.	791	17	2.15	110	0	0	901	17	1.89

program, which will be discussed when we come to this group. We feel that delay in these cases with localized peritonitis, presenting as they do the possibility of progression of the peritoneal involvement, offers us but little opportunity of reducing our mortality in this group.

This series includes thirty cases of appendiceal abscesses. We feel that these represent a process originally and permanently localized, and that they present no problems of peritonitis as such. In any cases in which there has been vomiting with resulting dehydration and a lowering of the general condition, any reasonable preoperative interval is allowable for the restoration of the patient to an acceptable operative condition. In several instances extraperitoneal drainage of the abscess has been possible, either with the primary incision into the mass at some point where it is in contact with the parietal peritoneum or by placing a pack on the unopened peritoneum at the point of closest contact of the mass with the parietes and then waiting for its spontaneous rupture.

When it has been necessary to drain by an incision through the abdominal wall, the appendix has been removed if reasonably accessible and if it could be delivered without the risk of too great dissemination of the infected material. In these cases we feel it imperative that a drain be left in the pelvis even though there may be no signs of involvement of that area at the time of operation, as it has been our experience that the occur-

rence of late pelvic abscesses is too frequent if the pelvis is not drained. The drainage in these cases has been carried out in the same manner as that already described. In this group of thirty cases, seventeen appendixes were removed at the time of the original operation and thirteen were drained without removal. We believe that the manipulation necessary to locate and separate these appendixes with the incidental bleeding and spread of infection is inadvisable and that simple drainage of the abscess is the proper procedure even though it necessitates a second operation. These patients are instructed to return in six months. Several failed to do so and two others returned only after a recurrent abscess had formed.

The twenty-two cases of perforated appendicitis with general peritonitis resulted in eight deaths, or a mortality of 36.4 per cent. Four of these cases represented practically hopeless surgical risks. This entire group is represented by that case which presents abdominal distention as the outstanding sign, less marked abdominal muscular spasm, dehydration, a weak rapid pulse, a pale, drawn expression, and, in some cases, a varying degree of cyanosis. Any preoperative interval in our hands has been short and for the purpose of intensive stimulation. Operation has been carried out in the same manner as in the earlier group. With no attempt at exploration, the appendix has been removed, if possible, which usually is the fact because of the absence of any localizing process. In only three of these cases was the appendix not removed. Drainage is carried out in the same manner as we have described, with the addition of counterdrainage on the left side in the presence of an excessive amount of fluid. The operative procedure is shortened as much as possible, and in this as well as in all cases with any considerable degree of peritoneal involvement no attempt is made at inversion of the appendix stump. These patients are put immediately into Fowler's position. We find it necessary to emphasize in our own institution that the patient be elevated with relation to the floor rather than to the bed. With the introduction of the Gatch type of bed there is no assurance that elevation of the bed means elevation of the patient with regard to the relative positions of the abdomen and the pelvis. These patients are left in Fowler's position for a minimum of forty-eight hours, after which exudative organization has probably occurred. Further maintenance of the position after this time is of little advantage, particularly when balanced against the discomfort of the patient and the difficulty of nursing procedures.

Morphine is continued every four hours in amounts sufficient to produce rest and quiet, the maintenance of a depressed respiratory rate being used as the control. We have found no substitute for morphine. The chewing of gum is started immediately and continued, as this seems the best manner of keeping in condition the mouths of the patients who are to be allowed no oral intake; it is probably of considerable value in preventing secondary parotitis, which may occur in the presence of dehydration. In any case in which a drain is placed in the pelvis and flank no drains are loosened earlier than the sixth postoperative day. It has been our routine procedure to start these patients on subcutaneous saline and dextrose solution intravenously. Subcutaneous administration is useless in cases showing much impairment of the circulation, and here the administration of fluids must be confined to the intravenous route. The period of continuance of intravenous or

subcutaneous fluid administration and absolute restriction by mouth is of course determined by the developments. It is our feeling that warm liquids should be started as early as possible and rapidly followed by food requiring chewing, even though the food is not swallowed.

The problems in connection with these cases are associated, first, with the debility of the patient as a result of the absorption toxemia, and, secondly, with the intestinal obstruction resulting from the peritonitis with paralysis of the bowel or mechanical obstruction developing in the course of the organization of the peritonitis. We purposely avoid the use of the term "paralytic ileus" because of its multiple connotations. We would rather discuss paralytic obstruction accompanying peritonitis on the one hand and mechanical intestinal obstruction on the other, the first to indicate paralysis and the second a true mechanical intestinal obstruction.

The clinical differentiation is obviously difficult, but that patient who from the beginning lies in relative comfort, who insists on the constant presence of an emesis basin under the chin and regurgitates small amounts of fluid at frequent intervals, who maintains a uniform distention, whose abdomen on auscultation gives no sign of peristaltic activity, whose pulse and temperature continue rising and whose opinion of his condition improves as it becomes poorer, has, in our opinion, peritonitis with paralysis of the bowel. In these cases the stomach must be kept empty by an indwelling gastric tube or by intermittent lavage, and the support of intravenous and subcutaneous administration of fluids continued. During the development of this picture one resorts to enemas, intestinal motor stimulants, and stupes.

Mechanical intestinal obstruction as opposed to paralytic obstruction is late in onset, usually appearing between the sixth and tenth postoperative days with an onset marked by nausea and vomiting recurring in a patient who has already reached a point of relative recovery from the original early postoperative condition. The outstanding signs are a steadily rising pulse highly out of proportion to the temperature and with active visible or audible peristaltic activity. A mass may or may not be present. In this group we are confident that enterostomy is life saving, so we do a Witzel enterostomy as rapidly as reasonable. Under local infiltration of the upper left abdominal wall, through a short incision, entrance is made into the first loop of small bowel that presents itself, and the catheter is brought out through a free edge of omentum, which is left to lie directly under the abdominal wound. These patients can stand only the minimal surgical procedure of relief, and secondary exploration with direct attack on the seat of obstruction is too much surgery. One fatality in this group came from just that. No case in which an enterostomy was done required further surgery for the relief of the obstruction.

The differentiation between these two types of obstruction is apt to be more academic than clinically exact when applied to the individual case. If distention and vomiting are not relieved by stomach drainage, dextrose and salines, an enterostomy is to be considered. The general tendency is to postpone this procedure too long. Six of our patients had an enterostomy and a seventh a colostomy for the relief of obstructive symptoms. The colostomy patient survived; three of the six enterostomy patients lived. A fourth patient

lived twelve days following enterostomy, to die finally of a lung complication and to show at autopsy to have had practically no peritonitis remaining. The other three died of extensive peritonitis that was already present at the time of the enterostomy. It is generally recognized that the mechanical obstructive lesions due to local peritonitis are the best adapted for this procedure and that little can be expected from its use in general peritonitis with lack of peristalsis. Pelvic abscess that follows appendicitis with drainage, with its symptoms of rectal tenesmus, diarrhea, pain and fever, can be easily drained through the rectum in the male or the vagina in the female.

We have a certain number of patients each year who after having a stormy convalescence and a suppurating wound have been hastened to recovery by a secondary wound repair. This ordinarily is done between the seventeenth and the twenty-second day after operation and hastens wound healing remarkably. The skin edges are freshened, the muscles drawn together, and a firmer wound with less scar is obtained in a very short time.

CONCLUSION

We have presented a series of 901 cases including a controlled and an uncontrolled group on which is based a discussion of the management of perforated appendicitis of three types: one, gangrenous appendicitis with local peritonitis, associated in the majority of cases with early perforation; two, appendiceal abscess; and, three, perforation with general peritonitis.

This entire series has been managed on a program of operation immediately following an obvious or reasonably founded diagnosis of appendicitis. We are convinced that immediate operation in early peritonitis has aborted the transfer of some of these early cases to the group of diffuse and more long-standing peritonitis, which carries a considerable increase in mortality; that appendiceal abscess represents a lesion originally and throughout its duration restricted to a localized process by the morphology of the right lower abdomen of the individual and presents no emergent needs; and that late general peritonitis involves a mortality that is enormous. But excepting those cases which when first seen obviously present an entirely hopeless surgical risk, there will always remain in this group those cases concerning which it will be difficult to arrive at a decision regarding delay and preoperative treatment.

We have discussed our steps in management which we believe are so orthodox and to which so little addition can be made that improvement in mortality rate so far as we are concerned must come from the possibility of extending in the treatment of appendicitis in general those factors which are concerned in our group of controlled cases: early observation, early diagnosis and early operation. It is almost axiomatic that no item of health instruction in the public school system can offer greater possibilities in the saving of lives than a campaign concerning abdominal pain, laxatives and ice bags in their relation to peritonitis.

The Family Physician.—The family physician must be saved. Upon his salvation depends the future of the medical profession. This can be accomplished by improving his position in the community and providing him with more interesting and more remunerative work.—McFarlane, Andrew: *The Family Physician—Past, Present, Future, New York State J. Med.* 34:579 (July 1) 1934.

THE TREATMENT OF PERITONITIS ASSOCIATED WITH APPENDICITIS

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In recent years it has become customary to begin articles on acute appendicitis with an apology. Since appendicitis is still the most common acute abdominal lesion, and since its etiology is unknown and its mortality rate is higher than it was fifteen years ago, it would seem that it is still worthy of thoughtful consideration. The mortality of appendicitis in the United States now averages over 20,000 a year. In a majority of these deaths the patients had been in the early decades of life with a good life expectancy.

In 1930, one of us¹ made a study of the patients with acute appendicitis treated in the University Hospital during a period of about four years. It was then our practice to perform an appendectomy as soon as the diagnosis of acute appendicitis was made without regard for the stage of the disease. As a result of that study, we found that the mortality was very low in those patients in whom the infection was limited to the appendix. It was also low in the patients in whom the infection was recent and limited to the right lower quadrant. These patients were largely those in whom the disease had lasted for two days or less. The mortality in patients with spreading peritonitis was shockingly high, and most of the patients of this group were found to have had the disease for from three to five days. An abscess was usually present. In cases in which the preoperative duration of the disease was longer than this, the mortality dropped quite remarkably. Every patient who died had had a purge of some sort, and it was clear that the purge had played an important part in increasing the severity of the disease. These observations confirm those of a large number of other surgeons who have made similar studies.

The vigorous campaign of Bower² and his associates in Philadelphia shows the good that can arise from a campaign directed toward the correction of the evils of late diagnosis, purgation and delayed hospitalization. However, the high mortality that is probably almost universal in this group of patients with general peritonitis has remained as a challenge to surgeons. The mortality in patients with diffusing peritonitis varies widely with different observers from 15 per cent to 65 per cent, with an approximate average of 28 per cent.

A review of the literature on the treatment of peritonitis is confusing and convinces one of the worthlessness of comparing statistics from different clinics in various parts of the world. They can be reconciled only by assuming geographic differences in the degree of severity of the disease. Since the mortality in our patients occurred mainly in patients with diffusing peritonitis and since an improvement in our results could be produced only by a change in the method of handling this group, we determined to treat all patients with acute

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Collier, F. A., and McRae, C. C.: Factors Influencing the Mortality in Acute Appendicitis, *J. Michigan M. Soc.* 30:319-328 (May) 1931.

2. Bower, J. O.: Acute Appendicitis in Philadelphia, *Monthly Bull. of Dept. of Pub. Health of Philadelphia*, December 1932.

appendicitis whom we suspected of having a spreading peritonitis by the method first advocated by Ochsner³ in 1892.

In this paper we are reporting our experience of the past three years in treating all phases of acute appendicitis, with special reference to the use of deferred operation in patients with spreading peritonitis. We wish to make it perfectly clear that we advocate and practice immediate appendectomy for all patients in whom we believe the disease to be limited to the appendix or its immediate vicinity; we use the deferred operation only in cases of spreading peritonitis. We have

TABLE 1.—General Analysis of Group of Patients Studied

Type	No. of Cases	Deaths	Per Cent Deaths	Average Age	Duration of Disease Before Admission	Average Days in Hospital	Comment
Group 1. Acute appendicitis	213	1	0.46	18.2	22.5 hours	8.4	
Group 2. Peritonitis, deferred operation	87	8	9.3	17.5	3.1 days	19.9	
Group 3. Appendiceal abscess	35	2	5.7	26	10.1 days	22.7	
Group 4. Moribund on admission	3	3	100.0	3	4 days		Died in 3 hours
Total	336	14	4.1				

applied the term "deferred operation" to the treatment advocated by Ochsner so as to emphasize its essentially surgical nature.

A survey of the literature shows that the Ochsner treatment of suppurative peritonitis is used by the minority of surgeons; apparently the number of surgeons advocating the method is decreasing yearly. However, the reported results of its use by Guerry,⁴ Deaver,⁵ Sherren,⁶ Love,⁷ and others are so good that we decided to give it a trial. In 1922, Jopson and Pfeiffer⁸ discussed the method and summarized the literature, which showed a complete lack of accord among American and European surgeons as to their methods of handling patients with spreading peritonitis and with acute appendicitis.

We were disappointed in our search of the literature for detailed information concerning the method, as even the surgeons favoring it have given few details about the clinical course of patients treated by it. It seems to be a method for the treatment of a very serious disease that has proved its ability to give excellent results. We believe that treatment by deferred operation has been gradually losing ground, not through any fault of its own but because its value has not been sufficiently emphasized. The laudable desire of most authors to emphasize immediate operation for acute appendicitis has overshadowed discussion as to the best method of treating acute appendicitis complicated by spreading peritonitis.

This study was made on 336 patients admitted to the University Hospital during the three years from 1931 to 1933, inclusive. All these patients were proved to have had acute appendicitis by operation and examination of

the appendix by the pathologist or, in some instances, by the clinical course of the disease. The patients can be divided roughly into two groups: 1. University students who were referred to us by the University Health Service, an ideal arrangement by which these young and otherwise healthy patients were seen by us early in the course of their disease; the results of treatment in this group were correspondingly good. 2. A group of patients who came to us from long distances relatively late in the course of their disease; among this group were many desperately sick patients.

A general analysis of the entire group of patients is shown in table 1. We have divided the patients roughly into groups according to the clinical manifestations and course of the disease and not according to the pathologic changes. The first group consists of cases of simple acute appendicitis in which we found the disease limited to the appendix or its immediate vicinity. In the second group, we found that the disease had spread beyond the appendix to the peritoneal cavity. Some of these patients were not operated on during the acute phase of the disease; they were treated according to the principles of deferred operation. A third group comprised patients entering the hospital in the late stage of the disease with a definite, palpable abscess. The fourth group consists of patients who were dying as they entered the hospital and are listed separately, as it is unfair to any method of treatment to include them.

The first group, listed under the heading of acute appendicitis, comprises 213 patients. In this group the disease had been present for an average of 22.5 hours. They were all operated on very soon after admission to the hospital. One patient died, the mortality rate being 0.46 per cent. Multiple hepatic abscesses developed in this patient from infected thrombi in the vessels of the meso-appendix. The average stay in the hospital was 8.2 days. These results emphasize the importance of early diagnosis and operation while the disease is limited to the appendix. The second group in which we made a diagnosis of diffusing peritonitis will be discussed later in the paper.

TABLE 2.—Analysis of Cases in Which Recovery Occurred with Deferred Operative Treatment

Number of Cases, 77	Number	Per Cent	Preoperative Days	Total Hospital Days
Subsidence without operation	29	37.6	...	13
Development of localized abscess	45	62.4	9.3	251
Abscess treated by appendectomy with drainage of abscess	32	41.5		
Drainage of abscess only	16	20.7		

The third group, comprising thirty-five patients, came for surgical treatment with a definite abscess and had been sick for an average of 10.1 days. The abscess was drained and the appendix removed when possible. Two patients died, a mortality rate of 5.7 per cent. One of these patients, a boy, aged 8 years, had a pulmonary abscess associated with an appendiceal abscess and died of a pneumococcal septicemia. A second boy, aged 16 years, was admitted with an enormous pelvic abscess which ruptured some hours before it was drained, causing death three days later. The average hospital stay was 22.7 days.

The fourth group consisted of three children, aged 3, 4 and 4; all were the victims of vigorous purging

3. Ochsner, A. J.: The Cause of Diffuse Peritonitis Complicating Appendicitis, and Its Prevention, *Am J Surg & Gynec* 15: 84, 1902.

4. Guerry, LeGrand: A Study of the Mortality in Appendicitis, *Ann. Surg.* 84: 283 (Aug.) 1926.

5. Deaver, J. B.: The Acute Abdomen, *Med. Rec.* 93: 47-52 (Jan. 12) 1918.

6. Sherren, James: The Causation and Treatment of Appendicitis, *Practitioner* 74: 833, 1905.

7. Love, R. J. M.: Some Acute Abdominal Disorders, *Lancet* 1: 375 (Feb. 23) 1928.

8. Jopson, J. H., and Pfeiffer, D. B.: The Limitations of the Ochsner Treatment in Certain Cases of Suppurative Peritonitis, *Ann. Surg.* 77: 194-205 (Feb.) 1923.

and had been sick for three days. They entered the hospital unconscious and pulseless. One died before she was examined, another died in one hour, and the other died in three hours. They are not included in any treatment group as no treatment could have been of any avail, but they are included in the total mortality figures. They died because the diagnosis had been made too late and because they had been purged.

DEFERRED OPERATIVE TREATMENT

The second group, which includes the patients with a spreading peritonitis, comprises eighty-five patients (25.3 per cent of the entire series) for whom the deferred operative treatment was carried out. These patients had had appendicitis for an average of three and one-tenth days before entering the hospital. Our rule for selecting patients for this type of treatment is as follows: Every patient entering the hospital with acute appendicitis of forty-eight hours' duration or longer was seen by a senior surgeon and the question of the stage of the disease and the type of treatment were carefully considered. If it was felt that the disease was limited to the appendix or its vicinity, an immediate operation was performed; but if it was felt that diffusing peritonitis was present, the deferred operative treatment was chosen. Any patient with appendicitis of less than forty-eight hours' duration in whom it was thought that peritonitis might be present was also seen by a senior surgeon. In short, the deferred operative treatment was undertaken only after consultation with careful individual consideration of the patients.

The history, signs and symptoms of diffusing peritonitis are usually typical. There are observed the hippocratic facies, dehydration from vomiting, fever varying in degree but often rising to 104 F., rapid pulse and respiration rates, restlessness and a rigid diffusely tender abdomen and a high leukocytosis. Many variations occur, however, and at times it taxes the most experienced surgeon to diagnose the exact stage of the disease. We have been pessimistic enough always to prophesy that conditions are worse than seems probable from the external evidence. Undoubtedly some of the patients in whom we made a diagnosis of diffusing peritonitis had only a localized peritonitis that later developed a walled-off abscess or recovered without its formation.

The treatment carried out is essentially that advocated by Ochsner³ in 1892. The patient is put into a comfortable Fowler's position, heat is applied to the abdomen by an electrical pad or an electrical baker, and morphine is given in sufficient quantities to keep the patient free from pain and apprehension. The stomach is emptied by positive siphonage through a small indwelling duodenal tube introduced through the nose, and absolutely nothing is given by mouth. The urine and blood chemistry are studied. Physiologic solution of sodium chloride and 5 per cent dextrose solution are given alternately by continuous intravenous drip; at least 5,000 cc. is given daily to an adult; at least 1,500 cc. of urine should be secreted daily. No enemas are given and fluids are not administered by rectum. The gastro-intestinal tract is given as complete a rest as possible.

Usually within a few hours a favorable change is noted. The temperature and pulse rate fall, the vomiting ceases, the skin and tongue become moist and the abdomen becomes less rigid and tender. Distention of

the abdomen, if present, often subsides, but it may or may not reappear. With the complete rest given to the gastro-intestinal tract, distention did not usually become a troublesome symptom. In no case was it felt obligatory to do an enterostomy; this is in marked contrast to our previous experience with the same type of case, in which immediate appendectomy had been performed and in which we performed an enterostomy almost as a routine.

The progress of a typical reaction to deferred operation is seen in chart 1. The patient had been sick for three days with a characteristic history of acute appendicitis prior to admission to the hospital. He was first seen with a higher fever, rapid pulse and respiratory rate and a leukocytosis of 19,000, with generalized abdominal rigidity and tenderness. The response to treatment was striking. There was remarkable improvement in the symptoms just cited and a

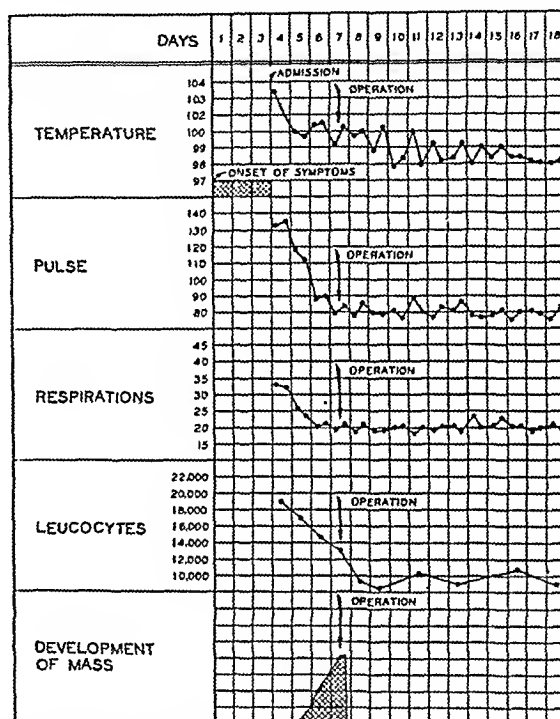


Chart 1.—Progress of a typical reaction to deferred operation. Onset of symptoms three days before admission. Appendectomy and drainage of abscess on fourth day in the hospital.

corresponding improvement in the clinical symptoms. An abscess was detected on the sixth day of the disease, and the third day of treatment, and was drained on the following day. Convalescence was uneventful and the patient was sent home after fifteen hospital days.

Frequent, at least daily, examinations of the pelvis and abdomen must be made in anticipation of the development of an abscess. The average time in which the abscess was noted was seven days after the onset of treatment. The results of treatment are shown in table 2. Of the eighty-five patients treated in this manner, eight died, a mortality of 9.4 per cent. Of the seventy-seven who survived, twenty-nine, or 37.6 per cent, grew steadily better; the signs of the disease disappeared, no abscesses developed and they were discharged home on an average of thirteen days. In spite of the fact that no demonstrable abscess was found and that in no instance did an abscess drain spontaneously through the bowel, we feel certain that a peritonitis of

some degree was present. These patients probably had a peritonitis of relatively mild virulence, or the infected area was more effectually walled off.

We direct these patients to return for appendectomy in eight weeks and the great majority of them have undergone an appendectomy at about that time. In most instances, there still exists at that time both gross and microscopic evidence of recent severe infection and perforation. In forty-eight patients an abscess developed and an operation was performed in an average of nine and three-tenths days after admission to the hospital, or on the twelfth day of the disease. In thirty-six patients the abscess was localized in the region of the appendix in the right lower quadrant of the abdomen. In nine patients the abscess uniformly filled the pelvis. In three patients the abscess was in a retrocecal or paracecal position and there existed an associated subphrenic abscess. Localization of the infection usually begins to be obvious on the sixth or seventh day after institution of the treatment and can usually be felt by abdominal, rectal or bimanual palpation. The presence of diarrhea is almost pathognomonic of the formation of a pelvic abscess. Frequent roentgen studies of the chest

Eight patients died while undergoing the deferred operative treatment. A study of these is of interest and is shown in table 3. We feel that the first five patients were doomed with any form of treatment. Patient 1, a girl, aged 5 years, had the disease for ten days before hospitalization and was treated during this time for cystitis by forced fluids and bladder irrigations. She was dehydrated, profoundly septic and died four days after admission. Autopsy showed a diffuse general peritonitis. Patient 2, a boy, aged 8 years, entered the hospital with signs and symptoms of peritonitis. He was unconscious, had frequent convulsions and died on the fifth day of the disease. Autopsy showed him to have a well walled-off abscess in the right side of the pelvis but with a very large thymus and general evidence of a thymolymphatic constitution. Patient 3, a boy, aged 11 years, had received daily purges for a week and when first seen in the hospital was very septic and continued in a desperate state until death one week later. The autopsy showed a generalized peritonitis. Patient 4, a girl, aged 12 years, entered the hospital unconscious and had frequent convulsions until death.

No localizing signs were present and the diagnosis was in doubt until the autopsy showed a generalized peritonitis. Patient 5, an obese woman, aged 55, worked in the field on a farm for five days with daily catharsis during the progress of the disease. She was profoundly septic and pulseless and died in two days.

The last three fatal cases offer a different problem, and we feel that these patients might have recovered if our handling of them had been more skilful. It will be noted that drainage of an abscess either was performed late or was inadequate, as shown by the necessity of redrainage. Edema of the external genitalia developed in all three of these patients, and at operation large abscesses under tremendous tension were found which were not detected earlier in spite of frequent abdominal and

rectal examinations. Without being able to explain the exact mechanism of the production of the edema of the external genitalia, we have come to look on it as of great importance, signifying that there was a pelvic abscess under tension and probably one that had passed the optimal time for drainage.

In two cases recently, not included in the group of patients here under discussion, we have operated as soon as edema appeared, in spite of the fact that an abscess could not be palpated; in both instances abscesses were found and drained, and the patients recovered. Usually the presence of an abscess is easily detectable, but occasionally, as in the three fatal cases just mentioned, it may be a matter of great difficulty; the persistence of general signs of sepsis, abdominal pain, a rising leukocytosis and the presence of an abscess should lead to an assumption of the presence of an abscess, even though it cannot be definitely felt as a mass. Abscesses may be multiple and may require multiple drainage, although the formation of secondary abscesses is not as common in our experience in the patients treated by the Ochsner method as in those treated by immediate appendectomy and drainage. In the three cases mentioned in the preceding paragraph, drainage was instituted later than usual and all three

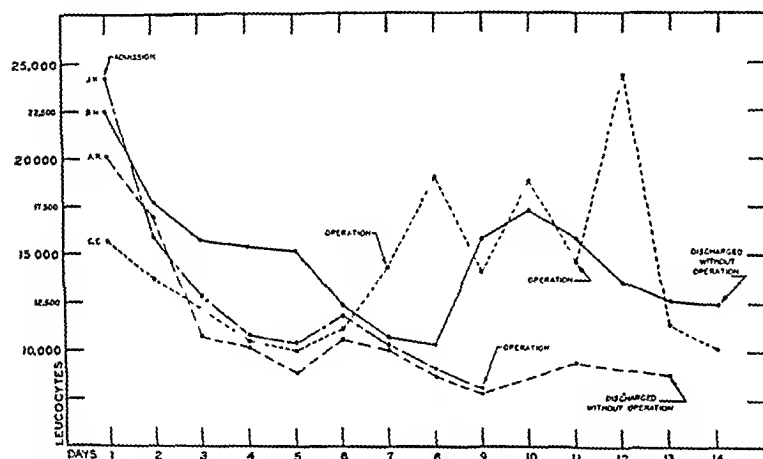


Chart 2—Leukocytosis in four patients with general peritonitis treated by delayed operation

must be made for comparative study of the diaphragm in order to make an early diagnosis of subphrenic abscess, which must always be suspected.

The behavior of the leukocyte count is of some interest in connection with development of the abscess. The leukocyte count of four typical cases is shown in chart 2. As can be seen, there was a steady drop in the leukocyte count for the first six days, corresponding to the fall in temperature and pulse and with improvement in the patient's general condition. This reaction, which is almost constant, probably indicates the time at which the generalized infection is disappearing or is being localized. It is at this time that the presence of an abscess should be suspected. As the abscess develops, the leukocyte count again rises. The location of the incision used and the type of operation performed varied. The incision was always made over the presenting point of the abscess, and the appendix was removed in thirty-two cases at the time of drainage of the abscess. In sixteen patients the abscess was simply drained. The appendix was always removed if it was accessible and if it could be removed without breaking the wall of the abscess; otherwise it was left to be removed at a later date.

cases required redrainage. It is probable that had we been more alert and performed drainage earlier, the occurrence of the secondary abscess and reoperation might not have been necessary. The proper management of these patients requires the utmost vigilance and taxes the experience and judgment of the surgeon to the limit.

TABLE 3.—*Analysis of Patients Dying with Peritonitis Treated by Deferred Operation*

Name	Sex	Age	Duration of Disease, Days	Purge	Hospital Day of Death	Operation	Comment
Case 1	♀	5	10	No	4th	No	Far advanced diffuse peritonitis; treated for cystitis before entrance
Case 2	♂	8	2	Yes	3d	No	Abscess well walled off; unconscIOUS; convulsions; thymolymphatic constitution
Case 3	♂	11	7	Yes	7th	No	Far advanced generalized peritonitis
Case 4	♀	12	2	Yes	2d	No	Unconscious; convulsions; septicemia
Case 5	♀	55	6	Yes	2d	No	Farm work prior to hospitalization; general peritonitis
Case 6	♂	9	2	No	24th		Pelvic abscess drained 15 days; subphrenic abscess 25 days; edema of scrotum
Case 7	♀	15	1	Yes	27th		Subphrenic abscess 12 days; abscess redrained 25 days; retroperitoneal infection; jaundice; edema of labia
Case 8	♂	16	3	Yes	21st		Pelvic abscess drained 7 days; pelvis redrained 22 days; edema of scrotum
Average.....			4.1				

As will be seen from our mortality table, most of the deaths occur in children. This opens the question of the applicability of the principle of deferred operation to them.

In table 4 is shown the mortality in the various clinical types of the disease as it occurs in the different age groups, with special reference to the young. The mortality in patients under 18 years was 6.3 per cent and in patients over 16 years it was 2.2 per cent.

In general it is true, as shown here, that the younger the child, the greater will be the mortality with any form of treatment. The disease is generally not recognized early because of the difficulty or impossibility of eliciting a history and because of the prevalent idea among mothers and some physicians that children are subject to abdominal pain of mysterious origin that can be cured only with a purge. The sooner the knowledge becomes widespread that infants and children are liable to the same organic diseases that affect adults, and that a child with abdominal pain is entitled to a physical examination before purging is done, the sooner will the child with appendicitis have the same chance of recovery as has the adult. All the children on whom we carried out the Ochsner treatment were much sicker than the members of the adult group. The mortality in children is high because of late diagnosis, home treatment with almost universal purging and, in addition, the anatomic and physiologic differences between young children and adults. The omentum, which plays such an important part in the defensive mechanism, is much less developed in children, and localization of infection is correspondingly less efficient and frequent. The young child tolerates the infection less well and his body chemistry is less stable than is that of the young adult.

The mortality of patients less than 16 years of age having general peritonitis and treated by this method was 12.5 per cent; this compares favorably with treatment by any other method and is better than our own results in this group treated by immediate operation. For the reasons we have enumerated, these patients are often in a desperate condition and offer the most difficult surgical problem in appendicitis. Without exception, we have treated them in exactly the same way as the adults, but they require infinitely more careful supervision and nursing care. Distention is much more common among children and is slower to subside. Although the deferred operative treatment is less efficient in children than in adults, any form of treatment is less efficient in children. We feel, therefore, that the principle of delayed operation should be applied to children with peritonitis. They so often come to the surgeon dehydrated and with acidosis; immediate operation only hastens an unfavorable outcome. By deferring operation even for a short time, the body fluids and body chemistry can be restored to normal, and they are then in a much better condition to withstand operation.

COMMENT

Surgeons have been urging early operation for acute appendicitis since it became recognized as a disease entity. There is no doubt of the soundness of this principle. We heartily subscribe to the dictum of immediate operation as soon as the diagnosis of acute appendicitis has been made. Also, we recommend operation in cases in which appendicitis is suspected; it is much better occasionally to remove an innocent appendix than to allow acute appendicitis to progress to its complications. However, to urge early operation for acute appendicitis is not the same as to urge immediate operation when the disease is no longer simple acute appendicitis but is complicated by a diffusing peritonitis.

TABLE 4.—*Analysis of Form of Disease and Results of Treatment in Various Age Groups*

	To 5 Years		6 to 10 Years		11 to 15 Years		16 Years and Over		Totals	
	Number	Deaths	Number	Deaths	Number	Deaths	Number	Deaths	Number	Deaths
Group 1. Acute appendicitis.....	30	0	25	0	40	0	118	1	213	1
Group 2. Delayed operation.....	5	1	13	2	30	3	37	2	85	5
Group 3. Abscess on admission.....	6	0	1	1	5	0	23	1	35	2
Group 4. Moribund on admission*.....	3	3	..	..	..	..	..	..	3	3
Total.....									336	14

* Death in three hours.

There exists a great diversity of opinion concerning the method of operative attack on patients with general peritonitis. Most surgeons advise removal of the appendix and drainage of the peritoneal cavity. Others advise removal of the appendix and closure of the peritoneum without drainage; thereafter the treatment is similar to the Ochsner method of treatment. Other surgeons simply drain the peritoneal cavity without removing the appendix; a very few surgeons still carry on an elaborate toilet of the peritoneal cavity with

wipings and irrigations. Jones⁹ recently reported a very low mortality in this type of patient after treatment by appendectomy and cecostomy. Our own experience with all these methods has been limited but, such as it was, has not been satisfactory.

Any type of operation carried out on a patient with a spreading peritonitis on the third, fourth or fifth day of the disease reduces the patient's ability to combat the infection, at least on theoretical grounds, presumably because the operation traumatizes the peritoneum before immunity is established. It is highly desirable to remove the appendix in every case in which it is a local focus of infection; when, however, peritonitis has begun to spread, its diffusion no longer depends on the presence or absence of the appendix. Once peritonitis has begun to spread, the peritoneum and abdominal cavity develop greater protective and reparative powers when they are not traumatized by operation. We feel that in a certain group of patients the protective function of the peritoneum can be encouraged and utilized by deferring operation until the immunity of the peritoneum has become well established.

Like any other surgical procedure, deferred operation has very distinct limitations. In the first place, the diagnosis must be certain, and, if doubt exists as between appendicitis and some other lesion for which immediate operation is desirable, one must not defer operation. Under no circumstances do we defer operation in cases of appendicitis associated with pregnancy, since the presence of the enlarged uterus prevents localization of the infection; because of this fact, operation in the pregnant woman should be performed on suspicion of the presence of appendicitis. No rule can be arbitrarily laid down as to the type of patient who should be treated by the method of deferred operation. We have found that every patient must be considered individually and the type of treatment finally chosen after it has been determined to the best of one's clinical ability that a spreading peritonitis is present.

The principle of deferring operation implies that an operation will eventually be performed. It is often difficult to choose the optimal time for operation, and a mistake may be serious. There should be no delay in draining an abscess once its presence is noted, or even suspected, because an enlarging abscess may rupture and reinfect the free peritoneal cavity. If this occurs, the result is often fatal. Secondary abscess in other locations may develop if the original abscess remains undrained. Deferred operative treatment is in no sense medical treatment. It must be carried on in a hospital by a surgeon who is prepared to operate at any time that the indications become clear. Few surgical problems present greater difficulties with respect to decision as to the optimal time for operation. In case an abscess does not develop, or in case the abscess is drained without removal of the appendix, the patient must be instructed to return for an appendectomy in from eight to twelve weeks. Observation has shown that the acute peritoneal reaction has disappeared by this time, making the operation technically easy, and if the operation is postponed for a longer time other acute attacks may supervene.

After an experience of three years with deferred operative treatment, we feel that it has definite advantages over the other methods of treatment with which

we are familiar and that it has a highly important place in reducing the mortality of peritonitis secondary to appendicitis.

SUMMARY

A study has been made of 336 patients with acute appendicitis treated in the University Hospital. The mortality was 4.1 per cent. In 213 patients, the disease was limited to the appendix, and immediate appendectomy was performed with a mortality of 0.46 per cent. In thirty-five patients there was an abscess present on admission to the hospital and immediate operation was performed with a mortality of 5.7 per cent. In eighty-five patients the appendix had ruptured and a diagnosis was made of spreading peritonitis. These patients were treated according to the principle of deferred operation as advocated by Ochsner; the mortality was 9.3 per cent. Among the seventy-seven patients who survived, the disease subsided without operation in twenty-nine and an abscess developed in forty-eight. The abscess was drained, with simultaneous appendectomy, in thirty-two patients, and simple drainage without simultaneous appendectomy was done in sixteen patients.

CONCLUSION

The treatment by delayed operation has an important part in the management of the late stages of acute appendicitis complicated by general peritonitis. Its use should be limited to this group of patients.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. GILE AND BOWLER AND
DRs. COLLIER AND POTTER

DR. ALTON OCHSNER, New Orleans: The measures emphasized by Drs. Collier and Potter are of the utmost importance: the absolute withholding of everything by mouth, allowing not even water, and the liberal use of morphine, not with the idea that it splints the bowel but because morphine, instead of inhibiting bowel activity, actually increases it. It doesn't increase peristalsis but it does increase the tone of the bowel. Patients with peritonitis do not die from the peritonitis as such. They die of their associated adynamic ileus, which can be largely prevented by increasing the tone of the intestine by liberal doses of morphine, and in this way the mortality rate from peritonitis can be definitely decreased. As every one knows, the mortality rate in appendicitis is increasing. My explanation of it is that these patients are coming into the hospital with a peritonitis, too late for the early operation and too early for the late operation, an axiom that was first sounded by Richardson. These patients should be treated conservatively by the use of heat to the abdomen, absolutely nothing by mouth, and large doses of morphine. As a result of the large doses of morphine, frequently their vital capacity is decreased. I try to combat the anoxemia by giving them oxygen. I feel that this is important. I agree with Drs. Collier and Potter that these patients should not be given enemas, because anything that will tend to increase the intestinal peristalsis will tend to break down the protective barrier, which is of such importance. I give nothing by rectum. Proctoclysis should not be given, because even though given slowly it tends to increase peristalsis, a condition that is not wanted. In my series the incidence of abscess formation has been less than in the series of Drs. Collier and Potter. Only about 30 per cent of my patients who have come in with a definite, palpable mass have developed abscesses. The explanation is that the mass which is palpable is an inflammatory one, consisting of the omentum and inflammatory exudate. This inflammatory process subsides without progressing to suppuration. In such cases the appendix should later be removed. In cases in which suppuration occurs it is important that incision and drainage be instituted as soon as suppuration has occurred.

⁹ Jones, E. S.: Appendectomy in Cases of Ruptured Appendix Associated with Diffuse General Peritonitis, *Ann. Surg.* 99: 640-649 (April) 1934.

DR. LE GRAND GUERRY, Columbia, S. C.: In 1,438 cases of recurrent appendicitis in my experience of more than thirty-two years there were no deaths. In 858 cases of acute appendicitis there was one death. This group includes the definite, acute cases of appendicitis up to the point of rupture. No case was included in this group in which there was gross perforation of the appendix. In the third group there were 484 cases of gangrenous, ruptured appendixes with three deaths. In a group of localized abscess cases of this size one would run the gamut of intraperitoneal suppuration. In group 4 there were ninety-four cases of gangrenous, ruptured appendixes with diffuse peritonitis. These patients were operated on immediately, with ten deaths, or a mortality of 10.64 per cent. In striking contrast to group 4 is group 5, with 135 cases of gangrenous, ruptured appendixes with diffuse peritonitis; there were two deaths, or a mortality of 1.4 per cent. The cases in this group were handled on the basis of deferred operation as given to me by Ochsner many years ago. My view is that the mortality rate in appendiceal surgery is largely determined by the way in which the cases in this critically ill group are handled, and that the principle of deferred operation is largely the solution of the problem. In a continuous, consecutive, unselected series of cases extending over a period of more than thirty years the mortality was around 0.5 per cent, a fact that in itself is most significant. I believe that to do a formal operation in this desperately ill group of patients is to invite disaster and an excessively high mortality rate. Deferred operation in the group of cases to which it is applicable should be regarded as the first step in the operative procedure and in no sense should be looked on as a means to evade operation. The whole force of the paper of Drs. Collier and Potter substantiates and proves the soundness of my contention. A separate group was made of ten cases in group 6, with three deaths, because the patients were moribund and they were the only ones in the entire series in which the appendix was not removed. The 423 cases in group 7, with one death, are presented to show the additional risk attached in removal of the appendix during the course of other operations. Only such appendixes are included in this group as gave unmistakable evidence of being diseased.

DR. C. F. DIXON, Rochester, Minn.: I feel that the total mortality rate in the experience recorded in both papers has been commendably low. I should like to reemphasize two points that were brought out: First, removal by an experienced surgeon of an acutely diseased, unruptured appendix is associated with practically no mortality rate; second, tragedies frequently occur when a patient with an acutely diseased appendix is given a cathartic. Careful study will show that the majority of patients who have ruptured appendixes, with general peritonitis, have taken some type of cathartic. Consequently it is this group of patients which gives the greatest concern. The report that Dr. Guerry published in 1926 is without question the finest that I know anything about. In it he reported from his personal experience 2,959 cases in which appendectomy had been performed in a period of twenty-five years, with a total mortality of 0.54 per cent. In 208 of these cases the appendix had perforated and diffuse peritonitis was present. In eighty-five of these 208 cases appendectomy was carried out immediately, with a mortality rate of 8 per cent. In the remaining 123 cases appendectomy was deferred for several days, with a mortality rate of only 1.6 per cent. Apparently it is the people of rural districts who succumb to peritonitis following perforated appendixes. It is possible that placing labels on cathartics dispensed, warning against their use in acute abdominal disorders, might help to lessen the perforations that occur in appendicitis. In a group of 523 patients on whom I operated consecutively because of acute appendicitis, 437 of the appendixes gave evidence of diffuse disease or gangrenous changes. In this series there were no deaths. In forty-eight cases the appendix had perforated, causing diffuse peritonitis, and abdominal drainage was instituted without an attempt to remove the appendix; there were five deaths, a mortality rate of 10.4 per cent. In the remaining thirty-eight cases localized abscess was present and extraperitoneal drain-

age was instituted, with a mortality rate of 7.7 per cent. After a review of the work of the authors who presented their papers today, as well as the work of Dr. Guerry, it would seem that removal of a perforated appendix in the presence of coexisting peritonitis is not indicated.

DR. R. J. BEHAN, Pittsburgh: The United States census reports state that the mortality from appendicitis was 9+ per hundred thousand of population in 1920 and it has gradually increased to 15+ per hundred thousand of population in 1932. How is this increasing mortality from appendicitis to be combated? An attempt to do so has been made by educating the public and the physicians to take cognizance of the early onset of pain in the right lower quadrant of the abdomen as possibly indicative of appendicitis and insistence that such patients be hurried to the proper person for diagnosis and treatment. The next consideration is, Is the virulence of appendicitis increasing? This is not known and if cases are worse probably nothing can be done about it. Therefore there remains the last part of that triad of possibilities, the correction of the inadequacy of treatment. Undoubtedly the treatment must be inadequate when the mortality is constantly increasing. I came here with well defined ideas in regard to certain forms of treatment. After listening to the authors I was a little in doubt, but nevertheless I think I should continue along the same way that I have been accustomed to do in the last six years. My mortality rate in forty-four cases of acute appendicitis associated with generalized diffuse peritonitis, from 1920 to 1928, was 50 per cent. In 1926 I gradually began to use alcohol inside the abdominal cavity. In 1930 it was used as a routine. My mortality has been reduced in fifty-four cases to three deaths, which is about 6 per cent. I have operated on every patient with diffuse suppurative peritonitis who entered my service, and by diffuse suppurative peritonitis I mean those cases in which when one opens the abdomen one finds free fluid (fibrinous exudate) present in the abdominal cavity, in some of them under such great tension that it oozes out of the incisional wound. I found *Bacillus coli* infection in about 31 per cent of these cases; in about 6 per cent I found a streptococcus (pure culture), and in the remaining cases I found a variety of organisms. The treatment that I give in these cases is about the same as is usually given in cases of peritonitis. The abdomen is rapidly opened under spinal anesthesia, a suction tube is placed inside the abdominal cavity, the pus is removed, and immediately I pour in alcohol and in a few minutes remove it by the suction apparatus. In one case in which there was a gangrenous appendix, with a necrosis of the cecum and with the abdomen diffused with the feces and the bowel contents, I used one gallon of alcohol in the intra-abdominal lavage. I have had no bad results. I found that they were absorbing the alcohol, and in tests of the blood I found that in one patient 50 mg. of alcohol per hundred cubic centimeters of blood was present.

DR. GEORGE A. HENDON, Louisville, Ky.: I think that the keynote for the treatment of peritonitis from whatever source should be a sustained continuity of effort. The problem of dehydration and starvation has been answered satisfactorily, both before and after operation, by a continuous process. The drainage of the intestinal canal should receive more consideration than it has. The drainage of the peritoneal cavity has engaged the most serious efforts for a long time. I think that, in the management of cases that have been described, enterostomy should be an essential ingredient of the program and not a subsequent incident. The plan that I use is to pass a drainage tube through the cecum at the situation of the appendix, through the ileocecal valve and a short distance into the ileum. I prefer to use the Pezzer catheter, because it has a bulbous extremity by which it is more readily maintained inside the intestine. There is another point, and that is the fact that there are serious blood dyscrasias to contend with. I have made routine blood examinations on these patients and have discovered invariably that there is a low calcium content, and by the administration of the calcium salts through venoclysis I have been able to raise the calcium content of the blood to

its normal figure and even beyond it. I have been impressed with the fact that the evidences of improvement almost invariably synchronize with the increase in the calcium. This is a point which I would like to have investigated from other sources in order that its importance may be estimated. The process of drainage from the upper end of the intestinal tract should also carry the ingredient of continuity, and the suction tube placed through the nose into the upper part of the intestinal tract should be so arranged that the drainage which follows does not have to be entrusted to the caprices of fortune; some effort in the way of a suction apparatus which works continuously and gently should be attached to insure the rapid and complete and continuous evacuation of the upper intestinal tract.

DR. F. F. LAWRENCE, Columbus, Ohio: That there has been an increase in the mortality of appendicitis in the past few years cannot be denied; that that increase is entirely due to the technic of handling the cases cannot be justly charged. The economic conditions of the last four or five years have operated in two ways: first, to urge the doctor to try to shorten hospital stay if possible or to avoid hospitalization if possible; the other, to handicap the patient so as to insist on avoiding hospitalization. Then there has been a reaction of public opinion to the oft repeated newspaper statements that every abdominal pain is considered an excuse for an appendectomy. The mortality and morbidity of appendicitis lies clearly in the delay in operating. Modern methods of training doctors in laboratory essentials and the failure to develop the use of the five senses have resulted in many delayed diagnoses and delayed operations, and consequently the patients frequently come to the surgeons moribund. The lack of benefits from the formerly called Ochsner treatment is due not to the method described by Dr. Ochsner but to its misuse. The attempt at the so-called fasting treatment for appendicitis, as Dr. Ochsner described it and as I have used it for thirty years most satisfactorily, does not permit the giving of medicine by mouth, does not permit the giving of even a teaspoonful of water by mouth, and it does not permit a distended stomach to remain so distended, but it means to empty the stomach with a stomach tube. There has been more or less swinging back to the idea that it is a crime to permit a poor human being to suffer a little bellyache, and consequently the use of morphine. There are three important reasons for the increased mortality: morphine, delayed diagnosis and operation, and misapplied Ochsner treatment. Of those three things which have to do with increasing the mortality, the delay in operation is the most important.

DR. FRED A. COLLIER, Ann Arbor, Mich.: I am glad that Dr. Lawrence spoke, because I began to see the light only about three years ago. He has seen it for thirty years. The use of alcohol in the abdominal cavity is new to me. I have, however, seen a great many other chemicals poured in. I recall that at one time tincture of iodine was popular in the hands of some surgeons, and I recall that ether was commonly used for this purpose, especially by the French surgeons. I must say I would have a good deal of trepidation about pouring a large amount of alcohol into the abdomen, but Dr. Behan has done it and I have not, and his mortality figures are very low. I think Dr. Hendon is right to insist on fluids. We owe him a debt of gratitude for the method he has devised for the continuous intravenous administration, which we use in all cases. I am gratified that he believes in the siphonage treatment, that is, the inlying duodenal tube, which I have casually mentioned. It was hearing a paper by Dr. Guerry that convinced me I should try this method of treatment. I think no one has had the results in the treatment of peritonitis that Dr. Guerry has had. One can sum up the entire situation by saying that if we would no longer purge patients, if we would make our diagnosis early and insist on hospitalization and operation, this entire problem would be solved because we would have only appendicitis to treat and we would never get these cases of general peritonitis that we have been talking about today.

SODIUM FERROCYANIDE AS A CLINICAL TEST OF GLOMERULAR EFFICIENCY

PRELIMINARY REPORT

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AND

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Despite the almost innumerable tests of renal function that have been suggested, we feel justified in presenting a new procedure because of its distinct advantages. The essential criteria of a practical functional test of clinical value are: (1) simplicity, (2) safety, (3) specificity for the structures or functions studied, (4) creation of stress conditions, and (5) uniformity of normal results. These criteria are all fulfilled by sodium ferrocyanide, as here applied. The procedure and calculations are simple, the substance has proved entirely nontoxic, it places stress on the kidneys, for it is a substance foreign to the body, and the variation in excretion in normal persons is relatively slight.

Ferrocyanide salts have the unique characteristic that, so far as its known, they are excreted solely by the glomeruli. The work of Marshall¹ and Marshall and Grafflin² with the renal secretion in aglomerular fish revealed that ferrocyanide is not eliminated at all by these fish, or in but extremely minute traces. The more recent studies of Gersh and Stieglitz³ with mammals convincingly demonstrate that ferrocyanide salts are eliminated by the glomeruli. There was no evidence whatever of tubular secretion. The rate of elimination appeared to be wholly independent of the rate of water excretion. It was because of these previous studies, indicating an extraordinary glomerular specificity, that we have attempted to apply this substance to clinical investigation of glomerular efficiency.

METHOD

Sodium ferrocyanide has been used in all instances. Potassium ferrocyanide is often toxic. The Abbott Laboratories generously prepared for us sterile ampules of dry sodium ferrocyanide containing 0.5 Gm. of the hydrated salt per ampule, or about 0.25 Gm. of the anhydrous salt. Extreme care is required in the preparation of these ampules, for the substance must be sterilized without heat, which tends to break down the ferrocyanide and liberate free cyanide ions. The Abbott Laboratories at first experienced difficulty because of spore-bearing organisms, but in using carefully synthesized sodium ferrocyanide this difficulty was overcome. Ferrocyanide salts may be decomposed by the acid of the stomach, if taken orally, but on slow intravenous injection of the sodium ferrocyanide no evidence of any toxic effect has been observed and none is to be anticipated.⁴

Our technic has been to dissolve completely the contents of one ampule (0.25 Gm. of the anhydrous salt) in 10 cc. of sterile distilled water and administer this by

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Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

Grateful acknowledgment is made to the Chemical Foundation for its aid in this work, received through the Julius Stieglitz Fund for Research in Chemistry Applied to Medicine.

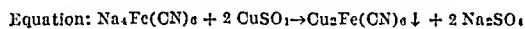
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4. Sollmann, Torald: Personal communication to the authors.

slow intravenous injection. Following this, specimens of urine are collected and analyzed for their content of ferrocyanide. Various time intervals have been tried, but we have found that four specimens collected at 30, 60, 120 and 180 minutes after the injection yield the maximum of information.

The Titration.—The titration is carried out with a quantitative copper sulphate solution.⁵ This is made to contain 0.4 per cent of copper sulphate (0.004 Gm. per cubic centimeter). The content of copper is determined exactly by electrolysis. Before titration the specimens are acidified with concentrated sulphuric acid. Copper ferrocyanide is an insoluble red salt but is less insoluble than the well known Prussian blue. This fact is used in determining the end point of the titration. Drops of concentrated ferric chloride solution are placed on a tile and as the titration proceeds a drop of the unknown solution is placed in contact with the ferric chloride. If free ferrocyanide is present an immediate formation of Prussian blue occurs; if all the ferrocyanide has been precipitated as cupric ferrocyanide, a distinct delay occurs in the appearance of this blue color

TABLE 1.—Chemical Reaction



Molecular weight of $\text{Na}_4\text{Fe}(\text{CN})_6 = 304.08$

Molecular weight of $\text{CuSO}_4 \times 2 = 319.26$

$$\begin{array}{rcl} \text{Therefore,} & \frac{304.08}{319.26} & = \frac{X}{0.004} \\ & X & = 0.0038 \end{array}$$

Therefore, 1.0 cc. CuSO_4 precipitates exactly 0.0038 Gm. $\text{Na}_4\text{Fe}(\text{CN})_6$

Example: Dose of $\text{Na}_4\text{Fe}(\text{CN})_6 = 0.25$ Gm.

15 cc. of CuSO_4 used to reach end point

$0.0038 \times 15 = 0.057$ Gm. $\text{Na}_4\text{Fe}(\text{CN})_6$

$$\frac{0.057}{0.25} = 22.8\% \text{ of total injected dose}$$

on the tile. The more insoluble ferri-ferrocyanide slowly replaces the slightly more soluble cupric ferrocyanide. The end point is therefore read when the appearance of blue is delayed appreciably (five seconds), and the number of cubic centimeters of copper sulphate required is noted.

Calculations.—The chemical reaction that occurs is represented in table 1.

If hematuria exists during the period of ferrocyanide elimination the method of titration must be modified, for the sulphuric acid apparently liberates sufficient ferric ions from the hemoglobin to precipitate Prussian blue and thus prevent the formation of the red cupric ferrocyanide. This difficulty is readily avoided by determining the volume of the specimen of urine, bringing it to a quick boil, which precipitates the protein, and then filtering it. A measured quantity of this filtrate is then acidified with concentrated sulphuric acid and titrated in the usual way, the results being corrected to the original volume of the specimen.

RESULTS

The majority of our observations were made in the medical service of Drs. L. C. Gatewood and A. A. Knight at Cook County Hospital. We have also studied the excretion curves of a number of healthy students. Our primary objectives in this preliminary investigation were to determine the degree of variation in excretion

in the normal individual and to evaluate the excretion curves in two or three common disease states. In almost all instances the excretion of phenolsulphonphthalein⁶ was also observed, the same time intervals being used as for the ferrocyanide excretion. Because of the crowded and hurried conditions at the Cook County

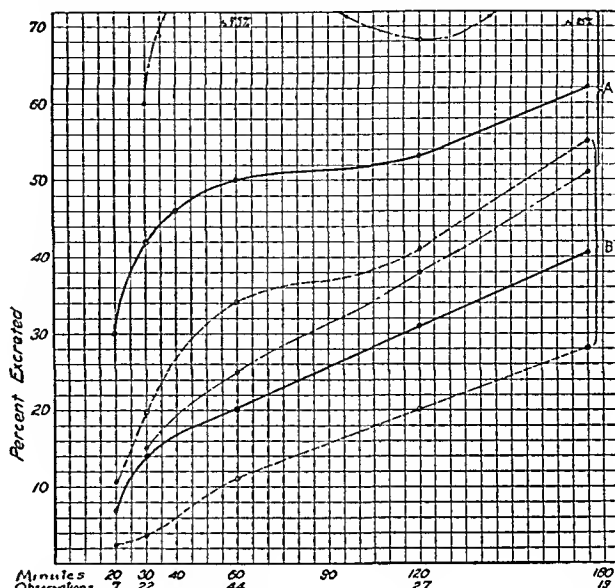


Chart 1.—Excretion curves for sodium ferrocyanide and phenolsulphonphthalein in fifty normal persons. Solid lines indicate averages, broken lines the extremes of variation: dashes for ferrocyanide and dots and dashes for phenolsulphonphthalein; A, phenolsulphonphthalein; B, sodium ferrocyanide.

Hospital, extensive control with other renal function tests, such as the urea clearance test and the Mosenthal test, was not undertaken.

Chart 1 reveals the average normal excretion curve of sodium ferrocyanide, as contrasted with the excretion

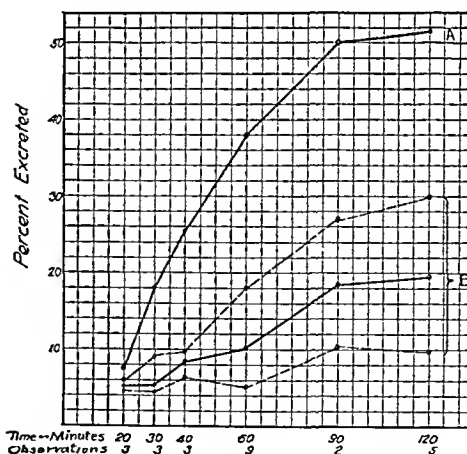


Chart 2.—Excretion curves for sodium ferrocyanide and phenolsulphonphthalein in eleven patients with hypertensive arterial disease but no urinary evidence of renal disease.

curve of phenolsulphonphthalein, in fifty presumably normal individuals, the graph being recorded as percentage of the substance eliminated. The broken lines indicate the extreme degrees of variation noted. It is obvious that, although there is a moderate degree of individual variation in ferrocyanide elimination, this

5. Sutton, Francis: A Systematic Handbook of Volumetric Analysis, ed. 10, Philadelphia, P. Blakiston's Son & Co., 1924, pp. 219-220.

6. Rountree, L. G., and Geraghty, J. T.: J. Pharmacol. & Exper. Therap. 1:597, 1909.

variation is distinctly less than that observed in the phenolsulphonphthalein excretion.

In eleven cases of hypertensive arterial disease with adequate cardiac efficiency and no urinary evidence of renal injury, the average excretion of phenolsulphonphthalein is slightly diminished under the normal average, but the ferrocyanide output is quite conspicuously reduced (chart 2). For example, at sixty minutes the normal phenolsulphonphthalein excretion was 50 per cent, and the average in the hypertensive patients 38 per cent (a fall of 24 per cent); with the ferrocyanide

artery and producing both marked hypertension and renal impairment are of great interest. Further studies of the ferrocyanide excretion in hypertensive disease are needed and are contemplated.

In eight cases of cardiac decompensation, both the ferrocyanide and the phenolsulphonphthalein excretion are much impaired; the former more so than the latter (chart 3). It is evident that impairment of renal circulation markedly affects the excretion of the salt. It has been claimed^{1a} that renal function is not impaired by cardiac decompensation; such a conclusion is invalid.

TABLE 2.—Nephritic Cases

	Time in Minutes					Clinical Data
	30	60	90	120	180	
Case 74; age 62.....	Chronic nephritis (azotemia); chronic cholecystitis with lithiasis; arterial tension 172/80; hemoglobin 90%; white blood cells 12,800; blood chemistry: urea nitrogen 130, sugar 100, creatinine 10.6
Ferrocyanide, per cent.....	....	5.9	....	7.7	8.5
Phenolsulphonphthalein, per cent...	....	Trace	....	Trace	1.0
Case 75; age 58.....	Chronic nephritis; myocarditis; arthritis; arterial tension 170/90; hemoglobin 70%; red blood cells 4,000,000; white blood cells 5,150; blood chemistry: urea nitrogen 18
Ferrocyanide, per cent.....	12.4	....	23.0	....	....
Phenolsulphonphthalein, per cent...	....	40	45	....	....
Case 76; age 16.....	Acute glomerular nephritis; rheumatic carditis; arterial tension 160/100; patient died
Ferrocyanide, per cent.....	....	....	....	....	....
2/14/34.....	4.1	8.8	11.2	....	....
3/15/34.....	4.7	7.0	Nephrosclerosis; arterial tension 160/90; hemoglobin 57%; blood chemistry: urea nitrogen 25.5, creatinine 1.35
Phenolsulphonphthalein, per cent.....	13	23	31	....	....
2/12/34.....	10	..	25	....	....
3/15/34.....	Nephritis; syphilitic aortitis; arteriosclerosis; arterial tension 206/110
Case 78; age 63.....	....	....	....	....	....
Ferrocyanide, per cent.....	1.2	1.2	....	1.2	1.2
Phenolsulphonphthalein, per cent...	5	30	35	36	Chronic nephritis; chronic myocarditis; arterial tension 220/160
Case 79; age 59.....	....	....	....	....	....
Ferrocyanide, per cent.....	1.2	8.3	....	15.4	20.2
Phenolsulphonphthalein, per cent...	25	50	65	65	Eclampsia 3 months previously; nephritis of pregnancy (type C); cardiac failure; arterial tension 100/110; hemoglobin 60%; red blood cells 3,000,000; blood chemistry: urea nitrogen 15.8, cholesterol 170
Case 90; age 51.....	....	....	....	....	....
Ferrocyanide, per cent.....	5.0	17.7	....	29.5	....
Phenolsulphonphthalein, per cent...	35	60	70	75	Glomerulonephritis; nephrotic edema; arterial tension 162/110, 178/110; hemoglobin 75%; red blood cells 4,460,000; white blood cells 8,600; blood chemistry: urea nitrogen 26.6, chlorides 335, albumin 2.22%, globulin 2.91%, uric acid 4.2, creatinine 1.4, non-protein nitrogen 45.4; patient died
Case 87; age 39.....	....	....	....	....	....
Ferrocyanide, per cent.....	10.0	15.3	18.9	....	....
Phenolsulphonphthalein, per cent...	40	50	55	Chronic nephritis; myocarditis; arterial tension 156/98; hemoglobin 70%; white blood cells 11,800; blood chemistry: urea nitrogen 125
Case 84; age 17.....	....	....	....	....	....
Ferrocyanide, per cent.....	....	....	....	....	21.3
Phenolsulphonphthalein, per cent...	20	25	25	Chronic nephritis; hypertensive heart disease; obesity; arterial tension 255/160; blood chemistry: urea nitrogen 93, creatinine 8, sugar 76
Case 77; age 46.....	....	....	No return	....	....
Ferrocyanide, per cent.....	No return	Chronic nephritis (uremic coma); syphilitic aortitis; arterial tension 250/170; hemoglobin 55%; white blood cells 7,700; blood chemistry: urea nitrogen 47.5, creatinine 2.66, carbon dioxide 60 vol. per cent
Phenolsulphonphthalein, per cent...	....	....	No return	....	....
Case 91; age 44.....	1.2	Trace	No return	....	....
Case 93; age 68.....	No return	Chronic glomerular nephritis; anemia; arterial tension 190/120; hemoglobin 50%; red blood cells 1,420,000; white blood cells 7,100; patient died
Ferrocyanide, per cent.....	....	....	No return	....	....
Phenolsulphonphthalein, per cent...	No return	Chronic nephritis (uremia); mitral regurgitation; cardiac decompensation; arterial tension 156/98; hemoglobin 70%; white blood cells 11,800
Case 71; age 31.....	....	....	No return	....	....
Ferrocyanide, per cent.....	....	....	No return	....	....
Phenolsulphonphthalein, per cent...	No return	Chronic nephritis (uremia); hematemesis; arterial tension 160/98; hemoglobin 70%; white blood cells 19,050
Case 72; age 46.....	....	....	No return	....	....
Ferrocyanide, per cent.....	....	....	No return	....	....
Phenolsulphonphthalein, per cent...	No return	Chronic nephritis (uremia); hematemesis; arterial tension 160/98; hemoglobin 70%; white blood cells 19,050
Case 73; age 55.....	....	....	No return	....	....
Ferrocyanide, per cent.....	....	0.9	....	1.8	....
Phenolsulphonphthalein, per cent...	....	....	No return (later)	....	5
	....	....	No return (later)	....	....

excretion the normal was 20 per cent at sixty minutes and 10.1 per cent in the hypertensive patients (a fall of 50 per cent). It is thus clear that the excretion of ferrocyanide is more sensitive to changes in the glomerular circulation. This is to be expected in view of the glomerular elimination of the ferrocyanide and the tubular secretion of the phenolsulphonphthalein.⁷ It is thus evident that in the hypertensive patient the glomerular efficiency is notably impaired. This is contrary to the conception⁸ that arterial hypertension is a protective mechanism to insure an adequate and improved glomerular circulation. The recent studies of Goldblatt and his collaborators⁹ in slowly clamping the renal

The results obtained in fourteen cases of distinct nephritis are best presented in tabular form (table 2). In seven cases none of the injected ferrocyanide could be reclaimed in the urine. In the others, the excretion was most severely impaired. In one instance of glomerulonephritis in a young girl, a distinct increase in the impairment was detectable over a period of one month (case 76). Unfortunately, during our period of study, we have seen no case of true nephrosis.

COMMENT

Sodium ferrocyanide offers a number of distinct advantages over other test substances for renal functional studies. It has previously been experimentally

7. Potter, A. C., and Bell, E. T.: *Am. J. M. Sc.* 149: 236, 1915.

8. Wiggers, C. J.: *Ann. Int. Med.* 6: 12 (July) 1932.

9. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: *J. Exper. Med.* 59: 347 (March) 1934.

10. Brems, A., and Nielson, E.: *Biblot. f. laeger* 125: 266 (July) 1933.

demonstrated that ferrocyanide salts are excreted wholly by the renal glomeruli,¹¹ whereas phenolsulphonphthalein is excreted by the convoluted tubules, as are ferric salts.¹² Uric acid is largely, if not solely, removed by the glomeruli.¹³ The routes of renal secretion of urea and creatinine are still somewhat uncertain. Urea is probably secreted by the convoluted tubules,¹⁴ and there is evidence, as yet not fully convincing, that creatinine is eliminated by way of the glomeruli.¹⁵ If this is true, further studies should reveal a very close parallelism between ferrocyanide excretion and the creatinine clearance test.¹⁶ Lassen and Husfeldt¹⁷ have very recently reported that in normal young men a fall in arterial tension induced by spinal anesthesia greatly decreased the glomerular filtration, although the tubular concentration was unimpaired. In acute hypotension to levels below the osmotic pressure of the blood colloids, ferrocyanide excretion ceases in rabbits.³ Although it has been shown that in hypertension the blood flow through the kidneys is more rapid than normal,¹⁸ the total glomerular efficiency is diminished. This may be attributed to the fact that injury to the glomeruli interferes with filtration more than with the free flow of blood.¹⁹

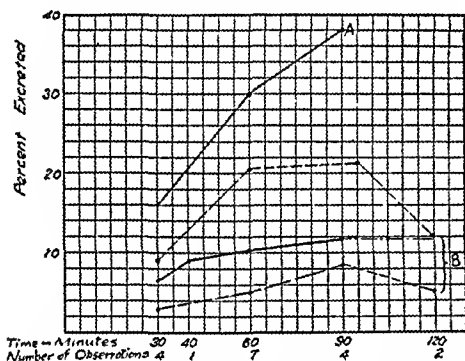


Chart 3.—Excretion curves for sodium ferrocyanide and phenolsulphonphthalein in eight patients with congestive cardiac failure.

We cannot discuss here the involved problems of the mechanism of renal secretion and the relation of this mechanism to the state of the circulation, but we feel that it is justifiable to point out that the ferrocyanide test offers a somewhat new and most promising method of approach to some of these problems. It is notable that in hypertensive arterial disease this glomerular function test reveals more extensive impairment than does the phenolsulphonphthalein test. Hypertension appears to diminish rather than enhance glomerular function, at least when the diastolic tension is raised through arteriolar hypertonia.²⁰ In one instance of aortic regurgitation with a huge pulse pressure (arterial tension of 220 systolic and 40 diastolic) the excretion of ferrocyanide was considerably increased over the normal: 38.9 per cent at sixty minutes and 50.7 per cent

at 120 minutes. Although it is impossible to draw any conclusions from this single instance, it is an interesting observation and suggests further study.

The spread of variation in excretion of ferrocyanide is less than that observed with phenolsulphonphthalein. This is of considerable importance, for uniformity of the normal response is a vital criterion of an effective functional test. Fractional readings at 30, 60, 120 and 180 minutes reveal delay in excretion, as they do with phenolsulphonphthalein,²¹ and are therefore more significant than the total output after three hours.²² The secretion of phenolsulphonphthalein is notably affected by diuresis and also by hepatic injury,²³ whereas our previous experimental work revealed essentially identical elimination of ferrocyanide in dehydrated animals and in those in which a water diuresis was induced.³ The renal concentration tests are probably the best guides to tubular efficiency,²⁴ but the ferrocyanide test reveals glomerular impairment.

CONCLUSIONS

1. Sodium ferrocyanide, in doses of 0.5 Gm. of the hydrated salt (0.25 Gm. of anhydrous sodium ferrocyanide) has been used in more than 100 individuals for the purpose of studying the glomerular efficiency.
2. It has proved entirely nontoxic in this dosage, when slowly administered intravenously.
3. The normal secretion curve is characteristic and shows but relatively little spread of variation. This variation is less than that of phenolsulphonphthalein excretion.
4. So far as is known, ferrocyanide salts are excreted solely by way of the glomeruli.
5. In hypertensive arterial disease the excretion of ferrocyanide is considerably retarded, much more so than the phenolsulphonphthalein elimination.
6. In congestive heart failure both the phenolsulphonphthalein and the ferrocyanide elimination are impaired.
7. In known glomerulonephritis the excretion of sodium ferrocyanide is either nil in severe cases or else very much reduced.
8. This test offers notable potentialities of clinical usefulness, since it is specific for the glomeruli, is safe, is simple of execution, and is quite constant in the normal.
9. In physiologic investigations of the mechanism of renal secretion the procedure should also prove of considerable value.
10. Much further work is required before the full significance and import of these studies are understood. We hope that this preliminary report may encourage others to extend and amplify this work; it has been our object merely to present a new method and to point out some of its potentialities.

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ABSTRACT OF DISCUSSION

DR. EDWARD J. STIEGLITZ, Chicago: The idea of this procedure started as a result of experimental work, which convincingly demonstrated that this substance, and this applies to

11. Marshall,¹ Marshall and Grafflin,² Gersh and Stieglitz.³
12. Stieglitz, E. J.: *Am. J. Anat.* **29**: 33 (May) 1921.
13. Gersh, I.: *Anat. Rec.* **58**: 369 (March) 1934.
14. Oliver, J.: *J. Exper. Med.* **23**: 30 (March) 1916.
15. McKay, E. M., and Cockrill, J. R.: *Am. J. Physiol.* **94**: 220 (July) 1930.
16. McKay and Cockrill.¹⁵ Rehberg, P. B.: *Hospitalstid.* **71**: 1113 (Oct. 11) 1928; *Zentralbl. f. inn. Med.* **50**: 367 (April 13) 1929.
17. Lassen, H. C. A., and Husfeldt, Eric: *J. Clin. Investigation* **13**: 263 (March) 1934.
18. McKay and Cockrill.¹⁵ Rehberg.¹⁶ Ozaki, M.: *Arch. f. exper. Path. u. Pharmacol.* **123**: 305, 1927. Morimoto, M.: *Arch. f. d. ges. Physiol.* **221**: 155, 1928. Medes, Grace; Herrick, J. F., and Baldes, E. J.: *Proc. Staff Meet., Mayo Clin.* **7**: 549 (Sept. 21) 1932.
19. Weiss, Soma; Parker, Frederic Jr., and Robb, G. P.: *Ann. Int. Med.* **6**: 1599 (June) 1933.
20. Stieglitz, E. J.: *Arterial Hypertension*, New York, Paul B. Hoeber, Inc., 1930.

21. Chapman, E. M., and Halsted, J. A.: *Am. J. M. Sc.* **186**: 223 (Aug.) 1933.

22. Ellis, L. B., and Weiss, Soma: *Am. J. M. Sc.* **186**: 233 (Aug.) 1933.

23. Hanner, J. P., and Whipple, G. H.: *Elimination of Phenolsulphonphthalein by Kidney*, *Arch. Int. Med.* **48**: 598 (Oct.) 1931.

24. Stieglitz.²⁰ Fishberg, A. M.: *Hypertension and Nephritis*, ed. 2, Philadelphia, Lea & Febiger, 1934.

other ferrocyanides, such as potassium, magnesium and calcium, is excreted entirely through the glomeruli, the tubules having nothing to do with the secretion. As far as I know, it is the only substance in which this has been proved. Perhaps the most interesting implications of these clinical applications are the physiologic. After all, this is a section on physiology and pathology, so the physiologic implications warrant emphasis. That observation in a patient with a large pulse pressure in aortic regurgitation of an excretion of almost twice the normal amount at stated time intervals, I think, makes one stop and think with regard to the mechanism of glomerular activity. There has been a good deal of argument as to whether hypertensive disease is or is not a protective mechanism. It has been claimed by some that in the hypertensive patient a definite elevation of blood pressure is required to maintain an adequate renal circulation. I myself am convinced, not from this alone but from other observations, that that is an entirely erroneous conception, that the renal circulation and the renal efficiency are markedly impaired during the hypertensive state. With a lower blood pressure in the same individual there is better and more effective circulation, better and more effective function. As yet we have not made any extensive observations sufficient to warrant reporting on the ferrocyanide function of the secretion prior to therapy in hypertension and after reduction of the arterial tension. We feel that that warrants energetic study. Apparently, from these preliminary studies, it is the diastolic hypertension which apparently impedes glomerular efficiency rather than the systolic. We have here, in my opinion, a tool with which to carry out such investigation.

THE ADRENAL CORTICAL HORMONE

EXPERIMENTS WITH A COMMERCIAL ADRENAL EXTRACT (ESCHATIN)

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The relatively large number of articles concerning the adrenal¹ "cortical hormone" that have been published during the past five or six years may lead clinicians to believe that such a hormone has been actually isolated and is available as an effective remedy for treatment of Addison's disease, so-called hypo-adrenalism, and a number of conditions that have no known relationship to the adrenal glands. I am impressed with the lack of proportion between the volume of literature on the subject and the substantial experimental work that it represents. Crude extracts, the composition of which is not known and which contain substances other than the indispensable product of the adrenal cortex, have been extensively used in various experiments from which deductions of far reaching physiologic and clinical significance have been readily made. Reports have been published on alleged remarkable beneficial influence of such extracts in the treatment of Addison's disease and a number of other diseases. Recently, a large commercial manufacturing drug firm has marketed, for general distribution as a therapeutic agent, a product represented as a physiologically tested extract of the adrenal cortex. The experimental tests to be reported in the present communication are concerned with this extract (Eschatin, Parke, Davis & Co.).

Experience gained from many years of constant research on the adrenal glands leads me to the belief that, in the recent apparent race for priority of publica-

tion or scientific achievement the goal has been overreached. Conservative physiologists and physicians will readily agree that critical analysis of the accumulated literature reveals little or no substantial progress beyond the basic fact, which was conclusively demonstrated for the first time about nine years ago by the late G. N. Stewart and myself, that the adrenal cortex stores an indispensable hormone which is present in certain extracts made from the gland and which, when administered to completely adrenalectomized animals, is capable of materially prolonging life and ameliorating symptoms of adrenal cortical insufficiency. The adrenal cortical hormone has not yet been isolated in pure form. Nor is it always possible to obtain it free from undesirable, sometimes injurious, substances in extracts made from the gland. It may therefore be considered rather premature to produce such extracts commercially, for general distribution, to be employed by parenteral administration to human beings.

Demonstration of adrenalectomized animals, some of which were benefited by administration of cortical extract, was given by Rogoff and Stewart in 1925, during meetings of the American Physiological Society. A preliminary report was published in 1927.² Further reports were made at the meeting of the American Physiological Society in 1928 and at the thirteenth International Physiological Congress, held in Boston in 1929. It was announced that active material could be extracted by various lipid solvents, including alcohol, acetone, petroleum ether, benzene and ether, and by selective use of combinations of these. The statement was repeatedly made that the most active preparations were obtained by initial extraction with alcohol and that the final product can be obtained in aqueous solution. Since 1926, numerous publications have appeared in various journals reporting similar results.

Shortly after Stewart and I demonstrated the beneficial influence of adrenal cortical extracts on the survival of adrenalectomized dogs, Hartman and his collaborators³ reported the preparation of an alleged potent extract by means of salt precipitation. We were unable to interpret their results as demonstrating potency of their extracts. A number of years previously we had made unsuccessful attempts to "salt out" the active material from extracts of the adrenal. However, since Hartman and his associates recommend iso-electric precipitation, which was not included in our earlier attempts, we carefully repeated the experiments under the conditions described by these workers. We were unable to obtain products that were capable of prolonging life in adrenalectomized animals beyond the maximum survivals of our untreated control animals.⁴ After Swingle and Pfiffner⁵ published results that confirmed the reports by us that the active material of the adrenal cortex can be obtained by extraction with lipid solvents, Hartman discarded his salt precipitation method and has since then employed lipid solvents in the preparation of adrenal extracts.

2. Rogoff, J. M., and Stewart, G. N.: The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs, *Science* 66: 327 (Oct. 7) 1927.

3. Hartman, F. A.; Brownell, K. A.; Hartman, W. E.; Dean, G. A., and MacArthur, C. G.: The Hormone of the Adrenal Cortex, *Am. J. Physiol.* 86: 353 (Sept.) 1928.

4. Stewart, G. N., and Rogoff, J. M.: Studies on Adrenal Insufficiency: IX. The Influence of Extracts of Adrenal Cortex (Sheep and Cattle) on the Survival Period of Adrenalectomized Dogs and Cats, *Am. J. Physiol.* 91: 254 (Dec.) 1929.

5. Swingle, W. W., and Pfiffner, J. J.: Studies on the Adrenal Cortex: I. The Effect of a Lipid Fraction upon the Life-Span of Adrenalectomized Cats, *Am. J. Physiol.* 96: 153 (Jan.) 1931; II. An Aqueous Extract of the Adrenal Cortex Which Maintains the Life of Bilaterally Adrenalectomized Cats, *ibid.*, p. 164. Pfiffner, J. J., and Swingle, W. W.: III. The Revival of Cats Prostrate from Adrenal Insufficiency with an Aqueous Extract of the Cortex, p. 180.

1. The name "suprarenal" is appropriate only when referring to the gland in human beings and, perhaps, monkeys. In laboratory animals "adrenal" designates, more correctly, these organs. Since the name "adrenal" may also be properly employed in cases in which the gland rests above the kidney, I have preferred to use it, throughout this article, instead of suprarenal.

In the preparation of extracts by Swingle and Pffner and by Hartman and his co-workers, they employed very much larger amounts of gland substance per unit of final product than was employed by us. They also administered much larger doses of their products in their experimental work. Since we sometimes observed toxic action as well as beneficial influence of some extracts, it appeared probable that their practice might be disadvantageous. From a practical therapeutic standpoint their procedure presents the serious question of adequate supply of glandular material. According to their published reports it may often require up to 2 Kg. or more of adrenal glands per day to treat a single patient. Since we were able to obtain effective preparations by using much smaller amounts of gland material, it seemed desirable to make some comparative tests under our laboratory conditions and standards. It was not possible, however, to obtain their extracts for this purpose.

In our earlier experiments, dosage was arbitrarily determined on the tentative assumption that "interrenalin," the indispensable hormone of the interrenal gland (adrenal cortex), is probably liberated at a rate comparable with the rate of secretion of epinephrine from the chromaffin body (adrenal medulla). On this basis the amount of cortical hormone required each day for a cat of average size and in relation to the amount of epinephrine stored in the medulla would be present in an extract corresponding to approximately the amount of cortex representing 1 Gm. of whole adrenal. Since administration of extracts was made only once or twice daily and since not all the hormone may be expected to have been extracted from the cortex, our extracts were made to contain from two to three times the aforementioned theoretical value, and the actual dosage averaged approximately 1 Gm. of cortex per kilogram of body weight daily for completely adrenalectomized animals. Doses representing considerably less cortex were found effective in prolonging life in some dogs. At first, concentration of the extracts was employed so that 1 cc. was equal to 1 Gm. of cortex. Later, when we discovered the beneficial value of administration of physiologic liquids in adrenalectomized animals, some extracts were made so that 1 Gm. of adrenal cortex was contained in 10 cc. of extract. This permitted obtaining the combined effects of the cortical hormone and physiologic solution of sodium chloride, proving more effective in ameliorating symptoms and prolonging life. Indeed, this was the basis of the treatment of Addison's disease in my published report.⁶ However, the relatively crude extracts were not always obtained entirely free from undesirable impurities and occasionally yielded toxic manifestations when introduced parenterally. As repeatedly stated, this convinced me that until a product of known purity can be obtained readily it is dangerous to employ the extracts at present available by parenteral administration, especially by the intravenous route in human beings. Accordingly, I modified the process so that the final product is preserved in glycerin, for oral administration in adequate dosage. Thus far it is evident that not only is the use of this product free from the dangers of parenteral administration but it has proved to be decidedly more effective by mouth in the treat-

ment of Addison's disease⁶ than was found by others who employed their extracts parenterally. In reference to parenteral, especially intravenous, administration of available cortical extracts, it is pertinent to quote the following from the report of a special committee of the Council on Pharmacy and Chemistry of the American Medical Association:⁷

While recognizing and urging the value of intravenous therapy under appropriate conditions, it is equally important to emphasize the fact that the injection of any foreign substance directly into the human blood stream is always a serious undertaking. There are many conditions in which the risks inherent in intravenous therapy may greatly outweigh the real or supposed advantages which are claimed for the procedure. This is particularly likely to be the case with the more or less potent drugs. There is also a growing tendency on the part of many to resort to intravenous injection under conditions in which it is of dubious value, if not potentially harmful.

Since the Swingle and Pffner product has become available commercially, I obtained a sufficient supply, on the market, for a preliminary series of tests. A more extensive series of experiments was rendered impossible by conditions beyond my control. Nor was it possible at this time to undertake to repeat in detail some of the work reported by Swingle and Pffner. Two lots of Eschatin were purchased, one bearing the number 2984309 and the other 2989478. The physiologic criterion for potency of an adrenal cortical extract, established as the standard in our laboratory, is its capacity to prolong life of completely adrenalectomized animals beyond the maximum found in a large series of untreated adrenalectomized control animals. Since there is no essential difference between the process employed by Swingle and Pffner and that employed by us, except in the quantity of adrenal cortex represented in a cubic centimeter, some tests were made to determine the efficacy of Eschatin in prolonging life of adrenalectomized cats when the extract was administered in doses comparable with the maximum dose found adequate to prolong life in the experiments of Rogoff and Stewart. Other experiments were performed to test the value of Eschatin in relieving the symptoms of acute adrenal insufficiency, employing large doses, comparable with those used by Pffner and Swingle in their report on the revival of cats prostrate from adrenal insufficiency.⁸ In the first case the Eschatin was so diluted with physiologic solution of sodium chloride so that 1 cc. was equal to 3 Gm. of cortex, based on the statement of the manufacturer that each cubic centimeter of their product represents 30 Gm. of cortex (i. e., 1:10 dilution). This was administered in doses of from 1 cc. to 1.5 cc. daily in cats following adrenalectomy. No evidence of prolongation of life was obtained in those animals that received the extract daily nor was there any evidence of revival from prostration or improvement from acute manifestations of adrenal insufficiency when large dosage was administered after the onset of symptoms. In more than one animal there was evidence of toxic influence of the material. The results of these experiments are illustrated in the following condensed protocols:

CAT 1.—Female, weight 2.5 Kg. Left adrenal excised Dec. 1, 1932. Right adrenal excised Jan. 17, 1933. Intravenous injection of 1 cc. (= 3 Gm. cortex) Eschatin daily beginning January 18. The animal progressively declined and was found dead on the morning of January 22.

7. Hunt, Reid; McCann, W. S.; Rowntree, L. G.; Vergilin, Carl, and Eggleston, Cary: The Status of Intravenous Therapy. *J. A. M. A.* 88: 1798 (June 4) 1927.

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CAT 2.—Female, weight 2.72 Kg. Left adrenal excised Dec. 1, 1932. Right adrenal excised Jan. 17, 1933. Intravenous injection of 1 cc. (= 3 Gm. cortex) Eschatin daily for a week beginning January 18, then 1.5 cc. for three days. On the eighth day the animal refused food, on the tenth day became apathetic and asthenic and was found dead on the morning of January 28.

CAT 3.—Female, weight 2.42 Kg. Left adrenal excised Dec. 1, 1932. Right adrenal excised Jan. 18, 1933. The animal was in excellent condition until the eighth day, when she ate only part of her meal. On the ninth day she ate about half of her usual meal and on the tenth day she refused food, was asthenic and apathetic. At 11:30 a. m. an intravenous injection of 10 cc. (= 300 Gm. cortex) Eschatin, undiluted, was administered. From ten to fifteen minutes after the injection the cat had a convulsion which was so violent as to cause her to turn a backward somersault. This was followed by coma for five or six hours. In the evening she was able to sit up but was quite wobbly and in a stupor. January 29, at 8:30 a. m., she was found in deep coma and died while preparations were being made for another injection.

CAT 4.—Male, weight 2.7 Kg. Right adrenal excised Dec. 2, 1932. Left adrenal excised Jan. 17, 1933. Intravenous injection of 1 cc. (= 3 Gm. cortex) Eschatin daily for nine days beginning January 18 and 1.5 cc. for two days thereafter. The animal was in excellent condition for a week and then seemed somewhat less alert but still eating quite well for three days. January 28 he became apathetic and refused food; on this date his weight was 2.5 Kg. January 29, in the morning the cat was in deep coma; at 9:35 a. m. he had a convulsion and died at 9:40.

CAT 5.—Male, weight 3.21 Kg. Right adrenal excised Dec. 2, 1932. Left adrenal excised Jan. 17, 1933. Intravenous injection of 1 cc. (= 3 Gm. cortex) Eschatin daily for seven days beginning January 18 and 1.5 cc. for three days thereafter. The animal was in excellent condition for six days and on the seventh day showed some signs of asthenia and ate only part of a meal. From then on all food was refused and on January 28 the animal was quite apathetic; 5 cc. (= 150 Gm. cortex) Eschatin, undiluted, was administered intraperitoneally in the morning. At 6 p. m. there was no change in the animal and milk was refused. Weight 3.1 Kg. The animal was found dead the morning of January 29.

CAT 6.—Male, weight 2.32 Kg. Right adrenal excised Dec. 2, 1932. Left adrenal excised Jan. 18, 1933. Cat remained in excellent condition for five days. On January 24, he refused food but was not at all asthenic or apathetic. At 4 p. m. intravenous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted, was given. On January 25, the condition was unchanged, and he refused all food; intravenous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted. January 26, took a taste of salmon but refused any more food; subcutaneous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted. January 27, cat seemed limp, staggered on walking, refused all food; intravenous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted. January 28, 9 a. m., weight was 2.1 Kg.; comatose; dead at 9:30 a. m.

CAT 7.—Male, weight 2.72 Kg. Left adrenal excised Jan. 20, 1933. Right adrenal excised February 2. Cat was in good condition for six days. On February 9 and 10, the animal ate only part of his meals and showed some stiffness in hind legs and an unsteady gait. February 11, 8:30 a. m., asthenic and partly comatose but easily aroused; subcutaneous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted; 9:30 a. m., unchanged; 10 o'clock, deeper coma; 10:15, died.

CAT 8.—Male, weight 1.92 Kg. Left adrenal excised Jan. 20, 1933. Right adrenal excised February 2. Cat was in excellent condition until the fifth day, when the animal did not eat and showed some stiffness in hind legs on walking but was not apathetic; at 9:15 p. m., subcutaneous injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted. February 8, took a taste of salmon but ate no more; seemed a bit less stiff in legs. February 9, in the morning, lethargic and quite wobbly; partly comatose; 10 a. m., subcutaneous injection of 5 cc. saline solution; at 11 o'clock, cat was decidedly more alert, appeared stronger and was able to stand and walk a few steps though wobbly, but this was not possible before the injection of saline.

The animal remained perfectly conscious; at 3 p. m. showed signs of somnolence. At 9 o'clock, more lethargic but perfectly conscious. February 10, 12:30 a. m., comatose; prepared to give injection of Eschatin and when cat was picked up a spastic convulsion occurred followed by another one in which it died.

CAT 9.—Female, weight 1.1 Kg. Feb. 3, 1933, ligation of blood vessels of both adrenal glands. The animal was in good condition for about a week but at no time since the operation did she eat her full meal. On February 9, some stiffness developed in the hind legs. On February 11, refused all food, asthenic and somnolent but completely conscious; 5:30 p. m., subcutaneous injection of 4 cc. (= 120 Gm. cortex) Eschatin, undiluted. February 12, found dead in the morning.

CAT 10.—Male, weight 3.3 Kg. Feb. 3, 1933, ligation of blood vessels of both adrenal glands. The animal was in good condition until February 23, when food was refused for the first time but he was not asthenic or apathetic. February 24, animal became apathetic and wobbled when walking; 4:15 p. m. intraperitoneal injection of 6 cc. (= 180 Gm. cortex) Eschatin, undiluted; 8:45, more asthenic, intraperitoneal injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted. February 25, in the morning, condition unchanged, refused all food; at noon given intraperitoneal injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted; 6 p. m., condition unchanged, intraperitoneal injection of 5 cc. (= 150 Gm. cortex) Eschatin, undiluted; 6:30, more apathetic, weight 2.85 Kg. February 26, in the morning animal found dead.

CAT 11.—Male, weight 2.12 Kg. April 26, 1933, ligation of blood vessels of both adrenal glands. The animal remained in good condition with occasional symptoms of moderate adrenal insufficiency until May 31, when he refused food but later in the day lapped a few teaspoonfuls of milk. There was also a beginning unsteadiness in gait. June 1, decidedly wobbly and apathetic; 12:10 p. m., given intravenous injection of 6 cc. (= 180 Gm. cortex) Eschatin, undiluted; at 12:15, the cat emitted a yell, muscular twitchings and extensor rigidity developed in the legs, it was unable to raise its head and it seemed bordering on coma; 12:30, deep coma; 12:50, died.

It would have been desirable to include a larger number of cats in the tests with the Eschatin diluted to represent 3 Gm. of cortex per cubic centimeter. The expense of the material and other conditions, as already indicated, did not permit this to be done. Since there was not the slightest indication of prolongation of life in any of the animals, however, it is fair to assume that the extract was not as potent as any of the earliest products that Stewart and I prepared. Indeed, the evidence shows that Eschatin is totally ineffective when judged by the criterion of Pfiffner and Swingle⁸ regarding its value in "the revival of cats prostrate from adrenal insufficiency." None of the cats tested derived any benefit from the extract, although one received the equivalent of 630 Gm. of cortex in two days, another 300 Gm. in one day, and a third 600 Gm. in four days. In two instances, cats 3 and 11, there was evidence of decided toxicity following the administration of Eschatin. It may be pointed out that Cleghorn⁹ reported the presence of significant amounts of histamine, and Eagle⁹ of choline, in similarly prepared adrenal cortical extracts. It is extremely surprising to have obtained such completely disappointing results, in view of the remarkable effects reported by Pfiffner and Swingle. At any rate, from the results of the tests made in these experiments the commercial extract does not seem to qualify as a "physiologically tested" product, and the evidence of toxicity renders it unsuitable for parenteral administration in human beings. In a normal individual and two patients with Addison's disease, serious reactions from administra-

8. Cleghorn, R. A.: Observations on Extracts of Beef Adrenal Cortex and Elasmobranch Interrenal Body, *J. Physiol.* 75: 413 (Aug.) 1932.
9. Eagle, E.: Presence and Significance of Choline in Cortico-Adrenal Extract, *Proc. Soc. Exper. Biol. & Med.* 30: 1094 (May) 1931.

tion of commercial extract of adrenal cortex were reported and attributed to the presence of protein (10 mg. per hundred cubic centimeters) and certain phenolic decomposition products of epinephrine in the extract.¹⁰

It is certain that in some of the experiments reported in the literature the amount of fluid administered greatly facilitated the beneficial influence of extracts. I have repeatedly observed spectacular recovery from coma and from less severe manifestations in adrenalectomized animals and in acute crises of Addison's disease, following the administration of relatively small volumes of physiologic liquids. It does not require much fluid to produce improvement in a cat that is in a severe state of adrenal insufficiency. Thus, in cat 8 the subcutaneous injection of 5 cc. of physiologic solution of sodium chloride at a time when symptoms of adrenal insufficiency were marked caused fully as great improvement as the previous day's injection of a similar amount of adrenal extract corresponding to 150 Gm. of cortex when the symptoms were not yet so severe. It must be remembered that spontaneous improvement may have occurred in either or both instances. In another animal (cat 12) severe symptoms developed in the beginning of the fourth day after excision of the second adrenal. The animal recovered from deep coma after intravenous injection of 20 cc. of physiologic solution of sodium chloride. The next morning a subcutaneous injection of 5 cc. of saline solution at 10 o'clock was followed by greater improvement, and at noon the cat ate some liver, although no food had been taken for two days previously. The animal remained in fairly good condition and was given another subcutaneous injection of 5 cc. of saline solution later in the day. The following day the animal declined, coma developed, and another subcutaneous injection of 5 cc. of saline solution was without effect, death occurring shortly after noon.

It is conceivable that, when adrenal extracts are made from the whole gland, epinephrine or perhaps other substances from the medulla may contribute either good or bad effects when administered. In a few experiments I have prepared extracts from the medulla of glands after dissecting it away from the cortex, using the same process in preparations from both portions of the gland. Such extracts had no demonstrable influence on the survival of adrenalectomized animals but seemed to be capable of reviving animals in acute crisis. They manifested greater toxic action than any extracts of cortex prepared by us and on subcutaneous injection caused severe local irritation, sometimes resulting in sloughing at the site of injection.

CONCLUSION

Not much has been added to knowledge of the adrenal cortical hormone since our demonstration of its availability in extracts of the gland. Obviously, it is not yet possible to rely with safety on the manufacture of such extracts on a commercial scale, for general use. Thus far the evidence offered to support claims of extraction of a purified crystalline hormone has not been convincing, although it may be hoped that this biochemical contribution will be accomplished before long.

1361 East One Hundred and Eleventh Street.

10. Benham, H. W.; Fisher, Mary; More, I., and Thurgar, C. J. L.: Three Cases of Addison's Disease, Treated with an Extract of Suprarenal Cortex, *Lancet* 1:125 (Jan. 16) 1932.

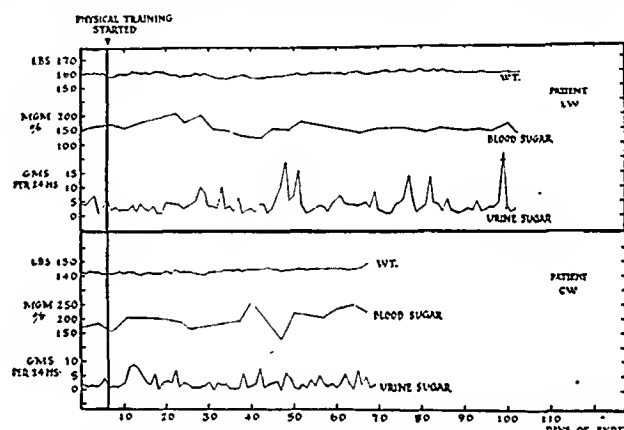
Clinical Notes, Suggestions and New Instruments

VALUE OF MUSCULAR EXERCISE IN THE TREATMENT OF DIABETES MELLITUS

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As early as 1868, Trousseau¹ reported the observation that muscular exercise decreased the glycosuria of diabetic patients. Similar observations have been reported by Zimmer² and by Mering and Finkler.³ Külz and Rumpf,⁴ on the other hand, found that while in some diabetic patients the glycosuria decreased after physical exertion, in others it increased. The observations of von Noorden⁵ (by whom the aforementioned references are quoted) agreed with those of Külz. Von Noorden concluded that while in mild diabetes muscular work may decrease the glycosuria, in severe diabetes it has the reverse effect.

With the advent of practical methods for the determination of the blood sugar, Allen⁶ reported that exercise caused a fall in the blood sugar level of diabetic patients. Since the discovery of insulin, Lawrence,⁷ Burger and Kramer,⁸ Gerl



Daily weight and twenty-four hour sugar excretion for the control period and the entire period of physical training. The fasting blood sugar levels are recorded twice a week.

and Hoffman,⁹ and Sendrail and Blancardi¹⁰ have observed that muscular exercise increases the hypoglycemic action of insulin, both in diabetic patients and in normal dogs.

This literature forms the apparent background for the emphasis that modern textbooks¹¹ place on the value of exercise and physical training in the treatment of diabetes mellitus. It will be observed that these references deal with temporary fluctuations in glycosuria and hyperglycemia brought

Aided by the Max Pam Fund for Metabolic Research.

Read before the Central Society for Clinical Research in September 1933.

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1. Trousseau, Armand: Lectures on Clinical Medicine, Delivered at the Hôtel Dieu, Paris, J.-B. Baillière et fils 2:746, 1868.

2. Zimmer: Die Muskeln eine Quelle: Die Muskelarbeit ein Heilmittel des Diabetes, Carlsbad, 1880.

3. Mering and Finkler: Diskussion über Diabetes Mellitus, Kong. f. inn. Med. 171:190, 1886.

4. Külz, R. E., and Rumpf, Theodor: Erfahrung über Diabetes Mellitus, Jena, 1899.

5. von Noorden, Carl: Die Zuckerkrankheit, Berlin, August Hirschwald, 1912; Handbuch d. Path. d. Stoffw., Berlin, August Hirschwald, 2:65, 1907.

6. Allen, F. M.; Stillman, Edgar, and Fitz, Reginald: Total Dietary Regulation in the Treatment of Diabetes, monograph 11, New York Rockefeller Institute for Medical Research, 1919.

7. Lawrence, R. D.: The Action of Insulin in Glycogen Formation and Its Therapeutic Application, Quart. J. Med. 20:69 (Oct.) 1926.

8. Burger, M., and Kramer, H.: Ueber die durch Muskelarbeit hervorgerufene Steigerung der Insulin Wirkung auf den Blutzucker-gehalt beim normalen und gestörten Kohlehydratstoffwechsel und ihre praktische und theoretische Bedeutung, Klin. Wchnschr. 7:745 (April 15) 1928.

9. Gerl, A., and Hoffman, A.: Muskelarbeit und Insulin Bedarf beim Diabetes, Klin. Wchnschr. 7:59 (Jan. 8) 1928.

10. Sendrail, M., and Blancardi, C.: Action du travail musculaire sur la sensibilité à l'insuline, Compt. rend. Soc. de biol. 110:1190 (Aug. 12) 1932.

11. Joslin, E. P.: Treatment of Diabetes Mellitus, Philadelphia, Lea and Febiger, 1928.

about by muscular work. We are familiar with only one report that deals with the effects of daily exercise on the diabetic state of an individual observed for weeks. Lawrence¹² reported that an increase in the exercise of such a patient on a constant diet allows the reduction of insulin dosage without increase in diabetic manifestations. Our previous work¹³ has indicated the difficulty of drawing valid conclusions from therapeutic experiments on diabetic patients, unless those patients are under constant and adequate control approaching that of the laboratory. Because of this and because of our distrust of temporary fluctuations in the glycosuria and hyperglycemia as criteria of diabetic tolerance, we undertook the following therapeutic experiment.

METHOD

Two young men, suffering from uncomplicated diabetes mellitus, were admitted to the Max Pam Metabolism Unit of

The preliminary periods in this case illustrate the progressive improvement in diabetic tolerance, so often observed during the initial stages of hospitalization.¹⁴ The period designated "control" is that at which we judged that this initial improvement had reached its limit. It may be seen that the subsequent periods of increasing exercise, encompassing three months of physical training, show no significant decrease in the daily glycosuria or the fasting blood sugar. Repeated tests of the blood sugar level just before and immediately after a period of vigorous exercise in this patient revealed no effect whatever. Thus, during one test it was 147 mg per hundred cubic centimeters before and 148 after, in another it was 166 before and 165 after.

CASE 2—C W, a youth, aged 20, had had diabetes for four years. The physical examination and history were negative except for the diabetes. The basal metabolic rate was 83 plus

TABLE 1—Representative Periods at About Equal Time Intervals Throughout the Experiments*

	Period	Days of Experiment	Exercise†	Test of Physical Condition			Diet				Insulin Units 24 Hrs	Fasting Blood Sugar, Mg per 100 Cc	Urine	
				Master's Vital Test, Min	Altitude, Meters	Weight, Pounds	Phosphorus, Gm	Fat, Gm	Carbohydrate, Gm	Calories			Nitrogen, Gm per 24 Hrs	Sugar, Gm per 24 Hrs
J W	Preliminary	19	None	7	34	161	80	180	100	2,140	15 15 30	191	8.00	7.00
	Preliminary	22-24	None	7	40	162.4	80	180	120	2,420	15 10 10	125	12.37	1.61
	Preliminary	45-50	None	6	40	161.4	80	180	110	2,700	15 0 10	131	10.66	1.21
	Control	51-57	None	6	40	160.9	80	180	140	2,400	10 0 10	157	12.01	4.71
	Exercise	70-80	S 30 B 15	4	45	175.1	80	140	110	2,700	10 0 10	171	9.75	5.50
	Exercise	113-120	S 30, B 15 R 15	5	47	168.8	80	180	140	2,400	10 0 10	149	10.60	4.11
	Exercise	141-148	S 45, R 30 B 15, X 30	5	47	168	80	180	140	2,400	10 0 10	149	10.70	2.67
	Preliminary	15	None	5.5	42	147.2	75	140	125	2,050	25 25 25	249	11.35	28.22
	Preliminary	5-13	None	5.5	42	142.4	75	120	120	1,800	30 30 30	275	11.89	13.67
	Control	13-37	None	3.5	40	142.3	75	120	120	1,800	30 20 30	195	9.6	1.14
C W	Exercise	51-58	S 60	3.5	38	142.4	75	120	120	1,800	30 20 35	201	6.82	2.20
	Exercise	72-79	S 60, W 15 R 20, X 15	1.5	40	144.7	75	120	120	1,800	30 20 35	265	7.67	4.77
	Exercise	80-93	S 60, W 20 R 30, X 30	1.5	47	147.7	75	140	120	1,800	30 20 35	230	8.60	2.1
	Exercise													

* The figures represent average values for the number of days indicated. The authors are indebted to the Department of Chemistry for aid with the chemical determinations.

† In this column the letters indicate the type of exercise: S = Swedish drill, B = basketball, R = rowing, W = walking, X = boxing. The figures following these letters refer to the number of minutes' duration of these exercises per day.

‡ The number of minutes recorded in this column indicate the time required for the pulse rate and blood pressure to return to the resting value following the prescribed standard amount of exercise.

the Michael Reese Hospital, where they remained for the entire period of the experiment. Both patients had been unemployed for over a year at the time of admission, and both were in a comparatively poor state of physical training. During a control period of several weeks, in which the patients underwent no more physical exertion than the average ambulatory hospital patient, their diabetic tolerance was established. At the same time their muscular ability and physical condition were measured by suitable tests. Once the control period was over, physical training was begun. Starting with simple setting up exercises, the daily muscular work was gradually increased so as to include walking, rowing, boxing, handball and basketball. The effects of this training on the physical condition and the diabetic tolerance were observed.

RESULTS

Most of the significant data are summarized in table 1. To conserve space, some of the many stages in the experiments have been omitted. The periods detailed in the table therefore present a foreshortened view of the experiments. The figures in each representative period are averages for the number of days specified. The chart graphically presents the daily variations in weight, glycosuria and fasting blood sugar throughout the whole experiment. It should be noted that the blood sugar determinations are fasting values and represent the highest levels attained during the twenty-four hours in these insulin treated cases.

CASE 1—L W, a man, aged 32, had had diabetes for three years. The physical examination and history were negative except for the diabetes. The basal metabolic rate was 44 plus

Here again there was no significant change from the diabetic status of the control period during the course of physical training. The observations as to the immediate effect of exercise on the blood sugar level in this patient are given in table 2.

SUMMARY AND CONCLUSIONS

Two carefully controlled cases of uncomplicated diabetes mellitus have been observed over an extended period before, during and after a systematic course of physical training.

TABLE 2—Effect of Exercise on Blood Sugar Level in Case 2

	Blood Sugar, Mg per 100 Cc
1 Morning test, no food or insulin since previous evening	
1/2 hour before exercise	225
Immediately before exercise	200
1/2 hour of setting up exercises, boxing and rowing	
Immediately after exercise	261
1/2 hour after exercise	290
2 Three hours after lunch and noon dose of insulin	
1/2 hour before exercise	71
Immediately before exercise	61
1/2 hour of exercise as above	
Immediately after exercise	61
1/2 hour after exercise	74

Although the muscular work and the physical conditioning produced their usual salutary effects on the general well being and the muscular power of the subjects, no evidence of a significant improvement in the diabetic tolerance or a decrease in the insulin requirements was obtained.

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12 Lawrence, R. D. The Effect of Exercise on Insulin Action in Diabetes. *Brit. M. J.* 1: 648 (April 10) 1926.

13 Soskin, Samuel, Binswanger, H. I., and Strouse, Solomon. Jerusalem Artichokes and Liver in the Treatment of Diabetes Mellitus. *Am. J. M. Sc.* 182: 675 (Nov.) 1931.

14 Strouse, Solomon, and Soskin, Samuel. Clinical Experimental Studies on the Treatment of Diabetes Mellitus. *Libman Ann.* Vol. 3, 1135, 1932.

Special Article

ALTHOUGH A NUMBER OF BACTERIOPHAGE AND ANTIVIRUS PRODUCTS HAVE APPEARED ON THE MARKET DURING THE PAST SIX YEARS, RELATIVELY FEW HAVE BEEN SUBMITTED TO THE COUNCIL ON PHARMACY AND CHEMISTRY. NONE HAVE BEEN ACCEPTED FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES. INQUIRIES FROM PHYSICIANS, HOWEVER, AND THE ADVERTISEMENTS OF MANUFACTURERS INDICATE THAT THE EXPLOITATION OF THESE PREPARATIONS IS SUFFICIENT TO WARRANT THE PUBLICATION OF A REPORT ON THEM. AS THE SUBJECT IS RELATIVELY NEW AND OBSCURE, AND AS THE PUBLISHED ACCOUNTS OF BACTERIOPHAGE THERAPY ARE CONFLICTING, IT IS OBVIOUS THAT A REPORT LIMITED TO COMMENTS ON THE COMMERCIAL PREPARATIONS WOULD HAVE ONLY A RESTRICTED USEFULNESS. BELIEVING THAT PHYSICIANS DESIRE A MORE EXTENSIVE PRESENTATION OF INFORMATION ABOUT BACTERIOPHAGE AND THE PRINCIPLES AND POSSIBILITIES OF BACTERIOPHAGE THERAPY, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED THE PUBLICATION OF THIS REVIEW. IN ADOPTING THIS REPORT THE COUNCIL EXPRESSED APPRECIATION OF THE EXCELLENT WORK OF DRs. EATON AND BAYNE-JONES.

PAUL NICHOLAS LEECH, Secretary.

BACTERIOPHAGE THERAPY

REVIEW OF THE PRINCIPLES AND RESULTS OF
THE USE OF BACTERIOPHAGE IN THE
TREATMENT OF INFECTIONS

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The purpose of this report is (a) to present summaries and discussions of (1) the experimentally determined facts relating to the bacteriophage phenomenon, (2) the laboratory and clinical evidence for and against the therapeutic usefulness of bacteriophage and (3) the relation of so-called antiviral to materials containing bacteriophage, and (b) to serve as a basis for a survey of the status of some of the commercial preparations. As it is impossible to include in this article an abstract of the whole voluminous and contradictory literature on these subjects, we have summarized only the papers and reviews that have appeared to us to be the most significant.

MODE OF ACTION AND NATURE OF BACTERIOPHAGE

Transmissible lysis of bacteria was discovered independently by Twort¹ in 1915 and by d'Herelle² in 1917. As d'Herelle has stated that he noticed the effect of the lytic agent first in 1909 and as the phenomena described by these two observers differ in some characteristics, there has been a sharp controversy over claims for priority. In recognition of this some authors refer to the process as the "Twort-d'Herelle phenomenon." d'Herelle's observations, however, have had such a widespread influence on the experimental and clinical studies of others that most authors call the phenomenon "bacteriophagy," adopting the name "bacteriophage," which d'Herelle gave to the lytic agent in order to express his belief that it is a living "devourer of bacteria."

The readily demonstrable effects on bacteria in cultures and some of the chief characteristics of the lytic

principle are described briefly in the following modified form of the summary published by Topley and Wilson³ in 1931:

1. Bacteriophage causes partial or complete lysis of bacteria in cultures during the early phases of bacterial growth. In cultures on agar, circular, clear, glassy areas of lysis are produced in the colonies or the edges of the colonies are "moth-eaten" or indented. In broth cultures a partial or complete clearing of the originally turbid fluid occurs as a consequence of the dissolution of the bacterial cells.

2. As a result of the action of bacteriophage on a bacterial culture, variants of the bacterium arise. These variant strains may have increased or decreased virulence as compared with the culture from which they were derived. Many of the variants are completely resistant to the bacteriophage which lysed the sensitive parent culture.

3. Bacteriophage is filtrable through Berkefeld, Chamberland and other bacteria-retaining filters. The lytic principle can be separated by filtration from the intact bacterial cells.

4. Bacteriophage is active (in vitro) in high dilutions. Often one part of lytic filtrate to one billion parts of culture will bring about lysis.

5. Bacteriophage can be propagated in series indefinitely by transference of a small amount of fluid or filtrate from one lysed culture to another young, growing culture of susceptible bacteria.

6. Bacteriophage cannot be propagated on bacteria-free mediums, and the lytic principle does not increase in association with old or dead bacteria, or bacterial products.

7. Young and actively growing cultures are lysed by bacteriophage. Old cultures, cultures not actively growing and cultures in which growth has been inhibited by antiseptics or other means are not dissolved.

8. Bacteriophages are usually specific for species or races of bacteria and have little or no effect on unrelated or dissimilar bacteria. Some lytic principles are strictly specific, others may affect related bacterial species or strains.

9. Changes in the ability of a specimen of bacteriophage to lyse or affect single species or groups of bacteria may be produced by serial propagation in association with susceptible bacteria. The activity of the lytic principle against a specific bacterium may often be increased, and its activity toward other strains may at the same time increase, remain unaffected or decrease.

10. The bacteriophage appears to be a particulate body. So-called races of bacteriophage have been estimated to have diameters of the order of from 10 to 50 millimicrons.

11. Serologic studies indicate that bacteriophages have distinct antigenic properties.

12. The resistance of bacteriophage to heat and chemicals is less than that of bacterial spores but slightly greater than that of vegetative cells. It withstands aging for long periods.

Space does not permit a thorough discussion of the highly controversial question of the nature of bacteriophage. The various views on this subject may be grouped as follows:

THEORIES

1. d'Herelle⁴ has always contended that the bacteriophage is a living submicroscopic virus, parasitic on susceptible bacteria. The principal point of evidence in favor of this view is the fact that the lytic agent may be propagated indefinitely in cultures of susceptible bacteria. d'Herelle regards this as evidence of multiplication. Phenomena of apparent adaptation, antigenic specificity and analogies to filtrable viruses are cited by d'Herelle as additional support for his opinion. These and other arguments advanced by d'Herelle are

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1. Twort, F. W.: An Investigation on the Nature of Ultra-Microscopic Viruses, *Lancet* 2:1241-1243, 1915; Les agents bactériolytiques filtrables et transmissibles, *Compt. rend. Acad. d. sc. Inst. Pasteur* 47:459-469 (Nov.) 1931; *Bacteriolytic Agents (Bacteriophage)*, *Lancet* 2:1241-1243 (Nov.) 1930.

2. d'Herelle, Felix: Microbiologie—sur un microbe invisible antagoniste des bacilles dysentériques, *Compt. rend. Acad. d. sc.* 165:373-380, 1917.

3. Topley, W. W. C., and Wilson, G. S.: *The Twort-d'Herelle Phenomenon*, chap. X in *The Principles of Bacteriology and Immunity*, New York, William Wood & Co. 1:224-233, 1931.

4. d'Herelle, Felix: *The Bacteriophage and Its Behavior*, Baltimore, Williams and Wilkins Company, trans. by G. H. Smith, 1926.

plausible and are not refuted by the facts. They have not, however, been accepted generally and are not more convincing than other lines of evidence in favor of other views. It is obvious that the theory of d'Herelle is of great scientific influence and importance. Unfortunately it has been exploited detrimentally by manufacturers of commercial bacteriophage preparations, as has been pointed out in several editorials in *THE JOURNAL* on the "bacteriophage metaphor."⁵

2. Many investigators have regarded the bacteriophage as an inanimate substance, perhaps an enzyme or activator of an endocellular hydrolytic bacterial enzyme, having its origin in the bacterial cell which it lyses and, being capable of lysing other cells, increasing in amount in the process. The absence of convincing evidence of the living nature of bacteriophage and the results of studies on the mode of action of the lytic principle, and the effects of substances on it, have favored this theory. A review of this evidence has been presented by Bronfenbrenner.⁶ More recent evidence in support of it has been provided by Krueger and Tamada,⁷ Krueger and Northrop,⁸ Hetler and Bronfenbrenner⁹ and Krueger and Baldwin.¹⁰

3. Bordet and his associates,¹¹ Arkwright¹² and other investigators have held the opinion that bacteriophage is an inanimate substance which affects physiologic or hereditary processes of the sensitive bacteria in such a way that early death and autolysis of the culture is brought about. This tendency to rapid autolysis may be transmitted from generation to generation by heredity, and autolysis of the cells liberates the substance that may in turn affect other sensitive bacteria.

4. Hadley,¹³ like d'Herelle, has emphasized the ability of the bacteriophage to induce rapid and extensive variation in bacterial cultures, aside from its lytic activity. This fact, coupled with other lines of evidence, has led Hadley to postulate that the bacteriophage is a filtrable stage in a complex life cycle of a bacterium. According to this view, the bacteriophage stimulates the microscopically visible bacteria of the culture to pass into a submicroscopic filtrable stage. This theory resembles the older "splitter" theory of Bail and has some elements in common with discussions of the possible independent viability of genes. The occasional late growth of bacteria in lytic filtrates and observations made with serial transfers have been the basis of the claims made by Hadley¹⁴ and by Kendall

and Walker¹⁵ that this process can be reversed and that living, microscopically visible, bacteria of the original species can be recovered from filtrates of lysed cultures. Adequate confirmation of this work is lacking at present.

ORIGIN OF BACTERIOPHAGE

Closely bound up with the nature of the bacteriophage is the problem of its origin. d'Herelle believes that the principle has a single original source, possibly in the intestines of man and animals (because of the abundance of bacteriophage in sewage) and that all specific lines of the bacteriophage have been derived from this by a process of adaptation to particular bacterial species. On the other hand, Hadley believes that the production of bacteriophage from such sources as sewage and pancreatic extracts is due to the effect of some substance on the bacterial culture which causes the appearance of bacteriophage from the culture itself. Good evidence of the spontaneous origin of bacteriophage in previously unaffected cultures is lacking. Lytic filtrates of sewage are usually mixtures of bacteriophage, which require purification for specific studies.¹⁶

It was pointed out in the beginning of this report that many lines of bacteriophage are highly specific. Thus a bacteriophage may act strongly on one strain of *Bacillus coli* and weakly or not at all on another. A certain degree of adaptation of the lytic principle can take place by serial passage through many cultures of the same strain of bacteria. The importance of these facts in the therapeutic application of the bacteriophage will be pointed out later. Similarly, the inverse adaptation of bacteria to bacteriophage, the production of resistant forms and variants, must be considered.

The bacteriophage filtrate, when injected into an animal, possesses the ability to produce an antibacteriophage. The serum of the immunized animal will sometimes inactivate the homologous bacteriophage or inhibit its activity. Repeated injection of bacteriophage is followed by increasing rapid disappearance of the lytic agent from the blood.¹⁷ The nature and extent of this effect is not at present fully understood.

COMPOSITION OF LYTIC FILTRATES

In any discussion of the therapeutic effects of the bacteriophage, the composition of the filtrates of lysed cultures must be borne in mind. Practically all bacteriophage preparations are made by filtering broth cultures of bacteria which have been lysed by the bacteriophage. These filtrates, although generally called "bacteriophage," contain in addition to the lytic principle a number of other substances, which may be divided into two classes:

1. Those substances originally present in the sterile broth used to grow the bacteria. These include meat extractives and muscle proteins; amino-acids, peptones and proteoses; nitrogenous organic bases, and a number of other substances, many of which are of unknown composition.

2. Those substances derived from the bacteria themselves. These include antigenic substances derived from the bacteria such as the bacterial proteins, prod-

5. Bacterial Auto-Aggressins, editorial, J. A. M. A. 94: 269 (Jan. 25) 1930; correspondence, *ibid.* 94: 503 (Feb. 15) 1930.

6. Bronfenbrenner, Jacques: The Bacteriophage: Present Status of the Question of Its Nature and Mode of Action, in Jordan, E. O., and Falk, L. S.: *New Knowledge of Bacteriology and Immunology*, University of Chicago Press, 1928, chap. 40, pp. 525-556. Bronfenbrenner, Jacques: *Filtrable Viruses*, Baltimore, Williams and Wilkins, 1928, pp. 373-403; edited by T. M. Rivers.

7. Krueger, A. P., and Tamada, H. T.: Preparation of Relatively Pure Bacteriophage, *J. Gen. Physiol.* 13: 145-151 (Nov.) 1929.

8. Krueger, A. P., and Northrop, J. H.: The Kinetics of the Bacterium Bacteriophage Reaction, *J. Gen. Physiol.* 14: 223-254 (Nov.) 1930.

9. Hetler, D. M., and Bronfenbrenner, J.: Further Studies on Mechanism of Transmissible Lysis of Bacteria, *Proc. Soc. Exper. Biol. & Med.* 29: 806-808 (April) 1932.

10. Krueger, A. P., and Baldwin, D. M.: Inactivation of Bacteriophage by Mercury Bichloride; Reactivation of Bichloride-Inactivated Phage, *J. Gen. Physiol.* 17: 129-133 (Sept.) 1933.

11. Bordet, J., and Cucca, M.: Exudats leucocytaires et autolyse microbienne transmissible; le bacteriophage de d'Herelle, sa production et son interpretation, *Compt. rend. Soc. de biol.* 83: 1293-1298, 1920. Bordet, J.: Problem of Bacteriophage or of Transmissible Bacterial Autolysis, *Ann. Inst. Pasteur* 39: 717-763, 1925.

12. Arkwright, J. A.: Source and Characteristics of Certain Cultures Sensitive to Bacteriophage, *Brit. J. Exper. Path.* 5: 23-33 (Feb.) 1924.

13. Hadley, P.: Twort-d'Herelle phenomenon; critical review and presentation of new conception (homogamic theory) of bacteriophage action, *J. Infect. Dis.* 42: 263-434 (April) 1928.

14. Hadley, P., Delves, E., and Kihmek, J.: Filtrable Forms of Bacteria; Filtrable Stage in Life History of Shiga Dysentery Bacillus, *J. Infect. Dis.* 48: 1-159 (Jan.) 1931.

15. Kendall, A. I., and Walker, A. W.: Occurrence of Bacteria in the Filtrate State in Active Bacteriophage, *J. Infect. Dis.* 53: 355-371 (Nov.-Dec.) 1933.

16. Asheshov, I. N.; Asheshov, I.; Khan, S., and Lahiri, M. N.: Studies on Cholera Bacteriophage, *Indian J. M. Research* 20: 1101-1188 (April) 1933.

17. Kendrick, P.: The Antigenic Properties of Bacteriophage Lysates of *Salmonella* Suispestifer; Rate of Disappearance of Injected Bacteriophage from the Blood Stream of Rabbits, *Am. J. Hyg.* 17: 318-323 (March) 1933.

ucts of the metabolism of the bacteria, and other substances resulting from the lysis of the bacteria. In this class may also be included the so-called antiviral of Besredka.¹⁸ Besredka reports that the antiviral is present in filtrates of broth cultures of various organisms. Lysis by the bacteriophage is not necessary to liberate it.

It is difficult or impossible to separate the bacteriophage from many of these substances; consequently the reported effect of lytic filtrates when injected into an animal or man may be due, in part at least, to substances other than the bacteriophage. Among the most important of these effects to be considered are:

1. Protein shock as a result of the proteoses, peptones and bacterial proteins.
2. Immunization by the antigenic bacterial proteins. This would require a period of at least four or five days before an effect would be noticeable.
3. The antiviral effect reported by Besredka.

REVIEW OF BACTERIOPHAGE THERAPY

Since the majority of the claims for the therapeutic use of bacteriophage have been based on its ability to lyse bacteria, and apparently destroy them, it seems advisable, before the literature on the clinical use of the bacteriophage is reviewed, to cite a number of experiments which may help to answer the question Does bacteriophage lyse susceptible bacteria in vivo as it does in vitro?

1. *In Vitro Experiments Relating to Bacteriophage Therapy.*—d'Herelle claimed that the lytic process produced by the bacteriophage is not modified by normal serum, ascitic fluid, or urine, although he admits that bile is inhibitory. These conclusions have been tested by a large number of experiments both in vitro and in vivo and have been contradicted in many cases. Thus whole blood from human beings or animals has been shown to be markedly or completely inhibitory to the lysis of streptococcus, staphylococcus, typhoid bacillus, and colon bacillus by the homologous bacteriophage (Friedberger and Vallen,¹⁹ Clark and Clark,²⁰ Appelbaum and MacNeal,²¹ Evans²²). The inhibitory action of blood appears to be due mainly to the serum portion as reported by Evans²² and by Appelbaum and MacNeal.^{21a} A large number of other investigators have also noted the inhibitory action of human or animal serum on bacteriophage for staphylococcus, streptococcus, colon bacillus, anthrax bacillus, dysentery bacillus and subtilis bacillus, the inhibition being almost complete with undiluted serum (Gratia and Jaumain,²³ Zdansky,²⁴ Riding,²⁵ Cowles and Hale,²⁶ Gratia and

Mutsaers,²⁷ Colvin²⁸). When the serum is diluted the degree of inhibition becomes less and varies with the source of the serum and species or strain of bacterium and bacteriophage under investigation. Since the experiments cited have been adequately confirmed and are at present practically undisputed, there is convincing evidence that the action of bacteriophage is markedly inhibited by whole blood and undiluted serum.

Results of studies on the effect of other body fluids on the bacteriophage have been more variable. Colvin²⁸ and Evans²² have noted the inhibitory effect of pus on bacteriophage for streptococcus and anthrax bacillus. Bruynoghe and Maisin²⁹ noted the disappearance of bacteriophage activity in the pus of staphylococcal abscesses. Appelbaum and MacNeal^{21a} found that purulent exudate was inhibitory in concentrations as high as 1:1,000 for staphylococcus bacteriophage. However, the same authors found that pus in similar experiments had very little inhibitory action on colon bacillus bacteriophage.

The inhibitory action of urine seems to be less striking in most cases than is that of other body fluids (Colvin²⁸ and Evans²²). Colvin found that the lysis of staphylococcus by the homologous bacteriophage in the presence of urine was complete in the case of one strain, partial with another strain and negative with a third strain. Larkum³⁰ made similar observations.

TABLE 1—Inhibitory Action of Body Fluids

Marked or Complete Inhibition with All Bacteriophages So Far Investigated	Degree of Inhibition Varies with Different Bacteriophages and Different Animal Species
	Pus Urine Ascitic fluid Cerebrospinal fluid
Whole blood	
Undiluted serum	
Bile	
Saliva (streptococcus only)	
Autoclaved intestinal mucus (dysentery only)	

The inhibitory action of bile seems to be undisputed.

Several of the authors already cited have investigated the action of other body fluids on bacteriophage, including ascitic fluid, saliva, cerebrospinal fluid and autoclaved intestinal mucus. The results of the work on the inhibitory action of these and the other body fluids already mentioned are summarized in table 1.

Further confirmatory evidence of the inhibitory action of body fluids is offered by the experiments of Dresel and Lewis,³¹ with tissue cultures infected with mouse typhoid bacilli and subjected to the homologous bacteriophage. With mouse tissue and chicken tissue in plasma and Ringer's solution the bacteriophage failed to lyse the susceptible organisms but remained in the cultures for as long as eleven days. When the cultures were spread on agar, lysis of the organism proceeded. The bacteriophage did not appear to affect the growth of the tissue cells, nor did the cells destroy the bacteriophage. The lytic agent remained in a state of suspended activity in the tissue cultures.

2. *Bacteriophage Therapy in Experimental Animals.*—Bronfenbrenner⁶ has pointed out that one of the chief points of evidence against the therapeutic value of

18. Besredka, Alexander. Local Immunization. Specific Dressings, Baltimore, Williams and Wilkins, edited and translated by Harry Plotz, 1927.

19. Friedberger, E., and Vallen, J. Action of Typhoid Bacteriophage in Presence of Erythrocytes, *Klin. Wchnschr.* 2:1649-1650 (Aug. 27) 1923.

20. Clark, P. F., and Clark, A. S. Bacteriophage Active Against Virulent Hemolytic Streptococcus, *Proc. Soc. Exper. Biol. & Med.* 24: 635-639 (April) 1927.

21. Appelbaum, Martha, and MacNeal, W. J. (a) Influence of Pus and Blood on Action of Bacteriophage, *J. Infect. Dis.* 49: 225-243 (Sept.) 1931; (b) Influence of Blood and Exudates on the Action of Bacteriophage Against Colon Bacillus, *J. Infect. Dis.* 50: 269-276 (March) 1932.

22. Evans, Alice C.: Inactivation of Antistreptococcus Bacteriophage by Animal Fluids, *Pub. Health Rep.* 48: 411-426 (April 21) 1933.

23. Gratia, A., and Jaumain, D. Dualité du principe lytique du colibacille et du staphylocoque, *Compt. rend. Soc. de biol.* 85: 882-884, 1921.

24. Zdansky, E.: Kritische und experimentelle Beiträge zur Frage der Wirkungsmöglichkeit der Bakteriophagen im Warmblüterorganismus und in der freien Natur, *Ztschr. f. Hyg. u. Infektionskr.* 103: 164-176, 1924.

25. Riding, D.: Acute Bacillary Dysentery in Khartoum Province, Sudan, with Special Reference to Bacteriophage Treatment. *Bacteriological Investigation*, *J. Hyg.* 30: 387-401 (Aug.) 1930.

26. Cowles, F. B., and Hale, W. M.: Effect of Bacteriophage on Experimental Anthrax in White Mice, *J. Infect. Dis.* 49: 264-269 (Sept.) 1931.

27. Gratia, A., and Mutsaers, W.: L'action inhibitrice du sérum normal sur la lyse du staphylocoque doré par les bacteriophages staphylococciques polyvalents, *Compt. rend. Soc. de biol.* 106: 943-945 (April 16) 1931.

28. Colvin, M. G.: Behavior of Bacteriophage in Body Fluids and in Exudates, *J. Infect. Dis.* 51: 527-541 (Nov.-Dec.) 1932.

29. Bruynoghe, R., and Maisin, J.: La Phagocytose du Bactériophage, *Compt. rend. Soc. de biol.* 86: 292-293, 1922.

30. Larkum, N. W.: Bacteriophage in Urinary Infection; Bacteriophage in Bladder, *J. Bact.* 12: 225-242 (Sept.) 1926.

31. Dresel, I., and Lewis, M. R.: Study of Bacteriophage in Tissue Cultures, *Am. J. Hyg.* 11: 189-195 (Jan.) 1930.

the bacteriophage is the almost uniform failure of a large number of investigators to demonstrate a curative effect of the lytic principle in carefully controlled laboratory experiments on infected animals. In a more recent review, Hoder³² cites a similar series of experiments, most of which were negative.

Attempts to treat staphylococcus and streptococcus septicemias in rabbits and mice have without exception failed, even when the bacteriophage is injected simultaneously with the bacterial culture. (Clark and Clark,³⁰ Eliava,³³ Krueger, Lich and Schulze,³⁴ Evans²²). Failure to affect the course of Shiga dysentery and *Bacillus coli* infections by simultaneous injections of bacteriophage in rabbits was also reported by Eliava. Harris and Larimore³⁵ reported no protective or curative effect of bacteriophage in typhoid infections in guinea-pigs and mice. On the other hand, a few positive results have been reported when active bacteriophage was injected simultaneously with organisms of the colon-typhoid-dysentery group into rabbits and mice, but injection of the . . . thirty minutes to three days later . . . the course of the infection (Arnold and Weiss³⁶ and Walker³⁷).

Many attempts to treat experimental plague in various laboratory animals have been unsuccessful. In rabbits, guinea-pigs, white rats, and mice the injection of bacteriophage failed to influence the course of the disease (Compton,³⁸ Flu³⁹ and Naidu and Avari⁴⁰). Flu also performed a series of experiments on chickens, which are not susceptible to plague but carry the bacillus many days in the blood. He was unable to demonstrate that the injection of bacteriophage caused any decrease in the number of bacilli in the circulating blood. In a similar experiment, using rabbits with Shiga bacillus bacteremia, Kabéshima⁴¹ was unable to demonstrate a sterilization of the blood in seven days by the repeated intravenous injection of Shiga bacteriophage, but the length of time required raises the question as to whether active immunity was produced and not actual lysis of the organism.

The treatment of experimental infections of a more or less localized character has been studied to a limited extent. *B. coli* cystitis in rabbits and guinea-pigs is reported by Larkum⁴⁰ and Marcuse⁴² to be cured or markedly alleviated by the action of the bacteriophage. In a study of the effect of bacteriophage on staphylococcal and streptococcal skin lesions in rabbits, Walker⁴³

found that, although admixture of the lytic principle and the organisms immediately before injection caused a reduction in the size of the lesions, no effect on the lesions was produced by local or intravenous injection either immediately after injecting the organisms or after the lesions had developed. Kolmer and Rule⁴⁴ succeeded in reducing the mortality of experimental streptococcal meningitis in rabbits from 100 per cent to about 60 per cent by injection of bacteriophage into the carotid artery.

The early experiments of d'Herelle on fowl typhoid, in which the mortality was reduced from 95 per cent or over to 5 per cent by treatment with bacteriophage, held out great promise for the use of this agent in therapeutics. On the basis of these experiments d'Herelle has contended that bacteriophage therapy is applicable only to natural infectious diseases and that experiments on artificially infected animals were not valid. In hemorrhagic septicemia of water buffaloes, on the contrary, d'Herelle could demonstrate no therapeutic effect of the bacteriophage although an immunity was produced twenty days after the injection of the lytic filtrate. Colvin,⁴⁵ using a bacteriophage of maximum activity in vitro, had little or no success in the treatment of infectious streptococcal lymphadenitis of guinea-pigs. There was some evidence that bacteriophage therapy was not entirely harmless. In an extensive series of experiments on the effect of bacteriophage on epidemic mouse typhoid caused by *Bacillus aertrycke*, Topley, Wilson and Lewis⁴⁶ concluded that there was no reduction of the mortality or the excretion of the organisms even though the bacteriophage was fed to the infected mice over a period of three months. Colvin⁴⁵ has pointed out that at least five other investigators have failed in attempts to treat mouse typhoid with bacteriophage. Pyle⁴⁷ reported similar failures in the treatment of pullorum disease of chickens with a bacteriophage that was highly active for the infecting organism in vitro.

From a consideration of the laboratory experiments just described, it is evident that the bacteriophage does not produce any such dramatic effect on susceptible bacteria in the animal body as it does in the test tube. In many of the experiments cited, the conditions appeared to be ideal for the lysis of the organisms by the bacteriophage, but in practically all cases no effect was produced, probably because of the inhibitory action of the body fluids and tissues on the lytic principle. Judging from the experiments cited, the greatest chance for success in the therapeutic use of the bacteriophage would be in localized infections of certain of the body cavities where these inhibitory conditions are at a minimum, as in the bladder, in the subarachnoid space, perhaps in the intestine, and possibly in abscess cavities and wounds. Of the various species of bacteria studied in experimental infection, some members of the colon-typhoid-dysentery group seem to be slightly more susceptible to the action of the bacteriophage in vivo than do the pyogenic cocci and other bacteria. But even with the most susceptible organisms under the least

32. Hoder, F.: Die Bakteriophagen in der Therapie, *Med. Klin.* **29**: 93-96 (Jan. 13) 1933.

33. Eliava, G.: Au sujet de l'adsorption du bactériophage par les leucocytes, *Compt. rend. Soc. de biol.* **105**: 829-831 (Jan. 8) 1930.

34. Krueger, A. P.; Lich, R. Jr., and Schulze, K. R.: Bacteriophage in Experimental Staphylococcal Septicemia, *Proc. Soc. Exper. Biol. & Med.* **30**: 73-75 (Oct.) 1932.

35. Harris, W. H., and Larimore, O. M.: Action of Bacteriophage upon Production of in Vivo Prepared Toxic Substance of *Bacillus Typhosus*, *Proc. Soc. Exper. Biol. & Med.* **26**: 752-754 (June) 1929. Larimore, O. M., and Harris, W. H.: Action of Bacteriophage in Experimental Typhoid Peritonitis, *ibid.* **26**: 754-756 (June) 1929.

36. Arnold, L., and Weiss, E.: Prophylactic and Therapeutic Possibilities of the Twort-d'Herelle's Bacteriophage, *J. Lab. & Clin. Med.* **12**: 20-31 (Oct.) 1926.

37. Walker, J. E.: Protective Effect of Bacteriophage Against Simultaneous Injection of Colon Bacilli, *J. Infect. Dis.* **45**: 73-78 (July) 1929.

38. Compton, A.: (a) Sensitization and Immunization with Bacteriophage in Experimental Plague, *J. Infect. Dis.* **43**: 448-457 (Nov.) 1928; (b) Immunization in Experimental Plague by Subcutaneous Inoculation with Bacteriophage; Comparison of Plain and Formaldehyde-Treated Phagelytic Plague Vaccine, *J. Infect. Dis.* **46**: 152-160 (Feb.) 1930.

39. Flu, P. C.: Der Antipestbakteriophag und die Prophylaxe und Therapie der experimentellen Pest, *Zentralbl. f. Bakteriol.* **113**: (abt. 1) 468-473 (Aug. 31) 1929.

40. Naidu, B. P. B., and Avari, C. R.: Bacteriophage in Treatment of Plague, *Indian J. M. Research* **19**: 737-748 (Jan.) 1932.

41. Kabéshima, Tamezo: Bactériologie: Thérapie expérimentale des porteurs de germes, *Compt. rend. Acad. d. sc.* **170**: 71-75, 1920.

42. Marcuse, K.: Grundlagen und Aufgaben der Lysinstherapie. (d'Herelle's Bakteriophagen), *Deutsche med. Wchnschr.* **50**: 334-336 (March 14) 1924.

43. Walker, J. E.: Effect of Bacteriophage in Experimental Staphylococcus and Streptococcus Skin Infections, *South M. J.* **24**: 1087-1089 (Dec.) 1931.

44. Kolmer, J. A., and Rule, Anna: A Note on the Treatment of Experimental Streptococcal Meningitis of Rabbits with Bacteriophage, *J. Lab. & Clin. Med.* **14**: . . .

45. Colvin, M. G.: . . . to Natural and Experimental Diseases of Laboratory Animals, with Special Reference to Lymphadenitis of Guinea-Pigs, *J. Infect. Dis.* **51**: 17-29 (July-Aug.) 1932.

46. Topley, W. W. C.; Wilson, J., and Lewis, E. R.: Role of Twort-d'Herelle Phenomenon in Epidemics of Mouse-Typhoid, *J. Hyg.* **24**: 17-36 (July) 1925.

47. Pyle, N. J.: Bacteriophage in Relation to Salmonella Pullorum Infection in Domestic Fowl, *J. Bact.* **12**: 245-261 (Oct.) 1926.

inhibitory in vivo conditions, no extensive lysis or destruction of bacteria by bacteriophage has been demonstrated.

3. Bacteriophage Therapy in Human Infections.—

The many reports of good results from the use of bacteriophage in human infections make it difficult to assert that lytic filtrates of bacterial cultures are without effect in the treatment of suitable cases. However, most of the work reported has been done without adequate controls, and consequently the results obtained are difficult to evaluate. It has been the general experience in medical research that therapeutic agents which are effective in human disease have previously been found effective in suitably conducted laboratory experiments on animals. This is not the case with the bacteriophage. In the previous section it has been pointed out that controlled therapeutic experiments with the bacteriophage in both artificially induced and spontaneous infections in animals have generally failed; and as will be seen in the following review, in the few instances in which various investigators have used adequate controls during the treatment of human diseases with bacteriophage the results have usually indicated no therapeutic effect.

In the many clinical trials of the bacteriophage in various infections, most of the results have been judged on a previous conception or knowledge of the clinical course of the disease, and many of the diseases treated were self limiting and nonfatal. This may to a large extent account for the conflicting views as to the therapeutic value of the bacteriophage. d'Herelle⁴⁸ has explained most of the failures in bacteriophage therapy as being due to the use of bacteriophage which was not active or "virulent" enough to destroy the infecting organism. For this reason in vitro lysis of the infecting organism by the bacteriophage should always be demonstrated, preferably before the agent is used in treatment.

Many of the conflicting results reported may also be due to differences in the mode or frequency of administration. Bacteriophage has been administered intracutaneously, subcutaneously, intravenously, by mouth, by rectum and by local applications such as wet dressings or irrigations, depending on the nature and location of the infection. For example, in enteric diseases one investigator may use the oral route, another subcutaneous injection, and a third intravenous injection. In some cases large amounts of bacteriophage, up to 100 cc., are administered at frequent intervals, in others only 1 or 2 cc. is injected every twenty-four to forty-eight hours.

The question of the fate of the bacteriophage after injection into the animal body is answered in part by experiments of Appelmans⁴⁹ and of Nungester and Watrous.⁵⁰ Appelmans observed that bacteriophage is not absorbed from the digestive tracts of normal animals. When injected, it is rapidly eliminated in the urine and feces. Only traces can be detected in the heart, liver, lungs, testicles and blood after twenty-four hours. The bacteriophage appears to accumulate in considerable quantities in the spleen and can be detected there five days after injection. Nungester and Watrous have confirmed these observations and noted a large accumulation of bacteriophage in the spleen two hours after injection. These experiments do not take into consideration the effects of the presence of susceptible

infecting organisms, which may act as carriers of the bacteriophage and affect its distribution. Inflammatory processes also appear to affect the distribution of bacteriophage, as shown by the experiments of Eliava⁵¹ and Sumiyoshi.⁵² The latter investigator fed bacteriophage to guinea-pigs and then induced a peritoneal inflammation by injection of bacteria. The demonstration of the lytic principle in the exudate indicated that it had passed from the intestine to the peritoneum. Eliava cites an experiment in which bacteriophage injected into the blood stream was detected after three hours in the peritoneal exudate produced by injection of sterile broth. Control guinea-pigs were negative for bacteriophage.

The therapeutic effects reported may or may not have been due to bacteriophage itself. Owing to the complexity of the lytic filtrates employed, the effects in one disease may have been due to the action of entirely different factors from those in another disease. Both in animal and in human experiments very few attempts have been made to control the results by the use of nutrient broth alone, the use of culture filtrates without bacteriophage, or the use of lytic filtrates in which the bacteriophage has been destroyed. Furthermore, as already reported, the action of the bacteriophage on bacteria is by no means limited to lysis of the organisms. These questions will be discussed in greater detail in connection with the review of the literature on bacteriophage therapy.

Bacteriophage in Staphylococcic and Streptococcic Infections.—A great many of the reported favorable results of bacteriophage therapy have come from the use of this agent in staphylococcic infections. The difficulty in obtaining active polyvalent bacteriophage for many of the streptococcus strains has precluded its use to some extent in infections with this organism. The infections treated have been local and the generalized infections, bacteremia and septicemia.

Since it is well known that septicemias caused by the pyogenic cocci have a mortality of from 40 to 50 per cent, these cases would seem to present suitable clinical material for testing the therapeutic value of the bacteriophage. The severity of these cases, however, varies between that of a mild bacteremia and that of a severe septicemia. It must be remembered also that in these cases the blood undoubtedly inhibits the lysis of the bacteria, that a concentration of bacteriophage in the blood great enough to produce lysis is probably seldom if ever reached,⁵³ and that the absence or slowness of multiplication of the bacteria in the blood stream makes regeneration of the bacteriophage negligible.

Despite these facts, results considered by the authors to be favorable have been reported for the use of bacteriophage in blood stream infections with staphylococcus and streptococcus. Brulé and Sauvé⁵² have reported the cure of a case of staphylococcic septicemia following one injection of bacteriophage and a blood transfusion. Schultz⁵³ reports that ten cases of septicemia were treated by intravenous injection of bacteriophage "with remarkable results in several cases." These reports are too limited to be convincing. MacNeal and Frisbee⁵⁴ have reported a series of fifteen

51. Sumiyoshi, Y.: Bauchhöhlenexsudat und Bakteriophage. Ztschr. f. Immunitätsforsch. u. exper. Therap. 39: 377-382, 1924.

52. Brulé and Sauvé: Un cas de staphylococcémie grave guéri par le bactériophage intraveineux, Bull. et mém. Soc. nat. de chir. 58: 491-494 (March 19) 1932.

53. Schultz, E. W.: Bacteriophage: Possible Therapeutic Aid in Dental Infections, J. Dental Research 12: 295-310 (April) 1932.

54. MacNeal, W. J., and Frisbee, Frances C.: Bacteriophage as a Therapeutic Agent in Staphylococcus Bacteremia, J. A. M. A. 99: 1150-1155 (Oct. 1) 1932.

48. d'Herelle, Felix: The Bacteriophage and Its Clinical Applications, Springfield, Ill., Charles C. Thomas, 1930; translated by G. H. Smith.

49. Appelmans, R.: Le bactériophage dans l'organisme, Compt. rend. Soc. de biol. 85: 722-724, 1921.

50. Nungester, W. J., and Watrous, R. M.: Accumulation of Bacteriophage in Spleen and Liver Following Its Intravenous Inoculation, Proc. Soc. Exper. Biol. & Med. 31: 901-905 (May) 1934.

cases of staphylococcic bacteremia treated by intravenous injection at frequent intervals of an asparagine preparation of bacteriophage which was low in protein content to avoid serious reaction. More recently MacNeal, Frisbee and Applebaum⁵⁵ have reported the occurrence of at least one serious reaction from the use of asparagine bacteriophage preparations by intravenous injection in *B. coli* septicemia. Several of these cases were also treated by transfusion and by local application of bacteriophage at the site of infection. Of the fifteen patients treated, eight died. MacNeal and Frisbee⁵⁴ report that previous to 1929 all patients with staphylococcic bacteremia seen by them who gave two successive positive blood cultures invariably died. They believe that the action of the bacteriophage is not due to lysis but to sensitization of the bacteria, so that they are more susceptible to the immune action of the body fluids and to phagocytosis. Dutton⁵⁶ reports that he has treated twelve cases of staphylococcic bacteremia with eleven recoveries and only one death. Of these twelve cases, five might not have been, in the opinion of Dutton, true septicemias. Rice⁵⁷ reports that two patients with staphylococcic septicemia treated by subcutaneous injection of bacteriophage died. Stout⁵⁸ reports two cases of staphylococcic septicemia, in one of which the patient was not treated by bacteriophage and recovered, and one treated also recovered. Dutton⁵⁶ has reported the results of the treatment of streptococcic septicemia. Of fifteen patients not treated by bacteriophage seven died, and of forty patients treated by bacteriophage only eleven died. This represents a reduction in mortality from approximately 46 to 28 per cent.

The series of cases cited are probably not large enough to have statistical significance, but all the authors believe that the bacteriophage is of value in the treatment of septicemia. However, the results are not entirely convincing, since it is known that the mortality in these conditions is probably not over 40 to 50 per cent and in the most detailed report, that of MacNeal and Frisbee,⁵⁴ the mortality of the treated cases is just over 50 per cent.

The cure of one case of staphylococcic meningitis is reported by Schless.⁵⁹ After an intensive review of the literature this author concludes that true staphylococcic meningitis is invariably fatal. In the case reported the purulent spinal fluid showed a pure culture of *Staphylococcus aureus* on three successive days, the blood culture remaining negative. Intraspinal administration of bacteriophage (from 10 to 40 cc.) was followed in twenty-four hours by negative spinal fluid cultures, disappearance of toxic symptoms and loss of rigidity. The results indicate that actual lysis of the organisms in the subarachnoid space might have occurred. Since the blood cultures were always negative it seems evident that the infection was limited to the meninges. Stout⁵⁸ also reports treating two patients suffering from staphylococcic meningitis with bacteriophage. Both patients recovered, but this author gives no details.

In the bacteriophage treatment of local staphylococcic infections the results are difficult to evaluate because of the tendency of such lesions to heal spontaneously. In the pyodermias, such as furunculosis, carbuncle and acne, favorable results have been reported in a large series of cases by a number of investigators. Gratia⁶⁰ was among the first to recommend bacteriophage for the treatment of staphylococcic infections. Therapeutic observations on experimental animals and in human cases by this author indicated that the lytic agent accelerated the cure of these conditions. Bruynoghe and Maisin,⁶¹ and Gougerot and Peyre⁶² also reported favorable results in furunculosis, acne and sycosis. In the treatment the bacteriophage was injected into and around the lesions and also applied in the form of wet dressings to the lesions, which had been previously opened. In these early cases all the authors reported that a marked local reaction followed the application of the bacteriophage and that this was followed by a liquefaction of the pus and regression of the infection in from twenty-four to forty-eight hours. Grenet and Isaac-Georges⁶³ reported that thirty-eight of forty cases of furunculosis responded favorably to bacteriophage therapy, with only two or three recurrences.

In the more recent literature of bacteriophage therapy of pyodermias in America a great many favorable results have been recorded. Schultz,⁶⁴ in summarizing the results of treatment by physicians in California, gives the following statistics:

Of sixty-three cases of furunculosis, forty-four "helped" by bacteriophage

Of sixteen cases of carbuncle, fourteen healed rapidly by bacteriophage.

Of twenty-nine cases of acne, fifteen recovered after application of bacteriophage.

In this series only effects that appeared from twenty-four to seventy-two hours after the administration of the bacteriophage were considered. Crutchfield and Stout⁶⁴ report that the clinical results of treatment of fifty-seven patients with staphylococcic skin infection were much better than in similar cases in which other means of treatment were used. In a later report Stout⁵⁸ gives the following summary of cases treated by bacteriophage:

The treatment of boils was successful in 85 per cent.

The treatment of generalized furunculosis was successful in 75 per cent.

The treatment of chronic recurrent furunculosis was successful in 60 per cent.

The treatment of carbuncles gave inconsistent results

In impetigo neonatorum, twenty-four cases were cured in from twenty-four to forty-eight hours with treatment

In impetigo, sixty cases showed good results from early treatment.

Acne and sycosis were rarely affected by bacteriophage therapy.

Although the number of cases of each disease is not mentioned, Stout states that the whole series included about 1,500 cases. Boyce, Lampert and McFetridge⁶⁵

55. MacNeal, W. J., Frisbee, Frances C., and Applebaum, Martha. Therapeutic Use of Bacteriophages Against the Colon Bacillus, *Arch Surg* **29**: 242-247 (Aug.) 1934.

56. Dutton, L. O. Therapeutic Use of Bacteriophage, with Special Reference to Staphylococcus Septicemia, *Southwestern Med* **17**: 374-379 (Nov.) 1933.

57. Rice, T. B. Use of Bacteriophage Filtrates in Treatment of Suppurative Conditions. Report of 300 Cases, *Am J. M. Sc* **179**: 345-360 (March) 1930.

58. Stout, B. F. Bacteriophage Therapy, *Texas State J. Med.* **29**: 205-209 (July) 1933.

59. Schless, R. A. Staphylococcus Aureus Meningitis. Treatment with Specific Bacteriophage, *Am J. Dis Child* **44**: 813-822 (Oct.) 1932.

60. Gratia, A. La lyse transmissible du staphylocoque. Sa production, ses applications therapeutiques, *Compt. rend. Soc. de biol.* **86**: 276-278, 1922.

61. Bruynoghe, R., and Maisin, J. Essais de therapeutique au moyen du bacteriophage, *Compt. rend. Soc. de biol.* **85**: 1120-1121, 1921.

62. Gougerot, H., and Peyre, E. Bacteriophage in Treatment of Skin Diseases, *Compt. rend. Soc. de biol.* **91**: 452-453 (July 18) 1924.

63. Grenet, H., and Isaac-Georges, P. Quelques essais therapeutiques a l'aide du bacteriophage de d'Herelle, *Presse med* **36**: 1089-1092 (Aug. 29) 1928.

64. Crutchfield, E. D., and Stout, B. F. Treatment of Staphylococci Infections of the Skin by the Bacteriophage, *Arch. Dermat. & Syph.* **22**: 1010-1021 (Dec.) 1930.

65. Boyce, F. F., Lambert, R., and McFetridge, E. M. Bacteriophage in Treatment of Infections of Superficial and Deep Tissues, with Report of 200 Cases, *New Orleans M. & S. J.* **86**: 158-165 (Sept.) 1933.

report the treatment of thirteen cases of furunculosis and twenty-seven cases of carbuncle, and Alderson⁶⁶ reports the treatment of ten cases of acne vulgaris and furunculosis by bacteriophage with good results. Kahn⁶⁷ found that in nine cases of acne and five cases of furunculosis the use of stock polyvalent bacteriophage produced a "50 to 90 per cent" improvement and was effective even in cases in which every other treatment had failed. He notes prompt healing of the lesions, the abortion of some boils, and the liquefaction of pus in others. Cipollaro and Sheplar⁶⁸ review a series of 108 cases of pyodermias treated by them. Of these cases, sixty-two were furunculosis in all but fourteen of which treatment was completed with cure. They believe that the effects in recurrent multiple furunculosis may be due to an immunity conferred by the bacteriophage. They consider surgery the method of choice in solitary boils in which the pus is encapsulated. In five cases of carbuncle Cipollaro and Sheplar obtained good results, noting that the pus is liquefied, toxemia and pain reduced, and recovery more prompt than when incision and drainage are used. They report fair results in the treatment of twenty-eight cases of sycosis vulgaris, only seven of their patients having failed to show any improvement. These authors also note local and general reactions from the injection of bacteriophage, usually followed by marked improvement in the condition of the patient.

Larkum⁶⁹ has presented the data collected by the Michigan Department of Health on the treatment of 208 cases of furunculosis by bacteriophage. In these cases the same polyvalent strain of bacteriophage was used throughout. The preparation contained the equivalent of five billion staphylococci per cubic centimeter. Treatment consisted of injection of 2 cc. subcutaneously on two successive days. Local applications were not used in furunculosis. The author summarizes the results first in groups according to the previous duration of the disease. This summary indicates that the previous duration makes no difference in the results. The general summary is given in table 2.

Larkum states that in thirteen instances patients cured by bacteriophage had previously failed to respond to autogenous vaccines. Of twenty-three cases of acne treated by bacteriophage, two were cured, eight improved and thirteen failed to respond. Rice⁵⁷ has also treated a large series of cases of staphylococcal infections. Stock bacteriophages were used for all except the first fifty cases. Cultures from cases which failed to respond were generally found to be resistant organisms. Several cases were treated with peptone broth, with some improvement but no striking effects. Sixty-six cases of boils and carbuncles were treated, with "excellent results" in fifty-five, intermediate results in five, failure in five, and no report in one. Four of the failures could be ascribed to the fact that the causative organism was not susceptible to the bacteriophage used. Wet dressings were used in a great number of cases, and subcutaneous injection was used in some. Thirty-five cases of acne were treated, with thirteen "excellent results," eight "fair" results, seven

with no effect, and treatment was incomplete in seven. In these cases the bacteriophage was applied in 1 per cent agar jelly. Both Rice and Larkum are inclined to the view that factors other than the lysis of the bacteria may play a part in the healing of the lesions. Larkum believes that many of the cures may be due to immunization with a readily available antigen. Rice, on the other hand, reports almost equally good results in cases that have been treated by wet dressings, or local instillation into the lesion, without the use of filtrates as a vaccine. In cases in which striking effects were reported to have occurred between twenty-four and forty-eight hours it is difficult to account for the improvement as being the result of active immunity.

In the treatment of osteomyelitis by bacteriophage, the reports have been generally less enthusiastic than those in the treatment of pyodermias. In osteomyelitis, streptococcus as well as staphylococcus may play an important rôle. Since no potent polyvalent bacteriophages are available for streptococci, attempts to treat streptococcal bone infections with bacteriophage might be expected to meet with little success. In most of the cases reported the ordinary methods of surgical inter-

TABLE 2—General Summary in Larkum's Series

Patients treated	208
No recurrences 6 months after treatment	88
No recurrences from 6 weeks to 6 months after treatment	61
No recurrences less than 6 weeks after treatment	13
Total number of patients showing no recurrences immediately to more than 6 months after treatment	162 (78 per cent)
Recurrences	46 (19 per cent)
Mild recurrences which later cleared up	30
Improved but occasional recurrences	10
No improvement	6 (3 per cent)
Reactions observed as follows:	
None	60
Mild	73
General	15
Severe	2
No report	56

vention have been used along with the bacteriophage therapy. Bagley and Keller⁷⁰ report treating ten cases of osteomyelitis with bacteriophage. Three cases in which infecting organisms other than staphylococcus were present were treated only with bacteriophage dressing. None of these cases showed improvement. Three cases, complicated by septicemia, were treated by dressings and by intravenous injection of bacteriophage. Severe reactions followed the intravenous injections in all these cases. Two of the patients died, one recovered. Four cases of uncomplicated staphylococcal osteomyelitis were treated by bacteriophage, wet dressings and subcutaneous and intramuscular injections being used. Three showed good results; one patient died of meningitis extending from osteomyelitis of the skull. The authors mentioned that uncomplicated cases of osteomyelitis respond best to other forms of treatment. Boyce, Lampert and McFetridge⁶⁵ report that the bacteriophage treatment of ten cases of osteomyelitis produced some relief but no striking effects. Rice⁵⁷ states that in eleven cases of osteomyelitis bacteriophage therapy gave excellent results in four, fair results in three, and no effect in four. He is of the opinion that the value of bacteriophage is less in this condition than is indicated by these figures. It has no value when

66 Alderson, H. E.: Bacteriophage in Pyogenic Infections of Skin, *Arch. Dermat. & Syph.* 21: 197-205 (Feb.) 1930.

67 Kahn, B. L.: Bacteriophage Therapy for Pyoderma: Report of Twenty Cases, *Arch. Dermat. & Syph.* 24: 218-227 (Aug.) 1931.

68 Cipollaro, A. C., and Sheplar, Adele E.: Therapeutic Uses of Bacteriophage in Pyodermias, *Arch. Dermat. & Syph.* 25: 280-293 (Feb.) 1932.

69 Larkum, N. W.: Bacteriophage Treatment of Staphylococcus Infections, *J. Infect. Dis.* 45: 34-41 (July) 1929.

70 Bagley, E. C., and Keller, Margaret: Bacteriophage in Treatment of Osteomyelitis; Study of Ten Cases, Including Three Cases Complicated by Staphylococcus Aureus Septicemia, *Minnesota Med.* 15: 597-601 (Sept.) 1932.

dead bone is present in the lesion. MacNeal⁷¹ and Larkum⁶⁸ report favorable results in the treatment of a small series of cases. Albee⁷² states that in about 94 per cent of cases of acute and chronic osteomyelitis observed by him a specific bacteriophage occurs spontaneously. He believes that the efficacy of the Orr closed treatment for osteomyelitis, in which the wound is closed without antiseptics and the dressings remain long undisturbed, is due to the spontaneous development of bacteriophage. This is merely a reiteration of d'Herelle's theory⁷³ of the rôle of bacteriophage in immunity to infectious disease, a theory that at present lacks experimental support.

(To be continued)

Council on Physical Therapy

THE FOLLOWING REPORT WAS SUBMITTED TO THE BOARD OF TRUSTEES OF THE AMERICAN MEDICAL ASSOCIATION AT A JOINT MEETING OF THE TRUSTEES AND THE COUNCIL, HELD IN CHICAGO, SEPT. 17, 1934. THE TRUSTEES EXPRESSED THE VIEW THAT THIS REPORT MIGHT WELL BE PUBLISHED FOR THE BENEFIT OF THE ENTIRE PROFESSION, IN ORDER THAT THE PHYSICIANS OF THE COUNTRY MIGHT BETTER UNDERSTAND THE PURPOSE OF THE COUNCIL, ITS AIMS, ACCOMPLISHMENTS AND PLANS FOR THE FUTURE.

H. A. CARTER, Secretary.

REPORT OF THE COUNCIL ON PHYSICAL THERAPY

The Council came into existence as the result of a resolution adopted by the House of Delegates in 1925. The members of the Council were appointed by the Trustees during the fall of 1925. The Council held its first meeting in January 1926. The Council has been actively in existence for eight years.

Physical therapy was in a chaotic condition at the time of the organization of the Council by the Trustees. During the war physical therapy had been elevated from the realm of quackery, but by 1926 it bid fair to lead many of our profession back into the realm of quackery. It was recognized as having many excellent attributes of therapeutic value by the majority of the profession, while at the same time it was frowned on by many of the conservative men of the profession as being tainted with quackery.

At this time only a few hospitals had adequate physical therapy departments, and only a few physicians were employing it solely for the welfare of their patients. The chaos that existed was due to the activities of manufacturing agents who were selling apparatus directly to the physicians and to hospitals for "machine therapy." A few manufacturers were sending physicians of questionable repute throughout the country to hold clinics for the purpose of demonstrating machines that would deliver certain forms of physical therapy, for which all kinds of unwarranted and unsupported therapeutic claims were made. The profession was rapidly losing sight of the fact that true physical therapy consisted chiefly of intelligent hand work—namely, heat, massage and exercise—and that expensive machines and apparatus played a minor part in the realm of physical therapy so far as the majority of the profession was concerned.

With the foregoing conditions confronting the newly formed council, it can be readily understood that the first two or three years of the Council's existence were devoted to self education of its members; to formulating rules of procedure that could withstand all criticism; and to months—even years—of study of certain physical phenomena used in physical therapy before it could refute or approve the therapeutic claims made by certain manufacturers. This was a new field in therapeutics to the Council members as well as to most of the members of the profession, and of necessity they had to move surely and cautiously

if the work of the Council was to be permanent. It is with a sense of real accomplishment that the Council presents the following outline:

I. The Council—its organization and activities relating to physical therapy apparatus.

A. The Council consists of twelve men: one internist, two physiologists, one pathologist, one physicist, one radiologist, one dermatologist, two orthopedic surgeons, one general surgeon, and two physical therapists.

Six of the original members appointed by the Council are still active. Two of the Council members were lost by death and four by resignation; two were not reelected; their places were immediately filled by others appointed by the Trustees.

B. The Council has prepared and adopted:

1. Official Rules and requirements for submission of apparatus.

2. Minimum standards for acceptance of apparatus; e. g.,

(a) Regulations to Govern the Advertising of Ultraviolet Generators to the Public and to the Medical Profession.

(b) Acceptance of Sunlamps.

(c) Diathermy: A Preliminary Statement to the Acceptance of Diathermy Apparatus.

C. The Council has developed a list of definitions and nomenclature by cooperating with the American Standards Association. This is the first complete list of nomenclature for which the definitions of the terms correspond with the similar terms in use by physicists, engineers and other scientists.

D. The Council has secured the services of leading physicists, physiologists, clinicians and others, who have served as consultants and as investigators of apparatus.

E. The Council has made extensive study and investigation of ultraviolet, visible and infra-red radiation and has corrected many of the abuses of radiation therapy due to the lack of familiarity in the profession concerning this form of treatment. The Council has

1. Investigated a great many types of ultraviolet lamps and developed the emission standards for certain grouping of lamps.

2. Has developed and adopted ultraviolet radiation dosage units in general use in the United States.

3. Has developed and adopted standards for the control of ultraviolet radiation advertising to the profession and to the public.

4. Has conducted investigations into x-ray and radium products and therapeutic practices.

F. The Council has cooperated with the American Standards Association, working with the American Society of Ventilating Engineers in the investigation of air conditioning and health claims in connection therewith.

G. The Council has cooperated with the Council on Medical Education of the American Medical Association, the American Orthopedic Association, the American Congress of Physical Therapy and the American Physiotherapy Association, (technicians) and the American Occupational Therapy Association, in developing standards for the education of technicians.

H. The Council has published sixty-two articles, which have dealt chiefly with those physical therapy procedures most applicable to the work of the general physician; which have refuted many false therapeutic claims for certain physical therapy apparatus, and which have otherwise endeavored to place physical therapy on a sound basis. Many

71. MacNeal, W. J.: Bacteriophages as Help in Treatment of Infections in Children, *New York State J. Med.* 31: 1383-1386 (Nov. 15) 1931.

72. Albee, F. H.: Will Bacteriophage Prove Ideal Wound Treatment? *Am. J. Surg.* 15: 228-236 (Feb.) 1932.

73. d'Herelle, Felix: Immunity in Natural Infectious Disease, Baltimore, Williams & Wilkins Company; translated by G. H. Smith, 1924.

of these articles have been included in the Handbook of Physical Therapy.

I. The Council has edited and published a Handbook of Physical Therapy.

II. Apparatus: The Council

- A. Has formally considered 290 pieces of apparatus.
- B. Has accepted 130 pieces of apparatus.
- C. Has published the rejection of seventeen pieces of apparatus.
- D. Has 143 pieces of apparatus still under consideration. A large portion of these have been investigated and rejected, but at the request of the manufacturers the publication of these reports has been postponed while the firms are gathering better evidence.
- E. Has withdrawn acceptance of one product.
- F. Has refused to consider about 100 mechanical nostrums.
- G. Has investigated, standardized and suggested improvements in anesthesia, resuscitation and oxygen therapy equipment. Under these heads fifteen pieces of apparatus have been accepted.
- H. Has cooperated with the Section on Ophthalmology of the American Medical Association in the investigation of lenses and ophthalmologic devices.
- I. Has investigated certain ear-exercising devices, many pollen-removing appliances, all kinds of mechanical exercisers, belts, pads, electric blankets, and innumerable other devices with questionable health values.

III. Advertising: The Council

- A. Has assisted in raising the tone of advertising matter and has been instrumental in the improvement of merchandising methods.
 1. By reading, revising and in many cases completely eliminating approximately 5,000 separate pieces of advertising material.
 2. By securing the cooperation of the better manufacturers.
 3. From the standpoint of physicians, hundreds of letters have been received showing their favorable reaction to improved advertising and merchandising methods.
- B. Has eliminated "clinics" that were conducted by manufacturers for the demonstration of their apparatus.
- C. Has eliminated almost completely the giving of lectures throughout the country by physicians of questionable repute, employed by manufacturers.

IV. Education: The Council has devoted much time to the education of the medical profession in physical therapy.

- A. By preparing standards for undergraduate and postgraduate education in physical therapy.
- B. By supplying speakers to state or county medical societies.
- C. By the Council members presenting papers before many representative medical associations in the United States.
- D. By formulating a method for extending postgraduate education.
- E. The Council has arranged for exhibits in physical therapy in conjunction with the Committee on Scientific Exhibit at the Annual Session of the American Medical Association. It has likewise presented scientific exhibits before the Association of American Railway Surgeons, American Congress of Physical Therapy, American Academy of Orthopedic Surgery, Illinois State Medical Society, Medical Society of the State of New York, Mid-South Post-Graduate Medical Assembly, Kentucky State Medical Association and the Medical Society of the State of Pennsylvania.

From the foregoing summary of past work of the Council, it can be authoritatively stated that physical therapy is now in much better repute with the entire profession than it was at the time the Council was organized. Then justifiable skepticism was warranted by the misuse of physical therapy. Today patients are receiving more and more of that type of physical therapy that is of real value to them.

V. How work is conducted:

- A. The Council has held from one to two meetings a year, and the Special Committee of the Council, consisting of three members, has met several times each year. More than 90 per cent of the work of the Council is carried on by a Bulletin sent to the members every two weeks.

VI. Future aims of the Council:

- A. There is still a great amount of work to be done, and its future activities will be directed chiefly along the lines indicated by the foregoing outline, but over a broader field. For example, the Council is undertaking the consideration of diagnostic machines, belts, supports and radium products.
- B. The Council feels that there is need for greater efforts in graduate teaching throughout the country. Therefore a more extensive plan has been developed whereby speakers may be furnished to county and state medical meetings.
- C. The Council will continue to guard zealously this field of physical therapy in order to prevent all irregular practices and to strive to enlarge its scope and usefulness for the benefit of the profession and the public at large.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DIOTHANE.—Diothane Hydrochloride.—Piperidinopropanediol-di-phenylurethane hydrochloride. — $C_6H_5N.CH_2CH(OCONHC_6H_5).CH_2(OCONHC_6H_5).HCl$.—The hydrochloride of the base piperidino-propanediol-di-phenylurethane, obtained by combining piperidine and glycerol monochlorohydrin in the presence of an alkali, and reacting the piperidinopropanediol with phenyl isocyanate.

Actions and Uses.—Nearly similar to those of cocaine, but it is claimed that the anesthesia lasts somewhat longer than that induced by corresponding doses of cocaine or procaine. Its toxicity by intravenous injection is about three times that of procaine, and hence it should not be injected except in very small amounts.

Solutions prepared extemporaneously should be used promptly, since such solutions usually contain traces of alkali and are thereby subject to precipitation.

Manufactured by the Wm. S. Merrell Company, Cincinnati. U. S. patent applied for. U. S. trademark 296,850.

Diothane Ointment, 1%: An aqueous solution of diothane, 1 per cent, in an oxycholesterin base.

Diothane Solution, 1%: A solution of diothane, 1 per cent, in distilled water.

Diothane hydrochloride occurs as a fine, white crystalline, odorless powder; when applied to the tongue, it possesses a bitter taste followed by a sense of numbness; permanent in the air at ordinary temperatures; slightly soluble in water, acetone and ethyl acetate; soluble in alcohol; insoluble in benzene and ether. Its aqueous solution (1 in 100) is faintly acid to litmus. Diothane hydrochloride melts at 195 to 200 C., with decomposition. From aqueous solutions, alkali carbonates and hydroxides precipitate the free base as a colorless oil, which does not solidify under ordinary conditions.

Dissolve about 0.5 Gm. of diothane hydrochloride in 50 cc. of water; separate portions of 5 cc. each: to one portion add 5 cc. of silver nitrate

solution a white precipitate results, soluble in an excess of ammonia water, to another portion add 0.2 cc of diluted hydrochloric acid, 0.2 cc of a 10 per cent solution of sodium nitrite and gradually mix with a solution of 0.2 Gm of betanaphthol in 10 cc of a 10 per cent sodium hydroxide solution a white, changing to a yellowish and finally to an orange color appears, increasing in intensity as the concentration of the betanaphthol becomes greater (*distinction from the anesthetics responding to the diazo reaction*), to another portion add 5 drops of gold chloride solution an orange-yellow precipitate appears (*distinction from albin apothecine cocaine metcaine and nupercaine which give a lemon yellow precipitate and butyn procaine and tinctocaine, which yield brown precipitates*). Dissolve about 0.1 Gm of diothane hydrochloride in 1 cc of sulphuric acid the solution is colorless (*readily carbonizable substances*). Saturate about 0.1 Gm of diothane hydrochloride dissolved in 10 cc of water with hydrogen sulphide. no coloration or precipitation results (*salts of heavy metals*).

Dry about 0.5 Gm of diothane hydrochloride, accurately weighed, at 100 C for six hours the loss in weight does not exceed 0.5 per cent. Incinerate about 0.5 Gm of diothane hydrochloride, accurately weighed the residue is not more than 0.1 per cent. Transfer about 0.3 Gm of diothane hydrochloride, accurately weighed, to a 500 cc Kjeldahl flask, and determine the nitrogen content according to the official method described in Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, third edition, page 20, chapter 2, paragraph 22 the percentage of nitrogen corresponds to not less than 9.5 per cent, nor more than 9.8 per cent when calculated, to the dried substance. Dissolve about 0.25 Gm of diothane hydrochloride, accurately weighed, in 25 cc of water, by warming, and transfer to a suitable Squibb separatory funnel rinse twice using about 10 cc of water followed by the addition of 3 cc of a diluted ammonia water (one part of ammonia water and ten parts of water), extract with four successive portions of ether using 20 cc each, filter through a pledget of cotton and evaporate to a thick oil in a stream of warm air, dissolve the oily residue in about 25 cc of previously neutralized alcohol, warm slightly, add 10 cc of tenth normal hydrochloric acid solution, followed by the addition of 10 cc of water, determine the excess of acid by titration with tenth normal sodium hydroxide solution, using bromophenol blue as an indicator the amount of tenth normal hydrochloric acid consumed corresponds to not less than 90.5 per cent nor more than 92 per cent of piperidinopropanediol di-phenylurethane when calculated to the dried substance. Transfer the ammoniacal aqueous portion from the foregoing immiscible solvent extraction to a 400 cc beaker and place on the steam bath for three hours, add 100 cc of water, followed by the addition of 10 cc of nitric acid and 25 cc of silver nitrate solution, subsequently boil with continuous stirring and allow to cool in a dark place. Collect the precipitate of silver chloride on a Gooch crucible, wash with diluted nitric acid and water, followed by alcohol and ether, finally dry to constant weight at 105 C, the amount of hydrogen chloride calculated from the silver chloride found corresponds to not less than 8.35 per cent, nor more than 8.45 per cent when calculated to the dried substance.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS JEECH, Secretary

THE "NOTICE OF JUDGMENT" ON SCARLET RED SALVE (HEILKRAFT MEDICAL COMPANY)

A physician recently wrote to THE JOURNAL, asking an explanation of the apparent incongruity of the Council's continued acceptance of Scarlet Red Salve (Heilkraft) after he had read the short abstract of the federal government's notice of judgment, which appeared in THE JOURNAL, July 21, 1934, page 205.

Since the product still has its accepted status in view of the firm's agreement to modify the claims which the Council, as well as the federal government, has found objectionable, no report of the Council's action (which was taken prior to receipt of the physician's inquiry) has been published. In order to clarify the apparent incongruity of the Council's continued acceptance of the product which the government has declared to be marketed under false and fraudulent therapeutic claims, the Council decided to publish the following statement of circumstances.

The following claims appearing on the label or in the package circular formed the basis of the government's action (notice of judgment 20165, June 1933) against the scarlet red salve of the Heilkraft Medical Company.

(Carton) "Causes an active proliferation of the epithelium, and in such chronic conditions as partial skin grafts ulcers following operation for infection, ulcers following burns, traumatic ulcers, specific ulcers, varicose ulcers bed sores and the like the results have been in many instances nothing short of remarkable. All who have used the agent are enthusiastic in their praise of it, (circular) In the treatment of Indolent Varicose Ulcers Sluggish or Non granulating Wounds, Sores resulting from various Blood Diseases Eczema, etc."

New and Nonofficial Remedies, 1934, contains the following statement of the actions and uses of scarlet red medicinal.

Scarlet red medicinal Biebrich and scarlet red sulphonite have a marked power of stimulating the proliferation of epithelial cells.

Opinions are divided as to the clinical value, but the dyes are used to promote the growth of epithelium in the treatment of burns, wounds, chronic ulcers, etc. In chronic ulcers, however, it is requisite that the local circulation be good in order to obtain a permanent result.

On being informed early this year of the government's action declaring Scarlet Red Salve (Heilkraft) misbranded, the Council's referee for the product made a report to the Council, which stated in part.

As some of the statements of claims come within the limits allowed by the Council's opinion according to New and Nonofficial Remedies, 1933 and others have in the past been accepted by the Council, the Council found itself in the embarrassing position of permitting the issuance of claims for a product which the Food and Drug Administration of the United States Department of Agriculture regards as "false and fraudulent."

The Food and Drug Administration was asked to assist the Council by supplying the evidence on which the Administration based its opinion. The Administration replied under date of September 28, in part, as follows:

"Our investigations lead us to believe that this preparation is sold very extensively over the drug counter to the general public and not on physicians' prescriptions or upon recommendations from physicians. The type of labeling used with this product would be considered highly extravagant when distributed by this method.

"The product was recommended as of value in ulcers following operations for infections, traumatic ulcers, specific ulcers, indolent varicose ulcers, sores resulting from various blood diseases, eczema, etc. We are of the opinion that such a label is extravagant in its claims even when recommended to a physician. A physician should be capable through his scientific training of judging the type of case in which this preparation would be of value. However, a layman is not capable of determining this. The law as written does not make any differentiation in the labels of preparations that are distributed for physicians' use or for physicians' prescriptions and those sold directly to the public."

This letter is helpful in stating the law, but it does not give the Council the benefit of a knowledge of the evidence on which the opinion of the Administration was based. In view of the possibility that the status of the therapeutic opinion may have changed since the previous referee examined the literature three years ago, the referee attempted to evaluate the published evidence.

The ability of Scarlet Red (Biebrich) to produce epithelial proliferation was first noted by Fisher in 1906. This was confirmed by others. The results of the careful experimental studies of J. S. Davis in the treatment of ulcers and skin grafts with Scarlet Red were published in the Bulletin of the Johns Hopkins Hospital 20: 186, 1909, 22: 210, 1911, 23: 332, 1912, 24: 178, 1913. These investigations still seem to the referee to prove that the chief component of Scarlet Red, aminoazotoluol, stimulates epithelial proliferation. The referee does not know of any refutation of the work of Fisher, Davis and others. The referee abstracted about ten papers published during the past five or six years reporting good results in treatment of ulcers with Scarlet Red or similar compounds. There has been no experimental work comparable in scope and care with the earlier work. The status of therapeutic opinion, however, does not seem to have changed, if the published papers are an index of that opinion.

It is to be recalled that New and Nonofficial Remedies contains the admission that clinical opinion is divided on the question of the therapeutic value of Scarlet Red. It is obvious also that the Heilkraft Medical Company was at fault in mentioning diseases by name in the trade package circular. The Council readily concurs in the opinion of the Food and Drug Administration that it is extravagant to claim that Scarlet Red can cure ulcers due to serious underlying constitutional or local diseases. The necessity of adequate local circulation is admitted in New and Nonofficial Remedies in connection with the treatment of chronic ulcers and it is obvious that syphilitic ulcers will not be cured by Scarlet Red. The Council believes that the Food and Drug Administration may not regard as "false and fraudulent" the claim that Scarlet Red stimulates epithelial proliferation unless it has at its disposal undisclosed experimental evidence better than that of Davis and others. It appears that the firm has gone beyond justifiable limits in its specific and unqualified claims. It seems therefore, that an agreement may be reached on these questions by the three parties concerned by adhering to the conservative statement in New and Nonofficial Remedies.

In transmitting this report to the Heilkraft Medical Company, the Council stated that it would reaccept the firm's product for inclusion in New and Nonofficial Remedies only on condition that the labels and advertising are revised along the following lines: (1) limitation of claims to the stimulating effect of Scarlet Red on epithelial cells, and (2) omission of unqualified claims of benefit in the treatment of traumatic ulcers, infected ulcers, and ulcers associated with systemic disease. The firm has agreed to revise its labels and advertising material in the very near future, in accordance with the stipulations of the Council's report.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. **RAYMOND HERTWIG, Secretary.**



KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—

Allvine Dairy Company, Kansas City, Kan.
 Artic Ice Cream and Milk Company, Cortland, N. Y.
 Ashley Dairy Company, Battle Creek, Mich.
 Babcock Dairy Company, Toledo, Ohio.
 Baker-Hubbell Dairy, Inc., Peoria, Ill.
 Banner Creamery, San Angelo, Texas.
 Briggs Dairy Products Company, Blackwell, Okla.
 Brinkman Dairy Company, Watertown, Wis.
 Cedar Grove Dairy, Falls City, Neb.
 Central Illinois Dairy Products Co., Peru, Ill.
 Citizen's Dairy Company, Springfield, Ohio.
 Clover Cream Dairy Products Co., Marshfield, Wis.
 Cloverleaf Dairy, Leavenworth, Kan.
 Cocumussoc Farm & Dairy Products, Wickford, R. I.
 Colonial Dairy Company, Wood River, Ill.
 Connor Dairy Products Company, Coshocton, Ohio.
 Consumers Dairy, Holland, Mich.
 Cook Brothers Dairy, Elkhart, Ind.
 Creighton's Creamery, Elmira, N. Y.
 Datson Dairies, Inc., Orlando, Fla.
 Dudley Dairy Products Company, Paducah, Ky.
 Fenley's Model Dairy, Louisville, Ky.
 Florida Milk Company, St. Petersburg, Fla.
 Gateway Creamery Company, Joplin, Mo.
 Greenwood County Creamery, Eureka, Kan.
 Grove Dairy, Urbana, Ohio.
 Joy's Creamery, St. Mary's, W. Va.
 Lakemont Dairy, Winter Park, Fla.
 Landwehr Dairy, Jefferson City, Mo.
 Lang's Creamery, Buffalo.
 Lawrence Sanitary Milk & Ice Cream Co., Lawrence, Kan.
 Little Dairy, Ironwood, Mich.
 Massey Dairy, Inc., Granite City, Ill.
 Meadolake Products Company, Sherman, Texas.
 Missouri Valley Creamery Company, Washington, Mo.
 Niles Creamery Company, Niles, Mich.
 Nokomis Dairy, Nokomis, Fla.
 Oak Grove Dairy, Clinton, Iowa.
 Oleander Ice Cream Company, Sarasota, Fla.
 Peerless Dairy Company, Rock Island, Ill.
 Pinehurst Dairy, Rockford, Ill.
 Prairie View Dairy, East Chicago, Ind.
 Purvin Dairy Company, Wilkes-Barre, Pa.
 Reed's Milk and Ice Cream Company, Shamokin, Pa.
 Riverside Dairy, Mishawaka, Ind.
 St. Charles Dairy Company, St. Charles, Mo.
 Southern Dairies, Inc., Asheville, N. C., and Knoxville, Tenn.
 South St. Paul Dairies, Inc., South St. Paul, Minn.
 Stephens Brothers, Carbondale, Pa.
 Stowell's Dairy, Leroy, N. Y.

Licenses.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base, and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla extract. See Krim-Ko Chocolate Flavored Drink, *THE JOURNAL*, June 30, 1934, page 2187.

CHALLENGE BUTTER

Distributor.—Challenge Cream & Butter Association, Los Angeles.

Description.—Packaged, salted, pasteurized butter graded to rate 92 or 93 score by United States Department of Agriculture graders.

Manufacture.—The cream used is largely separated out at the creameries and not on the farms. It is tested for milk fat, acidity, flavor and odor, is pasteurized for thirty minutes at 66 C. and cooled to churning temperature, or, if held over night, chilled below churning temperature. In winter, the maximum acidity (as lactic acid) permitted is 0.2 per cent, in summer 0.25 per cent. Certified food color is added when necessary to maintain a uniform butter color throughout the year. The cream is churned under standard conditions of time and temperature. The buttermilk is drawn off. The butter is washed with water, salt is added and the butter is thoroughly worked to distribute the salt and produce a moisture content of from 16 to 16.5 per cent. Before the butter is removed from the churn it must contain by analysis less than the specified maximum moisture and salt content. The butter is packed at the various creameries either in 68 pound cubes or in packing molds and is shipped under refrigeration to the packaging plants, where it is graded, cut to standard size, wrapped and packed in cartons.

No butter flavors or starters are used. Only occasionally is a neutralizer (sodium bicarbonate) used.

A premium is paid for butter scoring 93. Only 92 to 93 score butter is used for this brand. The grading is done by United States Department of Agriculture graders. The churns are treated with boiling water whenever necessary to destroy micro-organisms that may establish themselves. Code marks on the packages identify the batch of butter, date of churning and packing and the creamery. Laboratory control is maintained to assure that all butter issuing under the brand named "Challenge" fulfils specified requirements.

Analysis (submitted by distributor).—

	(1)	(2)	(3)
Moisture	16.4%	14.5%	16.0%
Milk fat.....	80.6	82.4	80.7
Curd	0.9	1.1	0.8
Sodium chloride.....	2.1	2.0	2.4

Calories.—From 7.3 to 7.4 per gram; from 207 to 210 per ounce.

LIBBY'S NATURAL HAWAIIAN PINEAPPLE JUICE

Manufacturer.—Libby, McNeill & Libby, Chicago.

Description.—Hawaiian pineapple juice, retaining in high degree the natural vitamin content.

Manufacture.—Fully matured and sound Hawaiian pineapples are sized to cylindric shape by a revolving cylindric knife, which removes the outer peel; the two ends are mechanically cut off. Any remaining particles of peel are removed by hand. The trimmed pineapples are washed by water sprays and crushed. The pulp is heated and the juice is expressed in a continuous press in an atmosphere of steam, screened, canned, and pasteurized at a definite temperature and for a time sufficient to insure keeping quality.

The preparation and processing are under laboratory supervision. All employees handling pineapples wear rubber gloves, aprons and caps.

Analysis (submitted by manufacturer).—

	per cent
Moisture	84.1
Ash	0.4
Fat (ether extract).....	0.02
Protein (N X 6.25).....	0.4
Reducing sugar as invert sugar.....	12.8
Crude fiber.....	0.02
Carbohydrates (by difference).....	14.3
Titrateable acidity as citric acid.....	0.8

Calories.—0.6 per gram; 17 per ounce.

Vitamins.—Vitamin C assay shows from 9 to 11 Sherman units per ounce.

Claims of Manufacturer.—Practically equivalent to the fresh fruit juice in nutritional values (vitamin C slightly reduced).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 8, 1934

BACTERIOPHAGE THERAPY

Bacteriophage preparations have been available to the medical profession for about fifteen years. Some have been offered cautiously under moderate claims; other preparations have been exploited with promulgation of d'Herelle's idea that bacteriophage is a living parasite of bacteria, a sort of vital germicide. A few bacteriophage preparations have been submitted to the Council on Pharmacy and Chemistry, but none have been accepted for inclusion in New and Nonofficial Remedies. Hundreds of papers have been published on the clinical use of bacteriophage products, many of which were made in noncommercial laboratories. What may be said fairly about the composition of these products, the nature of their constituents and the results to be expected from their therapeutic application? The first section of a critical review of the principles and results of the use of bacteriophage infections is published elsewhere in this issue of *THE JOURNAL*.¹

The discoveries of Twort and d'Herelle in 1915 and 1917 that bacteria can be dissolved and destroyed by an apparently self-propagating lytic principle were of great importance. Investigations of the nature and actions of this ultramicroscopic, filtrable agent have developed significant information. Uncertainties as to the nature of the material and unwarranted claims for its therapeutic efficacy should not be allowed to cloud the appreciation of its biologic importance.

Two views prevail as to the nature of the lytic principle. d'Herelle has held that it is a living parasite of bacteria, an ultramicroscopic filtrable virus, growing and multiplying in the process of changing or dissolving bacteria. He and his associates have supported this opinion with ingenious experiments and shrewd analogies to filtrable viruses. d'Herelle does not seem to have proved his point, but his hypothesis has not yet been disproved. Other investigators believe that the lytic principle is an inanimate substance of an enzyme-like character, which is reproduced during the

course of bacterial autolysis. The difficulty in making crucial experimental tests of these hypotheses comes from the fact that the lytic principle cannot be propagated apart from the living bacteria on which it acts. The weight of opinion, however, now seems to be preponderantly on the side of the argument that the lytic principle is inanimate. Since it has not been proved that the bacteriophage is a living agent and since there is good evidence opposed to the opinion that it is an autonomous agent, claims that it is a "vital germicide" are unwarranted.

The complexity of the "bacteriophage" mixtures is one cause of the confused and contradictory publications. The usual material called bacteriophage is made by allowing lysis to proceed to completion in a young growing broth culture of some bacterium. This is then filtered through a Berkefeld, Mandler or Seitz filter. Sometimes a preservative is added (often to the detriment of the lytic principle). This material then contains (1) the lytic principle or bacteriophage, (2) products of the dissolved bacteria, (3) products of bacterial metabolism, and (4) constituents of the culture medium. In its clinical application, the possible effects of all these constituents must be taken into consideration.

The action of the lytic principle on cultures on plates and in test tubes is undoubtedly far greater than its action on bacteria in the animal body. Blood, pus, bile, urine and other secretions of the body inhibit or annul its ability to dissolve micro-organisms. There is no evidence that lysis or killing of bacteria by bacteriophage occurs in vivo, except possibly in the bladder and walled off spaces, where little exudate is present and where irrigation with large amounts of lytic filtrate can be used. As for its other possible effects on invading bacteria, the evidence is incomplete. By opsonizing bacteria, it may aid in phagocytosis. By causing bacterial variation it may lead to the appearance of less virulent races of the infecting germ, or it may stimulate the appearance of more virulent varieties.

The lytic filtrates have a variety of specificities; some are strictly specific for one type of micro-organism, others affect numerous kinds of related bacteria. Obviously, if any specific therapeutic results are to be obtained, a lytic principle capable of acting on the bacterium causing the infection should be used. To accomplish this purpose, bacteriophages have been prepared against organisms isolated from patients. More often stock preparations of polyvalent bacteriophages or artificial mixtures of several bacteriophages have been applied. In numerous therapeutic trials the capacity of the lytic principle to dissolve the infecting organism in vitro has not been tested, although this is a phase of the clinical use of these materials that should never be neglected.

The products of the dissolved bacteria are excellent antigens. They are good vaccines. They stimulate the production of antibodies and they bring about states of resistance after their injection into the body. The

1. Eaton, M.D., and Bayne-Jones, Stanhope: Bacteriophage Therapy, this issue, p. 1769.

products of bacterial metabolism and constituents of the culture medium, together with the solution of bacterial substance, may have nonspecific protective actions like the effects of nonspecific protein therapy. In fact, the favorable results accredited to bacteriophage therapy may have been due entirely to the specific immunizing action of bacterial proteins in the material used and to nonspecific effects of the broth filtrates.

In this connection it is necessary to mention the so-called antiviral, which is claimed by some manufacturers to be a valuable constituent of these complex mixtures. "Antiviral" is not an antibody in the usual sense. It is a name given by Besredka to some presumed product of bacterial growth, which is supposed to unite with the susceptible receptors of body cells and, by occupying them inertly, prevent a subsequent attachment or attack by the living bacteria. Besredka's views have not been substantiated and there is no convincing evidence that lytic filtrates to which "antiviral" has been added are any more or less effective than the usual filtrates.

Almost every infectious condition from colitis to rhinitis has been treated with bacteriophage. Few controlled clinical studies have been made, and the published reports of the results of all the trials are, on the whole, contradictory. Only in the treatment of local staphylococcal infections and perhaps in cystitis due to colon bacilli and staphylococci has even slightly convincing evidence been presented to show that therapy with lytic filtrates is effective.

A multitude of complexities have been concealed under the simplified terminology of the "bacteriophage metaphor." From these writings there emerge the possibilities that the lytic principle, functioning as an inert substance rather than a living agent, may under certain conditions in the body dissolve bacteria, induce bacterial variation and increase phagocytosis. The chief action of the lytic filtrates appears to be an immunizing action, so that bacteriophage therapy would appear to be essentially a form of vaccine therapy.

RESPIRATORY RESPONSE TO ALTITUDE

The organism is so delicately equilibrated with the environment that any disturbance in its surroundings is followed by changes the magnitude and order of which have long interested physiologists. One naturally thinks of the alterations in temperature to which the body is exposed; the chemical and physical responses to this circumstance are more or less well known. With the development of aviation during the World War and later in a commercial way, more attention has been devoted to the train of events occurring in the organism when high altitudes are reached. The physiologic consequences of the adaptation, so far as they are known, are surprisingly widespread; they include changes in the respiration, in the circulatory mechanism and in the blood itself, all of considerable magnitude. As to the

immediate cause of this extensive disturbance, one authority¹ in this field has stated that "most of the bodily changes observed at high altitudes can be directly or indirectly attributed to the relative shortage of oxygen." A complete description of the effects of oxygen want produced by actual ascent to high altitudes or by experimental means in a low pressure chamber provides a striking example of functional integration in the organism.

Perhaps the most immediately appreciated response to a lowered pressure of oxygen is in the respiration.

In a recent study, Hurtado, Kaltreider and McCann² have corroborated older observations and added new ones. Three human subjects were exposed in a low pressure chamber to air at a pressure of 419 mm. of mercury, corresponding to an altitude of 16,400 feet. This level of pressure was reached in fifteen minutes and was maintained for two hours. Care was taken to change the air completely at frequent intervals, and accumulation of carbon dioxide was prevented. In common with previous experience, the volume of air breathed per unit of time was increased slightly in two of the subjects with little change in either the rate or the depth of breathing. In airplane flights to high altitudes, the increase in depth of breathing is frequently so gradual and so small in amount that the pilot is unaware of the change; more than one has become unconscious before warned to take oxygen by the subjective sensations. Alveolar air shows a decreased tension of both oxygen and carbon dioxide, a response observed in most persons. When this fails to occur, mountain sickness follows. In the Rochester experiments all three subjects showed a diminution of the vital capacity, a rather constant finding in such studies, and a somewhat greater relative increase in residual air.

Guinea-pigs were killed after two hours in the low pressure chamber and the lungs examined grossly and microscopically. There was pronounced congestion, which was obvious to the naked eye; histologic study revealed dilatation of the capillaries, which in turn resulted in a thickening of the alveolar wall. In the central parts of the lung, many of the alveolar spaces were obliterated. This is of interest in view of the remarkable series of studies on blood flow in the pulmonary capillaries recently reported by Wearn and his associates.³ By direct observation of a portion of the immobilized lung of anesthetized cats, they saw capillaries disappear and others appear spontaneously in a field without active circulation before. Blood flowed intermittently in the arterioles and capillaries of the lung, and frequently a spontaneous reversal of the direction of flow was seen. The conclusion was reached that normally the average number of active

1. Schneider, E. C.: *Yale J. Biol. & Med.* 4: 537 (March) 1932.

2. Hurtado, Alberto; Kaltreider, N. L., and McCann, W. S.: *Am. J. Physiol.* 109: 626 (Oct.) 1934.

3. Wearn, J. T.; Ernestine, A. C.; Bromer, A. W.; Garr, J. S.; German, W. J., and Zschiesche, L. J.: *Am. J. Physiol.* 109: 236 (Aug.) 1934.

capillaries represents only a small portion of the available capillaries per sac. Acute asphyxia did not cause the capillaries or arterioles to open. In the Rochester experiments, on the other hand, the dilatation of the capillaries of the lung was brought about by relative lack of oxygen induced gradually and arose as a compensatory response to the resulting anoxemia. The changes in the lungs likewise account for the observed reduction in vital capacity associated with the decreased pressure of oxygen.

Among other responses by the body to altitude there is an increase in the oxygen-transporting mechanism. There is an increase in the number of red corpuscles and therefore of hemoglobin. One of the significant observations made by Hurtado and his co-workers was a reduction in the saturation of hemoglobin with oxygen at the low pressure; there were in two subjects changes from 99.7 and 95.3 per cent saturation to 68.3 and 74.0 per cent, indicating a pronounced degree of anoxemia. There are important physiologic questions involved in a study of the widespread respiratory response to low pressures of oxygen; in the days to come, when private motor cars and airplanes make ascents to moderate or greater altitudes, the question of the functional disturbances and their rational treatment will become one of considerable practical significance.

TRYP SOGEN-CARNRICK

Knowledge of the glands of internal secretion is at best fragmentary. Nevertheless, as our readers well know, a number of manufacturers have been for years promoting elaborate lists of polyglandular preparations for the treatment of innumerable diseases. One of those most persistently promoted is a product called "tryp-sogen," prepared by the G. W. Carnrick Company, Newark, N. J. Even today, notwithstanding the vast amount of research that has been published on the treatment of diabetes, this company continues to recommend this product as "a valuable therapeutic agent" in the treatment of this disease. Over the years, the product called "tryp-sogen" has had a variety of formulas. Once even such inorganic compounds as gold bromide and arsenic bromide were included in it. Its name implies that this product is a precursor of trypsin, which is formed by the action of succus entericus on trypsinogen. In 1913 it was claimed that the preparation consisted of the enzyme of the islands of Langerhans with the tryptic and amylolytic ferments of the pancreas. At that time the gold and arsenic salts were still in the preparation. Later it was claimed that "tryp-sogen supplies the special internal secretory substance elaborated by the body itself for the control of normal carbohydrate metabolism as well as the special pancreas proteins and amino acid complexes necessary for a regenerative effect on the patients' own defective pancreas."

It has never been demonstrated that tryp-sogen contains insulin, yet insulin is, of course, "the special internal secretory substance" that controls normal carbohydrate metabolism. Even if this product did contain insulin, however, there is no evidence that it is effective on oral administration. In fact, just the opposite has been proved.

THE JOURNAL has repeatedly called the attention of the medical profession to the fallacious character of these claims, yet the firm never loses heart; presumably because it is able to find enough doctors who are willing to believe its claims to make its advertising worth while. One need not condemn the product, however, merely on its irrational basis. As long ago as 1907, Tyson¹ stated that he had a patient who took "\$25 worth of tryp-sogen tablets without any effect whatever." His experience has been verified repeatedly. Not satisfied, however, with the money it extracts from patients with diabetes, the firm has recently suggested the use of the product "as an adjunct in hypertension." Obviously there is not the slightest scientific evidence to indicate that it has merit in hypertensive disorders.

Years ago there might have been some slight excuse for the use of pancreatic extracts given by mouth in diabetes. Today such use is ignorant, unscientific and absolutely without warrant. The doctor who gives such preparations by mouth to the exclusion of the well established and effective methods of treatment involving proper control of the diet and the use of insulin might well be charged with failing to give his patient the ordinary scientific care expected from any average physician in such a condition. The physician who uses these products allies himself definitely with the promoter in a form of malpractice that might result most seriously for the patient concerned.

Current Comment

AGED PHYSICIANS

In compiling the current issue of the American Medical Directory, some interesting notes were collected relative to physicians of advanced age, many of whom are still in practice. The names of ten doctors were collected who were born between 1828 and 1838, so that the oldest of these men is 106 years of age and the youngest 96. They graduated in medicine from the years 1852 to 1878. Of the four men who are still in practice, the years of practice vary from eighty-one to sixty-nine. These are, of course, remarkable. It is significant that by far the majority of these men of advanced years live in small communities. THE JOURNAL is interested in receiving records of physicians who are more than 95 years of age.

1. Tyson, James. Treatment of Diabetes Mellitus, J. A. M. A. 49:1583 (Nov. 9) 1907.

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

- December 13. Shopping for Health, W. W. Bauer, M.D.
- December 20. Social Security, Morris Fishbein, M.D.
- December 27. Budgeting for Health, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next two broadcasts will be as follows:

- December 11. Care of the Handicapped, Morris Fishbein, M.D.
- December 18. Fight Tuberculosis With Modern Weapons, W. W. Bauer, M.D.
- December 25. Holiday; no broadcast.

THE ATLANTIC CITY SESSION

Chairmen of Section Committees to Assist in Promotion of Section Exhibits

The fifteen sections of the Scientific Assembly have appointed exhibit committees to assist in the promotion of section exhibits at the Atlantic City session and in the coordination of activities between the Scientific Assembly and the Scientific Exhibit. Chairmen of the section exhibit committees are as follows:

PRACTICE OF MEDICINE:

Irving S. Wright, New York.

SURGERY, GENERAL AND ABDOMINAL:

Alton Ochsner, New Orleans.

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY:

H. C. Hesselstine, Chicago.

OPHTHALMOLOGY:

Georgiana Dvorak-Theobald, Oak Park, Ill.

LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY:

William V. Mullin, Cleveland.

PEDIATRICS:

F. Thomas Mitchell, Memphis, Tenn.

PHARMACOLOGY AND THERAPEUTICS:

C. D. Leake, San Francisco.

PATHOLOGY AND PHYSIOLOGY:

Frank W. Hartman, Detroit.

NERVOUS AND MENTAL DISEASES:

Groves B. Smith, Godfrey, Ill.

DERMATOLOGY AND SYPHILOLOGY:

Fred D. Weidman, Philadelphia.

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH:

Paul A. Davis, Akron, Ohio.

UROLOGY:

Russell S. Ferguson, New York.

ORTHOPEDIC SURGERY:

Paul N. Jepson, Philadelphia.

GASTRO-ENTEROLOGY AND PROCTOLOGY:

A. H. Aaron, Buffalo.

RADIOLOGY:

S. W. Donaldson, Ann Arbor, Mich.

Application blanks for space in the Scientific Exhibit may be obtained from any of the foregoing chairmen, or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Personal.—Dr. Hugh A. Rasmussen, Westby, Wis., has been appointed medical officer for the Pima Indian Agency near Phoenix.—Dr. Louis C. B. Baldwin, Phoenix, formerly assistant professor of medicine, University of Rochester School of Medicine, Rochester, N. Y., has been appointed physician-in-chief of the Desert Sanatorium and Institute of Research, Tucson.

CALIFORNIA

Personal.—Dr. Harper Peddicord, Redwood City, has been appointed health officer of San Mateo County to succeed Dr. Harold E. Morrison. Dr. Frank H. Folkins is health officer of Redlands, succeeding Dr. Harold G. Gentry and Dr. Perryman F. Page Jr., health officer of Taft, succeeding Dr. Oran Newton.

Professor Anrep to Give Lane Lectures.—Dr. Gleb V. Anrep, professor of physiology, Egyptian University, Cairo, Egypt, will deliver the 1935 series of Lane Lectures at Stanford University School of Medicine, April 22-26. The five lectures will cover various phases of "Regulation of the Cardiovascular System." The Lane lectures were established in 1896 by Dr. Levi Cooper Lane, San Francisco, the founder of Cooper Medical College, which in 1908 became the school of medicine of Leland Stanford Junior University. Every two years some physician or scientist who has made a definite contribution in the field of medicine is invited to give a free course of lectures for medical students and the medical profession at large.

CONNECTICUT

Fellowships for Study of Adolescence.—Yale University School of Medicine announces the establishment of five fellowships by the Rockefeller Foundation for the study of adolescence, which will be approached through studies of anatomy, physical anthropology and anthropometry; physiology, biochemistry and nutrition; psychology and psychiatry; medicine, particularly pediatrics and immunology, and education and social adjustments. It is hoped to discover the methods by which data can be obtained on the growth and development of individuals during the second decade of life. The medical school has also effected a working relationship with the university department of physics. Appointments are to be for two years and they are to expire in alternate years so that one of the two men will always have had one year's experience on the project.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended November 24, indicate that the highest mortality rate (18.6) appears for Wilmington and the rate for the group of cities as a whole, 11.3. The mortality rate for Wilmington for the corresponding period last year was 10.8 and for the group of cities, 11.5. The annual rate for eighty-six cities for the forty-seven weeks of 1934 was 11.3 as compared with a rate of 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

Medical Bureau for the Needy.—Creation of a medical admitting bureau in Washington for persons seeking free medical care has been endorsed by the Medical Society of the District of Columbia. It is proposed that the bureau be operated in cooperation with the Community Chest and handle all applications for free treatment at medical clinics or for free hospital care. The plan endorsed by the society calls for a special supervising committee, consisting of members from the executive committee of the Community Chest, the hospital superintendents' association and the medical and dental societies.

ILLINOIS

Conference of Health Officers.—The annual conference of Illinois health officers and public health nurses will be held in the Centennial Building, Springfield, December 11-12. The following program will be presented:

- Dr. David J. Davis, Chicago, The Medical College and Preventive Medicine.
 Dr. Wilson G. Smillie, Boston, Practical Epidemiology.
 Dr. David O. N. Lindberg, Decatur, Case Finding in a Tuberculosis Program.
 H. J. Shaughnessy, Ph.D., Springfield, The Laboratory and Epidemiology.
 Pearl McIver, R.N., Washington, D. C., Community Coordination for a Public Health Nursing Program.
 Eva F. MacDougall, R. N., Indianapolis, Qualities for Success in a Public Health Nurse.
 Dr. Earl E. Kleinschmidt, Ann Arbor, Mich., A Philosophy of Health Education.
 Dr. Warren F. Draper, Washington, D. C., Administrative Practice in Public Health.
 Dr. Herman N. Bundesen, Chicago, Popularizing Preventive Medicine.
 Dr. Sidney O. Levinson, Chicago, Convalescent Serum in Infantile Paralysis.
 Dr. Archibald L. Hoyne, Chicago, Convalescent Serum in Scarlet Fever.
 Dr. Joseph A. Baudouin, Montreal, Vaccination in Control of Tuberculosis.
 Dr. Clifford G. Grulee, Chicago, Breast Feeding as a Factor in Preventive Medicine.
 Dr. Winston H. Tucker, Springfield, Epidemic Encephalitis.
 Dr. Albert S. Gray, Hartford, Conn., Newer Phases of Occupational Hazards.
 Dr. Lloyd L. Arnold, Chicago, Practical Control Methods in Syphilis.

Chicago

Dr. Flexner to Give Pasteur Lecture.—Dr. Simon Flexner, director of laboratories, Rockefeller Institute of Medical Research, New York, will deliver the thirteenth Pasteur Lecture of the Institute of Medicine of Chicago, April 26. His subject will be "Virus Diseases of the Central Nervous System: Their Extent and Mode of Infection."

General Practitioner's Night.—"Acute Coronary Thrombosis" will be the theme of the meeting of the Chicago Medical Society, designated "General Practitioner's Night," December 12. Speakers will be Drs. Laurence E. Hines, James G. Carr, Chauncey C. Maher, Don C. Sutton and Sidney Strauss. The society sponsored a lay educational program, December 5. Dr. William A. O'Brien, associate professor of preventive medicine and public health and pathology, University of Minnesota School of Medicine, Minneapolis, presented "The Story of Cancer" and Dr. Morris Fishbein, editor of THE JOURNAL, "Cancer Charlatans."

Society News.—Speakers before the Chicago Society of Internal Medicine, November 26, were Drs. Rudolph Schindler on "Gastroscopy—Present Status and Value in Diagnosis of Gastric Disease"; James G. Carr, "Clinical Experiences with a Derivative of Squill," and Joseph L. Miller, "Recent Advances in Our Knowledge of the Thyroid Gland."—At a meeting of the Chicago Laryngological and Otological Society, December 3, Dr. John Gordon Wilson presented "A New Approach to the Study of Otosclerosis"; Austin A. Hayden, "Otolologists and Leagues for the Hard of Hearing," and Miss Gertrude Torrey, "Application of Lip Reading to Cases of Progressive Deafness."

Conference on Birth Control.—A conference on the scientific, practical and ethical aspects of the Ogino-Knaus method of birth control will be held in the Cameo Room of the Morrison Hotel, December 10, at 8 o'clock, under the auspices of the Catholic Physicians' Guild of Chicago. The following program will be presented:

- Dr. Andrew C. Ivy, professor of physiology, Northwestern University Medical School, The
 Dr. Arthur G. Miller, director of the Mill an
 illustrated demonstration of the validity of the Ogino-Knaus method from 154 clinical cases.
 Rev. John A. O'Brien, professor in the Newman Foundation and chaplain of the Catholic students, University of Illinois, Lawful Birth Control in Harmony with Science and Ethics.

Participating in the formal discussion will be

- Dr. Anton J. Carlson, chairman, department of physiology, University of Chicago.
 Dr. Frederick H. Falls, professor of gynecology and obstetrics, University of Illinois College of Medicine.
 Dr. Mark T. Goldstone, chief of medical and surgical staffs, Wesley Memorial Hospital.
 Dr. N. Sproat Heaney, clinical professor of gynecology and obstetrics, Rush Medical College.
 Dr. Henry Schmitz, professor and head of the department of gynecology of Loyola University.
 Dr. Irving F. Stein, president, Chicago Gynecological Society.

An invitation is extended to members of the Chicago Medical Society and to out of town physicians and scientists interested in the problem of birth control.

IOWA

Executive Secretary Resigns.—Mrs. Dorothy C. McCarthy has resigned as executive secretary of the Iowa State Medical Society, effective November 1. Miss Dorothy M. Nelson has been named acting executive secretary. The position was created at the annual session of the state society in 1933, and Mrs. McCarthy was the first incumbent.

Society News.—Dr. Vernon C. David, Chicago, discussed pathology and treatment of some lesions of the colon and rectum before the Black Hawk County Medical Society in Waterloo, October 16.—Dr. Victor E. Levine, Omaha, discussed the classification and treatment of the anemias before the Cerro Gordo County Medical Society in Mason City, October 9.—Dr. Frederick J. Swift, Des Moines, of the state health department, addressed the Clinton County Medical Society, November 1, on public health activities.—The Dallas-Guthrie Medical Society was addressed in Panora, October 18, among others, by Dr. Percival B. Glew, Dallas Center, on "Salivary Calculi."—Dr. Nathaniel G. Alcock spoke before the Johnson County Medical Society in Iowa City, October 3, on transurethral prostatic resection.—A symposium on sanitation was presented before the Marion County Medical Society in Pella, October 12, by Dr. Carl Aschenbrenner, C. J. Scott, D.V.M., and T. G. Fultz, D.V.M.—Dr. Clinton E. Harris, Woodmen, Colo., addressed the Poweshiek County Medical Society in Grinnell, October 10, on tumors of the chest.

MASSACHUSETTS

Collection of Photographs of Ophthalmologists.—A collection of photographs begun by the late Dr. Lucien Howe forms the nucleus of a gallery now being assembled at the Howe Laboratory of Ophthalmology, Boston, under the direction of Mrs. Howe. A large part of the collection are photographs of the chairmen of the Section on Ophthalmology of the American Medical Association. This group of fifty-three photographs, most of which are autographed, were collected by Dr. George S. Derby and, following his death, in compliance with his wish, were given to the laboratory. The founders of the American Ophthalmological Society, Drs. Freeman J. Bumstead, Hasket Derby and Henry D. Noyes, constitute a second group. Included also are photographs of Drs. Edward Reynolds and John Jeffries, who established the Massachusetts Eye and Ear Infirmary in 1824; Dr. Elisha North, founder in 1817 of the New London Eye Infirmary, the first institution of its kind in the United States; Drs. Edward Delafield and John K. Rodgers, founders of the New York Eye Infirmary in 1820; Dr. Philip Syng Physick, who established the Pennsylvania Infirmary for Diseases of the Eye and Ear in 1822; Dr. George McClellan, founder of the Institution for Diseases of the Eye and Ear in Philadelphia, 1821, and Dr. Edward L. Holmes, one of the founders of the Illinois Charitable Eye and Ear Infirmary in 1858. Eleven countries are represented in the collection of 125 photographs, but there is as yet no grouping on that basis. Dr. Howe died in Belmont in 1928. He was chairman of the Section on Ophthalmology of the American Medical Association, 1895-1896; emeritus professor of ophthalmology, University of Buffalo School of Medicine, and past president of the American Ophthalmological Society. He was responsible for the so-called Howe Law in 1890, which was the first law for the prevention of ophthalmia neonatorum by providing for the use of prophylactic drops in infant's eyes. In 1926 he gave \$250,000 to Harvard University to establish the Howe Laboratory of Ophthalmology, of which he was the director. He was awarded the Leslie Dana Gold Medal in 1927.

MINNESOTA

Cosmetician's Claims Unwarranted.—The state board of medical examiners has warned Mrs. Ella Graham, Maple Lake, that she must refrain from representing herself as a skin specialist. Mrs. Graham has been traveling about the state taking orders for cosmetics, and an investigation was made following her visit to Anoka, where she is said to have represented herself as a skin specialist.

Society News.—Speakers before the Minnesota Academy of Medicine, November 14, were Drs. Frank E. Burch, St. Paul, and Martin Nordland, Minneapolis, on "Surgical Treatment of Retinal Detachment" and "Hyperthyroidism in Children," respectively.—Speakers before the Clay-Becker County Medical Society at Lake Park, November 2, were Drs. Jay Arthur Myers, "Diagnosis, Treatment and Prevention of Tuberculosis"; Harold S. Diehl, "The Common Cold," and Ralph V. Ellis, "Diagnosis and Treatment of Hay Fever."—At a meeting of the Hennepin County Medical Society, November 5, Drs. Rev-

ben A. Johnson and Hobart A. Reimann discussed "Micrococcus Tetragenus Infection" and "Recent Advances in the Specific Therapy of Pneumonia," respectively. Dr. Thomas M. Rivers, New York, addressed the society, November 21, on encephalitis.

MISSOURI

Fifty Years in Practice.—Twenty-six members of the St. Louis Medical Society were honored at a meeting, November 27, in commemoration of the completion of fifty years or more in the practice of medicine. Rabbi Julius Gordon was the speaker; the title of his talk was "A Minister Looks at Medicine." The guests of honor were:

Carl Berek	George A. Humpert
Louis C. Boisliniere	Bransford Lewis
Henry S. Brookes	Heine Marks
James A. Dickson	Fred W. Patton
Meyer J. Epstein	Anand N. Ravold
William A. Fries	Francis L. Reder
Francis R. Fry	Henry Schwarz
Joseph Grindon	George N. Seidlitz
Moses E. Haase	Max C. Starkloff
Willis Hall	Paul F. Vasterling
Eugene F. Hauck, Clayton	John W. Vaughan
Louis Hauck	Benjamin A. Wilkes, Los Angeles
Moses W. Hoge	Henry L. Wolfner

NEW YORK

Society News.—Dr. William A. Sawyer, Rochester, was elected president of the Tuberculosis and Health Association of Rochester and Monroe County at a meeting, October 24. Philip P. Jacobs, Ph.D., of the staff of the National Tuberculosis Association, New York, conducted a tuberculosis institute the same day under the auspices of the county, state and national organizations, with the cooperation of Rochester health and social agencies.

New York City

The Sir Robert Jones Lecture.—Dr. Philip D. Wilson, surgical director of the Hospital for Ruptured and Crippled, delivered the fifth Sir Robert Jones Lecture at the Hospital for Joint Diseases, December 6, entitled "What Can Orthopedic Surgery Do for the Arthritic Cripple?"

Study of Appendicitis.—At a combined meeting of the section on medicine and surgery of the New York Academy of Medicine, December 7, Dr. Shepard Krech made a report on a two years study of acute appendicitis, conducted at the request of the academy in fourteen hospitals. The operative mortality of acute appendicitis was found to be 7 per cent in 1921 and the same in 1931. At a recent meeting of the academy, it was voted that the committee on public health relations make a further study along the lines of the recent study of maternal mortality.

Professor Urey Receives Nobel Prize in Chemistry.—Harold C. Urey, Ph.D., associate professor of chemistry, Columbia University, has been honored with the Nobel prize in chemistry for 1934 for his discovery of double weight hydrogen. Dr. Urey, a native of Indiana, took his baccalaureate degree in zoology at the University of Montana and his advanced degree in chemistry at the University of California in 1923. He is the editor of the *Journal of Chemical Physics* and co-author of "Atoms, Molecules and Quanta." Dr. Urey last April received the Willard Gibbs Medal of the Chicago section of the American Chemical Society.

Applicants for Free Medical Services.—More than 2,000 names of persons seeking free or partly free health and welfare services were cleared each day through the Social Service Exchange during the fiscal year from Oct. 1, 1933, to Oct. 1, 1934, according to the annual report. The total number of names cleared during the year was 634,984, as compared with 712,428 for the corresponding period of 1932-1933. Almost half the number, 328,967, were known to one or more social agencies in the city. The exchange is a cooperative activity carried on under the auspices of the Welfare Council for more than 500 health and welfare organizations in order to make their services quickly available.

Hospitals Protest Taxation.—The nonmunicipal hospitals of New York have suffered severe hardship through new state and federal statutes that impose indirect taxes, the Hospital Information and Service Bureau asserted in its annual report to the United Hospital Fund. All voluntary hospitals were compelled to pay the sales tax, which was put into effect in New York May 1, 1933. They must also pay processing taxes on cotton, wheat, corn, pork products and certain paper products, but they are entitled to a refund on the percentage of goods that is used exclusively for the care of the poor. Other problems that beset the hospitals in their efforts to lower maintenance costs are lack of relief funds to help defray cost of free care, underpayment by the city for public charges, and

the proposed eight hour day for nurses. Nine convalescent homes were forced to close during the past year, depriving the city of 305 beds, the bureau reported. Dr. Charles Gordon Heyd is chairman of the hospital information bureau and E. H. Lewinski-Corwin, Ph.D., is director. The United Hospital Fund opened its annual campaign for funds, November 26. It seeks to raise \$500,000.

OREGON

Society News.—The Polk-Marion-Yamhill Counties and Central Willamette medical societies held a joint meeting at Newport, September 22, at which the following scientific program was presented: Drs. James C. Masson, Rochester, Minn., on "Use of Living Sutures in the More Difficult Abdominal Hernias" and "Malignancy of the Large Bowel"; John M. Blackford, Seattle, "Hypertension"; Hale A. Haven, Seattle, "Surgical Relief of Pain," and Albert W. Holman, Portland, "Nephritis."

Guest Home for Psychoneurotic Patients.—Announcement is made of the opening in Portland of the Northwest Retreat, a guest home for convalescent or psychoneurotic persons, under the direction of Dr. James L. McCartney, until recently psychiatrist on the staff of the New York State Department of Corrections. Preference will be given to persons in a cooperative state in which a favorable result may be expected. The Retreat will be conducted as a private residence. Persons interested in the understanding of psychiatry and mental hygiene are invited to attend an open house every Friday afternoon followed by a seminar period.

PENNSYLVANIA

Society News.—Drs. Charles D. Ambrose, Ligonier, and Robert C. Johnston, New Kensington, addressed the Beaver County Medical Society, October 11, at Rochester, on "Endocrine Infantilism" and "Acute Intestinal Obstruction—Diagnosis and Treatment," respectively. Drs. Ethel F. Buchman and Lucy Etta B. Vaughn of the staff of the Allentown State Hospital addressed the Lehigh County Medical Society, October 9, on "Manic Depressive Psychosis" and "Involutional Melancholia," respectively. Dr. Sidney A. Chalfant, Pittsburgh, addressed the Erie County Medical Society, Erie, November 6, on diagnosis and treatment of uterine cancer.

Philadelphia

Mütter Lecture.—Dr. Charles H. Frazier, John Rhea Barton professor of surgery, University of Pennsylvania School of Medicine, delivered the Mütter Lecture of the College of Physicians of Philadelphia, December 5; his subject was "A Review, Clinical and Pathological, of Parapituitary Lesions."

Conference on Cancer Research.—The woman's auxiliary of the Lankenau Hospital Research Institute for the Promotion of Cancer Research sponsored its second annual conference, November 20, at the New Century Club. Dr. James B. Murphy of the Rockefeller Institute for Medical Research, New York, made an address on "Ideas and Ideals in Cancer Research"; Dr. Stanley P. Reimann, director of the Lankenau Hospital clinical laboratory, on "Current Events in Cancer Research," and Mrs. Lewis R. Dick, vice president of the auxiliary, "The 'Active Principle' in Cancer Research." In the afternoon a visit to the institute was scheduled, with an exhibition of apparatus, materials and methods and a motion picture showing behavior of living cells as special features.

Society News.—Speakers at a meeting of the Northern Medical Association of Philadelphia, November 19, were Drs. Abram H. Persky, on "The Tonsils and Their Role in Focal Infection"; Herman W. Ostrum, "Precordial Pain—The Etiology as Revealed by X-Ray Study," and Michael G. Wohl, "Renal and Extrarenal Coma." Dr. Meredith F. Campbell, New York, addressed the Philadelphia Urological Society, November 26, on "Bladder Outlet Obstruction in Infants and Children." At a meeting of the Eastern Pennsylvania chapter of the Society of American Bacteriologists, November 27, speakers included Drs. John A. Kolmer, on "A New Antigen for the Wassermann Test," and Ralph M. Tyson and Donald F. Lyle, "Infantile Diarrhea Due to B. Pyocyaneus."

RHODE ISLAND

Hospital News.—Dr. George Levene, Boston, gave an address at the State Hospital for Mental Diseases, Howard, on "Roentgenological Evidence of Cranial Dysplasias of Pituitary Origin." Dr. Joannes G. Dussier de Barenne, Sterling professor of physiology in the Yale University School of Medicine, New Haven, delivered an address, November 20, on "Recent Studies on Laminar Corticology."

TENNESSEE

University News.—Col. Fielding H. Garrison, librarian of the William H. Welch Memorial Library at Johns Hopkins University, addressed the faculty and students of Vanderbilt University School of Medicine, October 18, on "Life as an Occupational Disease."

Personal.—Dr. Cecil B. Tucker, Knoxville, has been appointed director of a recently organized health district made up of Anderson and Campbell counties. Dr. Fray O. Pearson, Alexandria, succeeded Dr. Tucker on the staff of the Knoxville health department. Another district has been organized to include Carter and Unicoi counties, with Dr. Russell B. Howard, Elizabethton, in charge and Dr. Bernard W. Patton, Memphis, as assistant in charge of Unicoi County, with headquarters in Erwin.

VIRGINIA

Professor Appointed.—Dr. Frederick B. Mandeville, director of the roentgenologic laboratory at Peralta Hospital, Oakland, Calif., for the past three years, has been appointed professor of roentgenology at the Medical College of Virginia, Richmond. He will also be full time roentgenologist to the hospitals operated by the college. Dr. Mandeville succeeds Dr. Daniel D. Talley Jr., who had served since the death of Dr. Alfred L. Gray, giving as much time as his private practice permitted.

University News.—Dr. Paul B. Barringer, University, is sponsoring a plan to place a marker on the home where Dr. Walter Reed lived while he was a student at the University of Virginia. The fourteenth postgraduate clinic at the University of Virginia Hospital was held November 16 in cooperation with the department of clinical education of the Medical Society of Virginia. Among the features were discussions of agranulocytosis by Dr. Henry B. Mulholland, laboratory diagnosis of anemia by Dr. William E. Bray and appendicitis in children by Dr. William H. Goodwin. Dr. Maximilian Ehrenstein, formerly lecturer in pharmacologic chemistry at the University of Berlin, has accepted a fellowship in physiology at the university for the current session to engage in investigations on the suprarenal glands.

GENERAL

Automobile Accidents Increase 16 Per Cent.—Approximately 28,400 persons were killed and 740,000 injured in automobile accidents during the first ten months of this year, according to figures compiled by the Travelers Insurance Company, Hartford, Conn. The number of deaths is an increase of 16 per cent over the number for the same period of last year, a fact which indicates that the full number for the year will reach an all-time record. The previous record was in 1931, when more than 33,000 were killed. Pedestrians were the victims in 48 per cent of the cases, as against 45 per cent for the whole of last year. August was the only month to show a decrease compared to the corresponding month of last year. Among states that reported through September, decreases occurred in Connecticut, Maine, New Hampshire and New Jersey. Available records show that there has been a gain of 24 per cent in the number of drivers who were declared intoxicated and a gain of more than 55 per cent among pedestrians declared intoxicated.

Society News.—Dr. Hermon Marshall Taylor, Jacksonville, Fla., was elected president of the Southern Medical Association at the annual meeting in San Antonio, Texas, November 13-16. Drs. Samuel Orr Black, Spartanburg, S. C., and John Manning Venable, San Antonio, were elected vice presidents. The next annual session will be held in St. Louis. At the annual meeting of the United States Live Stock Sanitary Association at the Hotel La Salle, Chicago, Dr. Paul B. Brooks, deputy health commissioner of New York, Albany, discussed milk-borne infections and Dr. Henry D. Chadwick, state health commissioner of Massachusetts, incidence of tuberculosis in school children. Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, was unanimously reelected director general of the Pan-American Sanitary Office, and Dr. Justo F. Gonzalez, Uruguay, is secretary. Dr. Jorge Bejarano, Colombia, was elected organizing president for the tenth Pan-American Sanitary Conference, which will be held in Bogota, Colombia, in 1938. The 1935 conference of the American Federation of Organizations for the Hard of Hearing will be held in Cincinnati, June 2-6.

Fellowships in Physiology.—Four fellowships of \$250 each, to be awarded for the fifteenth International Physiological Congress in Leningrad-Moscow in 1935, are announced by the Federation of American Societies for Experimental Biology.

One fellowship will be awarded in each of the branches of biologic science represented by the four constituent societies of the federation; namely, the American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics and American Society for Experimental Pathology. Each candidate, who does not have to be a member of the federation, must be recommended by some member of the society representing the field of study or some other person familiar with the candidate's work. Candidates must be under 35 years of age and must not have attained professorial rank or its equivalent, and each must present with his application a draft of a meritorious paper to be presented at the congress. Applications must be made before Jan. 15, 1935, to the secretary of the society which includes the field of study. Secretaries are: for physiology, Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn.; for biologic chemistry, Henry A. Mattill, Ph.D., State University of Iowa, Iowa City; for pharmacology and experimental therapeutics, Dr. Eugene M. K. Geiling, Johns Hopkins University School of Medicine, Baltimore, and for experimental pathology, Dr. Shields Warren, Palmer Memorial Hospital, Boston.

Look Out for Thomas Henry Robinson Jr.—The Division of Investigation of the U. S. Department of Justice reports that Thomas Henry Robinson Jr. is being sought in

connection with the kidnaping of Louisville, Ky., October 10, of Mrs. Alice Speed Stoll. This man has been receiving treatment for syphilis and is said to have "difficulty of a rheumatic nature with his feet." He has also been receiving treatment for "eye trouble." Robinson is 22 years old, is 6 feet tall, weighs about 149 pounds and is of slender build, with black hair, gray eyes and fair complexion. The photograph here reproduced was taken in June 1929. The Division of Investigation, U. S. Department of Justice, Washington, D. C., requests that any physician who comes into possession of any information concerning the whereabouts of



Thomas Henry Robinson Jr. notify it or the special agent in charge of the office of the division in the nearest large city in the state.

Change in Status of Licensure.—The state board of medical education and licensure of Pennsylvania at a meeting, October 18, took the following action:

License of Dr. Eugene Julius Hamborszky, Farrell, indefinitely suspended because of conviction on charges of narcotic violation and addiction.

License of Dr. A. F. P. Huston, Pittsburgh, which was suspended in June, restored with full rights to practice.

The Idaho Department of Law Enforcement reports the following:

Dr. Floyd A. Benjamin, Emmett, license suspended, August 14, for violation of the Harrison Narcotic Act.

The Maryland Board of Medical Examiners reports the following:

Dr. Benjamin H. Smart, North Beach, Md., license revoked, recently, because his license to practice in the District of Columbia had been revoked for a crime involving moral turpitude.

The California State Board of Medical Examiners announces the following:

Dr. Thomas Oliver Greig, Berkeley, license revoked, October 17, for violations of the terms of his probation imposed, Oct. 22, 1930, which prohibits his using or possessing alcohol.

Dr. Robert Vivian Baker, Avalon, license revoked, October 16, based on narcotic charges.

Dr. John R. U. Campbell, Dunsmuir, placed on probation for five years, October 16, during which time he shall not have nor apply for a narcotic permit or have narcotics in his possession.

Dr. Rudolph F. Rohling, Los Angeles, license restored, October 16; placed on probation for five years.

Dr. Roy F. Ruth, Los Angeles, license restored, October 17, placed on probation for five years without narcotic permit or privileges.

Dr. Arthur N. Nelson, Los Angeles, placed on five years' probation without narcotic permit or possession.

Dr. John Marshall Robinson, Los Angeles, placed on probation for five years, October 17, without narcotic privileges.

The Illinois State Department of Registration and Examination reports the following:

Dr. Jessie Abigail Shipley Traxler, Chicago, license revoked, November 3, for violation of the Harrison Narcotic Act; she is now in the federal industrial institution for women at Alderson, W. Va.

Geographic Distribution of Mortality.—A study of standardized death rates in individual states, recently published in the *Statistical Bulletin* of the Metropolitan Life Insurance Company, shows that North and South Dakota have the lowest mortality of any states, 7.9 and 7.6 per thousand, respectively. Next come a group of states with rates between 8 and 9, six in the Middle West: Nebraska, Kansas, Oklahoma, Minnesota, Iowa and Wisconsin, and three in the Northwest: Washington, Oregon and Idaho. The next range of death rates, from 9 to 10, is found in California, Wyoming, Montana, Utah in the West; Michigan, Indiana, Ohio, Kentucky, Missouri, Arkansas and Mississippi in the central part; Florida in the South, and Vermont, New Hampshire and Connecticut in the East. States with a rate from 10 to 11 include Maine, Massachusetts, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, North and South Carolina, Georgia, Tennessee, Alabama, Louisiana and Illinois. The highest mortalities are found in Colorado and Nevada, with rates between 11 and 12, and in Arizona and New Mexico, more than 12. The high rates in these four states are probably due to the large proportion of Mexicans, among whom death rates are higher than among Americans, and to the influx of persons suffering from tuberculosis, the bulletin points out. In the Dakotas a favorable climate and the relatively safe and comfortable life on farms and in small towns combine to keep the inhabitants well, it was said. Reliable data were not available for Texas for the period considered in this study, 1929-1931.

Government Services

Changes in Public Health Service

Passed Asst. Surg. Frederick P. Burow, relieved at Ellis Island, N. Y., and assigned at Hamburg, Germany, in connection with the examination of aliens.

Passed Asst. Surg. Ivan W. Steele, relieved at Hamburg, and assigned at the American Consulate, Berlin, Germany.

Dr. Arthur B. Price, appointed and commissioned as assistant surgeon.

Asst. Surg. Henry L. Wollenweber, relieved at San Francisco and assigned at the National Institute of Health, Washington, D. C.

Warning About Cinchophen and Amidopyrine

The Food and Drug Administration has issued a warning to the public to be wary of cinchophen and amidopyrine, which are frequently used in remedies advertised for rheumatism and neuralgia. The statement pointed out that serious poisoning from these drugs develops insidiously, cinchophen causing degeneration of the liver cells and amidopyrine destruction of white blood cells. These drugs are not included in the list of those which the law requires manufacturers to declare on their labels, because cinchophen was unknown when the law was passed and the dangerous effects of amidopyrine had not been recognized. The administration urged buyers to look for declarations of the presence of the two drugs on labels or to write to Washington for information in case of doubt.

School for Children with Trachoma

A "trachoma school" has been opened on the Fort Apache Reservation in Arizona, in which about 300 children with trachoma will be placed under treatment. The school, which occupies a former boarding school, will be under the immediate direction of Dr. James C. Hancock, under the general supervision of Dr. Polk Richards, medical director of trachoma activities. Other such schools will be established later in areas where trachoma is a menace, according to an announcement by John Collier, commissioner of Indian Affairs.

CORRECTION

Carbon Tetrachloride as an Industrial Hazard.—In his article as printed in *THE JOURNAL*, September 29, page 962, Dr. Paul A. Davis wishes to make the following corrections: Under experimental data, 113,347.5 should read 113,311.47. In experiment 1, 126 should read 116. In experiment 2, 63 should read 58, 0.0076 should read 0.0079, and 76 should read 79. In experiment 4, 252 should read 232. In experiment 5, 0.1191 should read 0.1264, 1,008 should read 928, and 1,191 should read 1,264. In experiment 6, gram should read grain, 0.2382 should read 0.2370, and 1,890 should read 1,740. In experiment 8, 1134 pounds should read 2134 pounds, 0.234 should read 0.00435, and 0.37 should read 0.0069.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 10, 1934.

The Undiminishing Maternity Mortality

While the general death rate and the infantile death rate have been greatly reduced in recent years, the maternal death rate shows no diminution. The Ministry of Health has issued a circular to the local authorities saying that, in spite of what has been done in the past three years to improve and develop maternity services, the maternity mortality has not yet begun to fall. The minister recognizes that it could not be expected that the full effect of the measures which have been taken would so soon be reflected in the mortality statistics. At the same time he finds that there are still many areas in which the maternity service is neither complete nor satisfactory and that there are few, if any, in which there is not scope for further improvement. In all areas there is probably need for more intensive effort to educate women as to the importance of antepartum supervision and to persuade them to use the facilities provided for the purpose. The minister has on more than one occasion expressed the view that there is a clear case for development of the maternity service on urgent grounds of public health, and he considers that it would be true economy for each authority to do what is needed to provide a service that is both effective and comprehensive.

At a dinner of the British College of Obstetricians and Gynecologists, Mr. Baldwin, formerly prime minister, gave an assurance that the government wished the college well and had followed its work with interest. The college (which has only recently been established) hoped, he said, to do for obstetrics and gynecology what the College of Physicians was doing for medicine and the College of Surgeons for surgery. There was no doubt that, with all the work which had been done in regard to sanitation, housing and old age pensions, the whole question of child welfare and maternal mortality had come into the national picture in a way that it had never done before. The country did not realize that, while during the present century the general death rate had been reduced by about one third, tuberculosis had been reduced by an equal amount, and infant mortality by nearly one half, the maternal death rate was slightly increasing. It had been shown that half of the maternal deaths in Great Britain were preventable. That was a terrible indictment. It was extraordinary that the country had for so long taken these deaths, like accidents on the road, as a matter of course. They were in fact a reflection on the intelligence of the people and on humanity. There was also the suffering in later life from neglected childbirth. He had been told that, if the women received proper attention before and during childbirth and for a short time afterward, the number occupying women's wards in hospitals would be reduced by one half. Was there some factor to account for the high mortality which had hitherto escaped their vigilance? Could they not achieve closer working with the Medical Research Council? In reply, the chairman, Dr. J. S. Fairbairn, spoke of the work which the college had begun in conjunction with the National Birth Day Trust Fund in arranging a clinical investigation to alleviate the pains of childbirth among women attended only by midwives.

A meeting of more than 1,000 women was held at the Friends House, London, arranged by the Maternal Mortality Committee, whose report criticized the way in which local authorities were neglecting to make full use of the Maternity and Child Welfare Act and stated that the act was inadequate to deal with the present situation. Lady Denman, who presided,

read a telegram from Lord Horder suggesting that more attention should be paid to the question of the fitness of women to bear children and less to the competence of physicians and nurses. Mrs. Barton, of the Women's Cooperative Guild, moved a resolution stating that the conference was deeply impressed by the reports of malnutrition among married women, especially in areas of prolonged unemployment. Mrs. Frankenburg, a midwife, seconded the resolution but called attention to the fact that malnutrition was not the only cause of high maternal mortality, for statistics showed that the death rate was higher in the west end than in the east end of London. This important statement aroused a display of indignation from the socialistic audience bent on emphasizing malnutrition. Mrs. Frankenburg also caused indignation by saying that women needed education in what was the correct diet. There was too much preference for the tasty can of salmon compared with eggs and milk. Mrs. Sutherland, chief woman officer of the Labor Party, objected to these remarks and said that the can and the can opener were the only labor-saving devices within the reach of the working class woman. Lady Barrett, gynecologist of the London School of Medicine for Women, suggested that the best way to deal with malnutrition was to have a dining room for nursing mothers run in connection with antepartum clinics. The resolution was carried unanimously, as well as others to the effect that allowances should be paid in all maternity cases on the lines of national health insurance, that all local authorities should provide a complete gynecologic service, which would include advice on birth control, and that the minister of health and the British Medical Association should be asked to receive a deputation urging the wider provision of midwifery services and the fuller maintenance and development of child welfare and maternity services. With regard to malnutrition, there is, as the *Times* points out, the great difficulty of defining the condition. Sir F. Gowland Hopkins has said that the nutrition of every race is and has been imperfect.

The Change in Hospital Finance

Addressing the section of Odontology of the Birmingham Medical Institute, Prof. Leonard Gamgee described the great changes in hospital finance which have come about. Less than twenty years ago the voluntary hospitals were supported by endowments and subscriptions, and in some places, as in Birmingham, by workmen's contributions. But the great point was that no patient was ever charged a cent. Now almost every patient is charged a maintenance fee and the hospitals are supported in increasing degree by the cooperative contributions of the class from which the patients are drawn. The distinction between the voluntary and the municipal hospital is that the former is still not supported by the taxes. It is now realized that small contributions from wage earners and others can run hospitals, which are no longer primarily institutions for the treatment of the sick poor but for the treatment of subscribers to contributory systems, the majority of whom could not pay for treatment outside. Would physicians give the same honorary service to a cooperative insurance system as they were willing to give to a pure charity? Mr. Gamgee's answer was that he was glad that the time for making that decision did not come when he was doing active hospital work.

Control of the Sale of the Barbiturates

The tightening up of the regulations governing the sale of sleeping tablets has been strongly advocated by Sir William Willcox, the government toxicologist, and has been under the consideration of the official poisons board. He holds that the barbiturates should be obtainable only on a physician's prescription, that the pharmacist should retain the prescription, and that in no case should a fatal dose be supplied. But other

physicians think that the danger is exaggerated and do not agree with all these proposals. While the barbiturates, which are now obtainable from a pharmacist without any formality, should be supplied only on a physician's order, they hold it to be impracticable for a prescription to be obtained for every dose. Also, unless the prescription is endorsed "not to be repeated," it is the property of the patient. This raises the difficulty that the same prescription can be produced at any number of pharmacists' shops and an addict can thus obtain as much of the drug as he wants.

Children Taught to Wear Gas Masks

The possibility of another war is a common topic and among the horrors depicted are air attacks on cities, in which poison gas will play a part. It is stated that the war office is about to issue instructions to the civilian population as to their action in case of air attacks. Forty children have actually been taught how to wear gas masks in a mimic gas attack to which fireworks, a smoke screen made by smoke bombs, marked "gas zones," nurses and stretchers gave a touch of realism. The demonstration was held on Peckham Rye, one of London's open spaces. Those who took part in it were members of the British Red Cross Society and children of members. Commandant A. E. Skinner of the society showed the children, with the aid of a blackboard, how to wear the masks. Parents were invited to the demonstration, the idea of which was to train the children in discipline in the event of a real gas attack, and in the necessity and urgency of respiration. Oxygen cylinders were available.

Subsequently the British Red Cross Society repudiated responsibility for the demonstration. It understood that the press wanted to see how voluntary aid detachments were trained and were willing for this to take place. But the society gave no authority whatever for children to take part in a mimic gas attack. The society has nothing whatever to do with the training of children. It is contrary to its policy and this demonstration had nothing whatever to do with the society.

PARIS

(From Our Regular Correspondent)

Nov. 26, 1934.

A Bill to Limit the Number of Medical Students

Prof. George Portmann of Bordeaux has just submitted a bill, in his capacity as senator, which will be discussed this fall before the senate and the house of representatives. The proposed law will greatly limit the number of medical students, which has increased from 8,182 in 1929 to 10,338 in 1933. The number of graduates in 1930 was 1,076 and in 1933 it rose to 1,397. The ratio of the number of physicians in France to the population is 1 to 1,645. In Paris alone there is one physician to 630 civilians.

Germany has recently decided to limit the number of students in the universities to 15,000 instead of 25,000 as in 1933. This would appear to be too radical a limitation in the case of France.

Efforts have already been made by the various French medical schools to cut down the number of students. Instead of oral examinations, which are often unfair to the student, a system of written examinations is being introduced. So far it has been limited to the first two of the six years medical course. Only recently the number of years required has been changed from five to six. Many complaints have been received as to the laxity of the method of examinations, but an effort is being made to meet this just criticism. Professor Portmann believes that all these measures are inadequate, and, in view especially of present economic conditions, some corrective measures are imperative.

At the present time a medical student must have passed examinations equivalent to at least the first two years of the college courses given in the majority of the American universities. The Bachelor of Arts degree requires only two years of study at the French lycées or colleges, but the number of required courses is more than equivalent to the first two years of the American college courses. This degree is required before a student can enter the medical school. After entering, there is an obligatory preliminary year devoted to physics, biology and chemistry. These courses are not given at the medical school proper.

The new law proposes to have a committee composed of the heads of the departments of war, navy, colonies and education. These shall determine the number of medical students needed each year. If they decide, for example, that the number should be 1,000 for a given year, the 1,500 students receiving the best examination averages at the end of the preliminary medical year (physics, biology and chemistry courses) shall be permitted to enter the first year of the medical course. The 1,000 students (of the original 1,500) receiving the highest averages in the preliminary (basic sciences) year shall be permitted to enter the first medical school year.

In 1900 there were 16,815 physicians in France itself, and in 1928 this number had risen to 27,000, whereas there was an increase in population of only two million. The University of Paris medical school alone has more than 4,000 students, all under the supervision of a single faculty.

Is Social Insurance a Success?

In the November 14 issue of the *Concours médical*, a very instructive article by Dr. P. Dally gives some statistical data that will be of value in the evaluation of proposed legislation in the United States to establish sickness insurance under state or national supervision. When Bismarck in 1886 proposed such a law in Germany, his object was to neutralize the rapidly growing Socialist party, which demanded higher wages rather than compensation for illness. Laws of the latter kind have never been popular with the working classes, and even less so with the medical profession. According to Dally, such legislation was due to political considerations that aimed primarily to distribute public funds to the masses. The care of the sick was a secondary consideration. None of these laws had as their object public health in the larger sense; that is, no efforts were made in the direction of preventive measures. This seems rather paradoxical when one recalls that such efforts would have only resulted in a decrease in the amount of money needed to carry out the laws and thus, in the final analysis, have lightened the burden of those who were contributors and beneficiaries of the fund. These laws, especially in countries like Germany and Austria, where they were first employed, are still in an experimental stage, as evidenced by the constant changes that are being made, as the result of the demands of the employer and the employee.

A vital error lies in the fact that these laws attempt to solve an intangible question of morals such as the reciprocal relation of patient and physician. The insured worker in many instances tries to get back the money he has paid by malingering, by exaggeration of the time needed to recuperate and by dissatisfaction with the percentage of his invalidity which has been decided on by the medical examiners. Kirschner, a German surgeon of international reputation, says "Our country is like a huge hospital, a community of invalids, where every individual tries to grab as much as possible out of the big indemnity bag into which he pours his contributions." One out of every seven persons is a beneficiary of the sick relief funds, in Germany. There have been as many officials to administer these funds as beneficiaries in Germany. This is already the complaint in France, even though the law is only four years

old. In countries where insurance against illness was optional, it has become obligatory. Where formerly there was only a patient and a physician, the decisions of the latter are subject to supervision by a medical government employee. There is constant friction in countries where there is obligatory sickness insurance. In Austria the law has been modified twenty-eight times since its passage in 1887.

This conflict will cease perhaps, some day, when the national insurance agencies have at their disposal a corps of medical government officials who devote their entire time to the care of the assured. There will be no further conflict, because there will no longer exist a medical profession in the present interpretation of the words. A better method, perhaps, of utilization of the large funds of these state insurance departments would be to create large diagnostic centers and hospitals, which would permit better care to be given to the worker. Some efforts are being made in this direction.

There are few countries in which the medical profession has neither been consulted in the passage of legislation for sickness insurance, nor even consulted from time to time in the management of the departments. This is certainly true of France.

Neither the assured nor the medical profession is satisfied with social insurance laws. Among nineteen countries of Europe this is the opinion in all except Bulgaria, Denmark, France and Holland. In Yugoslavia the insured is satisfied, but not the medical profession. Some very instructive tables accompany the article of Dally, from which some data are as follows:

Free choice of physicians: Yes in Bulgaria, France, Great Britain, Holland, Norway, Sweden and Switzerland. No in Germany, Esthonia, Hungary, Latvia, Poland, Czechoslovakia, Yugoslavia and the city of Vienna.

Who is obliged to be insured? In Germany, every worker earning less than \$900, in France all less than \$1,100, in Great Britain all less than \$1,200 and also all manual workers. In Germany, this means nearly one third, in France about one fifth and in Great Britain about two fifths of the total number of inhabitants.

If those who have charge of social insurance would not neglect to utilize the vast funds at their disposal in greater efforts to prevent disease, much good could be accomplished, is the conclusion of Dr. Dally.

VIENNA

(From Our Regular Correspondent)

Oct. 23, 1934.

The Tenth Convention of Physicians of the Alpine Region

The tenth annual meeting of physicians in the region of the Alps was held in Graz, October 8-10. More than 400 of the leading physicians from Austria, Switzerland and Italy attended. Under the chairmanship of Prof. Dr. Wittek of Graz a memorial tablet in honor of the deceased surgeon Prof. Hacker was unveiled. The first subject discussed was the problem of thrombosis and embolism. Because of the illness of Prof. Dr. Maresch, chief pathologist of the Vienna General Hospital, the paper was read by his assistant Dr. Feller. He emphasized that the nature of this dangerous disorder has not yet been fully explained. The assertion that this condition has enormously increased was investigated on the basis of 70,000 post-mortem reports. The assertion proved to be greatly exaggerated. "Compared to the prewar period, only a slight increase could be ascertained." Professor Maresch assumes that this increase is caused by the "over aging" of the population; that is, the relative and absolute increase in the higher age groups as the result of the decrease in the birth rate and an increase in the longevity. He also emphasized the relation of the dis-

order to meteorological factors. In cooperation with the director of the Central Meteorological Institute in Vienna, it could be established by exact analysis of all the characteristics of the weather that there is a connection between the incidence of the disorder and abnormal temperatures and barometric conditions, particularly in regions with damp and hot sea winds.

The treatment and clinical aspects of embolism and thrombosis was discussed by the Viennese clinicians Eppinger as internist and Ranzi as surgeon. The first speaker discussed the etiology. The development is especially likely during prolonged rest in bed, after operations, bone fractures and deliveries. All these conditions involve injuries of the tissues, which produce changes in the blood vessels, which in turn favor the development of thrombi. For this reason, attempts should be made to accelerate the circulation. Great stress has been placed in recent years also on the treatment that employs exercises and aims to shorten the patient's rest in bed as much as possible. Massage of the extremities has been recommended particularly after operations. The surgical aspects were discussed by Professor Ranzi and Professor Denk, and especial attention was called to the significance of previous operations. Getting out of bed early after operations is to be recommended whenever possible, particularly in patients over 45 years of age.

After that, the hygiene of large cities was discussed. Dr. Gegenbauer, chief of the health department of the city of Vienna, reported on the sources of infection of abdominal typhoid.

Prof. Dr. Hamburger of Vienna spoke on the significance of the formation of habits in clinical pathology. He showed that on the basis of certain habits that are formed during childhood (tic, vomiting, morbid sleepiness) there develop certain disorders, in the treatment of which psychic factors and suggestion play an important part.

Dr. Kauders of Baden, near Vienna, discussed "light diet," which is indicated in disturbances of the digestive tract, in renal diseases, in circulatory disturbances and in hormone disorders. It is possible that a light diet which is deficient in vitamins may lead to the development of scurvy-like conditions; also a hypersensitivity may develop to some of the constituents of the light diet (milk, eggs). The patient may develop urticaria, pruritus, transitory edema and even angina pectoris and gastric hemorrhage. Every restricted diet, whether a vegetable diet, raw diet, Gerson diet, salt-free diet (Noorden) or fat diet, requires careful adaptation to the individual case.

The causes and the treatment of anemia were discussed by Dr. Naegeli of Zurich. Modern diagnostic methods make possible a precise differential diagnosis and accordingly the prescription of iron and arsenic, of cod liver oil or of liver preparations; and in acute conditions blood transfusions.

Professor Schinz of Zurich, the chairman of the convention of roentgenologists in Switzerland, described his research on the roentgenologic diagnosis of diseases of the vertebral column. Roentgenoscopy reveals entirely new aspects in the case of tumors and of tuberculosis of the vertebrae. Accordingly, the treatment has made considerable progress in these conditions.

"Glandular fever," which in children was first described by Pfeiffer, was discussed by Professor Jagić of Vienna. In recent years this disorder has been observed also quite frequently in adults. The patients developed fever, also swelling of the glands in the region of the lower jaw, of the neck and of the axilla, splenic tumor and various changes in the blood picture somewhat like those in genuine forms of leukemia. The prognosis is generally favorable.

Professor Berger and Dr. Grill of Graz spoke on the artificial production of pernicious anemia in animals by prolonged poisoning with carbon monoxide gas. In a human case, in which the cause was recognized, cure was effected by the removal of the cause (poisoning with carbon monoxide of several years' duration) and by liver diet.

Prof. Dr. Hiess of Klagenfurt spoke on prophylaxis during pregnancy. He stressed the necessity of at least two examinations of the pregnant women before delivery. Tuberculosis and even malignant and benign tumors do not exclude a normal delivery, provided the prophylaxis has been adequate. Especial attention should be given to the "old primiparas," but the author has seen normal deliveries in women who were nearly 50 years old.

The calculation of the day of delivery was elucidated by docent Dr. Kraul. Nine months plus seven days after the last menstruation, the well known formula of Naegeli was taken as the basis in 22,000 cases within the last eight years in the First Women's Clinic of Vienna. It was found that this formula gave only an average duration. The opinion about "past term" infants, that is, the dependence of weight and length of the newborn on the duration of the pregnancy, could not be corroborated. The deviations from the calculated date of birth are due to differences in the constitution. The average duration of 266 days can be subject to considerable changes, between 258 and 297 days.

Organization of the Medical Profession of Austria on the Basis of the New Organization of the State

Since the political revolution in Austria in February 1934, the entire direction and constitution of the state have undergone fundamental changes. Austria is ruled on the basis of "estates" (corporate bodies) that correspond somewhat to the medieval crafts or guilds. Persons connected with sanitation in the future will be organized and united in two guilds, the "health guild" and the "physician's guild," in spite of the fact that certain formal connections may exist between the two as far as physicians are concerned. The "health guild" includes all private physicians, veterinarians, midwives and the personnel assisting the physicians. Excluded are all persons who are in public service, since these are already incorporated in the "official's guild." The representatives of this "health guild," who are to function in the councils (called Culture Council), in order to look out for the interests of this guild in legislation and in other governmental activities, are appointed (not elected) by the minister for social organization. The "physician's guild" itself is a professional organization in the "health guild." The organ of this physician's guild is the "physician's chamber" for professional and economic concerns. These chambers are divided into two sections (a) for the court of honor (medical ethics) and (b) for economic problems. The regional institutions of the physicians remain in existence as such but the state or provincial representations are to be given a unified "fuhrung" (leader). This "leader" is appointed and he is assisted by a council, the members of which at first are likewise appointed. On the whole, the principle of election, which formerly dominated everywhere, has been completely done away with, authority rules. However, it should be added here that all these regulations are only a transition to a "limited democracy." A (provisional) physician's "federal economic council" is to be created, the members of which are to be appointed by the government. The latter is to select men who appear suitable, but they must belong to the "fatherland front," which is considered the bearer of the political power in Austria. All former political parties have been dissolved voluntarily or by law; almost every one in Austria who does not wish to give the appearance of being an enemy of the state must be a member of the "fatherland front," physician's likewise. In this manner the new physician's organization is clearly political.

The new organization has not been completely accepted as yet. It is criticized by the medical profession and by others, by persons who are not at all unfriendly toward the new aims but who only wish to correct defects. Medical circles are under the impression that the official character of the physician's

chamber will be a hindrance in the representation of purely medical interests. Formerly the economic organization was energetically active in such matters, and because of its independence from the government it was rather strong and quite successful in its activity for the physicians. Since a reform of the *krankenkassen* and of the social insurance system is to be expected in the near future, and also a new law for the medical profession, the fact that many experienced and competent members of the old physician's chamber and medical organizations have not been reappointed has created a most disagreeable surprise. It is feared that the efforts made by physicians for many years to improve their condition may now fail completely. At any rate, many physicians are in grave doubt about the future. Everywhere the tendency is noticeable to pension the older men and to force the younger men who formerly had different political convictions than the now ruling elements out of their positions without pensions. This applies particularly to former social democrats and to national socialists but also to nonpolitical Jews, who in this manner could be forced into a hidden "numerus clausus."

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 20, 1934.

Medical Congresses in Argentina

The Fifth National Congress of Medicine of Argentina was held in Rosario, September 2-7, with a large attendance. The official topic was "Amebiasis," which was presented by Drs. Castex, Staffieri and Franchini (clinical aspects), Marotta (surgery) and Greenway and Mazza (parasitology), as official speakers. Papers were read by Drs. T. M. Rivera on filtrable viruses, Brauer on collapsotherapy, Fonesca on mycotic allergy, Binet on the suprarenals and the metabolism of sulphur, and Lipschütz on the gonadotropic action of the hypophysis. Members of the sections of histology, pathologic anatomy, physiology and biochemistry, hygiene, legal medicine, medical clinics, pediatrics, surgery, ophthalmology, urology, otorhinolaryngology, pharmacy, odontology and naval and military medicine, convened in several meetings. Dr. B. A. Houssay spoke on functions of the anterior lobe of the hypophysis and Dr. Cíbils Aguirre on antidiphtheritic vaccination. The next national congress will meet in Córdoba in 1938.

The first Congress on Medical Economics, organized by the Colegio Médico, a medical society of Buenos Aires, with the cooperation of similar medical societies of Argentina, was held, June 24-30, in Buenos Aires. Important problems of collective medical practice were discussed. The members resolved to have a fixed tariff of fees, in relation to the economic conditions of patients, who were classified as "poor," "justified to have a 60 per cent reduction in the schedule," and "able to pay the whole fee assigned in the schedule." They also resolved to have the City Hospital and similar institutions as centers for free medical care. There were various general motions, such as on the preparation of a national sanitary code. The existence of sanatoriums belonging to medical cooperative and medical mutual societies was approved. The members stated that the medical profession in Argentina is overcrowded and advised the limitation of the number of students to medical schools in relation to the health demands of the country, as well as the selection of candidates, according to their preparation and ethical background. The suppression of treaties of reciprocity with various countries was advised as an aim of securing practice for Argentine physicians, those graduated from Argentine schools as well as those returning home with diplomas from accredited schools in other countries.

The annual Congress of Surgery will meet October 21. The ninth Pan-American Sanitary Conference, organized by a committee under the chairmanship of Dr. G. Araoz Alfaro, with

Drs. M. Sussini and M. Obarrio as vice presidents and Drs. A. Zwanck and A. Sordelli, as secretaries, will meet November 12-22.

Lectures by Foreign Professors

Well known foreign professors were presented to the Congress of Medicine recently held in Rosario. During their stay in Argentina the following delivered lectures: Prof. Léon Binet, teacher of physiology of the Faculty of Medicine of Paris, a course of twelve lectures on physiology of the lung, oxygenotherapy, intestinal occlusion, hyperthermia, and some other topics. Prof. T. M. Rivers of the Rockefeller Institute on filtrable viruses; his lectures were delivered in Spanish. Prof. Bastos Ansart of Madrid, on cerebral surgery. Prof. L. Brauer of Hamburg, on physiology of exercise, aeronautic medicine and collapsotherapy; his lectures were delivered in Spanish. Professor Franchini of Modena, on amebiasis. Professor Bottazzi of Naples, on Leonardo da Vinci, factors of alimentation, and muscular tonus. Prof. O. da Fonseca of Rio de Janeiro, on parasitology. Professor Lichtenberg of Berlin, on urinary pathology and pyelography. Professor Munk of Berlin, on vascular and renal pathology.

Mottled Enamel

Drs. Goldenberg in 1917 and Bergara in 1927 reported the results of their experiments on the action of fluorine. Dr. Chaneles in 1930 reported results of a thorough study of the action of fluorine on the teeth of rats. Research has been focused this year on the geographic distribution of mottled enamel in relation to the contents of fluorine in drinking water in Argentina. Dr. R. Erasquin reviewed and completed a map prepared by Dr. Damon, showing the geographic distribution of the dental condition. Dr. J. M. Muñoz performed an analysis of drinking waters in the zones in which the inhabitants have mottled enamel. He found a content of 2.4 mg. of fluorine per thousand cubic centimeters in drinking waters in those zones, by working with Casares' method. Dr. Trelles, however, made some objections on the exactness of the method (*Semana médica*, October 4).

Anaerobic Actinomycetes

Negróni has verified the failure to obtain cultures of either Actinomycetes or Actinobacilli in aerobic mediums in many cases of actinomycosis with clubs. He prepared cultures in anaerobic mediums, in agar and dextrose, and succeeded, in seven cases out of ten, in obtaining cultures of *Streptothrix israeli*, to which he gives the designation *Proactinomycetes israeli*, following the classification of Actinomycetaceae given by Jensen in 1931. The results of his work seem to indicate that mycetoma may be caused by Actinomycetes, by Actinobacilli or by Proactinomycetes.

Tuberculosis and Erythema Nodosum

Dr. A. Arenas recently reported before the Sociedad de Biología the results of his experiments on erythema nodosum. The author was able to obtain visible tubercle bacilli, after the first series of inoculations subcutaneously and by means of the lymph nodes, in only one case out of seven cases of erythema nodosum. Acid-fast bacilli of an increasing virulence appeared, however, after successive inoculations from animal to animal, in the material of five out of that of the seven cases.

Deaths

Dr. J. M. Escalier, formerly head of the Rivadavia and Durand hospitals, and ex-president of the Asociación Médica Argentina, born in Bolivia, died August 15 at the age of 70. —Dr. J. M. Zubizarreta, formerly head of the pediatric department of the Hospital de Niños la Casa de Expósitos, and ex-director of public welfare of the federal capital, died October 13. —Dr. Ernesto Romagosa, professor of surgical clinics of the Faculty of Medicine of Córdoba, ex-dean of the faculty and ex-rector of the university, died recently.

Marriages

CECIL STUART EUGENE TOUZEL, Fort Worth, Texas, to Miss Gwendolen Williamson Cole at Point Fortune, Que., Canada, August 23.

LEONARD KIRK MCMURTRY, Evansville, Ind., to Miss Ruby Ray Douglas of Princeton at Henderson, Ky., September 15.

JASPER STEWART HUNT, Charlotte, N. C., to Miss Eleanor Louise Bomar of Spartanburg, S. C., October 6.

LUTHER C. MITCHELL, Sandersville, Ga., to Miss Lamartine Christian of Madison in Augusta, September 30.

JOHN W. PYLES to Miss Erica Tanner, both of New Martinsville, W. Va., in Pittsburgh, October 12.

EDWARD VICTOR DENNEEN, New York, to Miss Julia Theresa Corcoran of North Bay, N. Y., October 17.

JOSEPH D. CULBERTSON, Norton, Va., to Miss Flossie Bradle of Eureka, Ill., at Pekin, Ill., October 13.

BEVERLEY EUGENE SMITH, Baltimore, to Miss Mary Wini-fred Davis of Oxford, Miss., October 1.

FELIPE ANDRES MARTINEZ to Miss Marguerite Gertrude Kurdle, both of Baltimore, August 8.

SIDNEY S. BERKOWITZ, New York, to Miss Miriam H. Rosenfeld of Philadelphia, October 5.

LOREN K. MEREDITH to Miss Elizabeth Ruth Brinton, both of Des Moines, Iowa, October 12.

FRANCIS M. CONWAY, Brooklyn, to Miss Jean Mayer of Montclair, N. J., September 12.

LEO E. GIBSON, Syracuse, N. Y., to Miss Pauline Remington of Potsdam, N. Y., October 3.

SEWELL B. COULSON, Waldron, Ind., to Miss Helen Jackson at Indianapolis, September 9.

RAY S. CRIST, Port Townsend, Wash., to Miss Josephine E. Reasor of Seattle, August 25.

WILLIAM F. BELL, Kalvesta, Kan., to Miss Winefred Beeman at St. Louis, September 12.

CARL H. SENN, Williamsport, Pa., to Mrs. Helen Hayes of Philadelphia, August 20.

WEBSTER K. ROSS to Miss Vina Conley, both of La Grande, Ore., August 19.

JAMES R. HART to Miss Myra Disterdiek, both of Erie, Pa., August 22.

JOHN J. MRAZ to Miss Jannette Harkins, both of Erie, Pa., August 29.

Deaths

August Frederick Jonas ♂ Omaha; Bennett College of Eclectic Medicine and Surgery, Chicago, 1877; Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany, 1884; in 1901 third Vice President, in 1906 and in 1911 member of the House of Delegates, and in 1912-1913 Chairman of the Section on Surgery of the American Medical Association; professor of surgery, emeritus, University of Nebraska College of Medicine; member of the American Surgical Association and the Western Surgical Association; fellow of the American College of Surgeons; served during the World War; at various times on the staffs of the Nebraska Methodist and the Douglas County hospitals; aged 76; died, November 13, of cerebral hemorrhage.

Herbert Melville Little, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1901; professor of obstetrics and gynecology at his alma mater; member and formerly vice president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons; member of the American Gynecological Society; fellow of the American College of Surgeons; gynecologist to the Montreal General Hospital; gynecologist and obstetrician to the Royal Victoria Hospital, formerly known as the Montreal Maternity Hospital of which he was superintendent; on the editorial board of the *Canadian Medical Association Journal*; aged 56; died, October 11.

Creswell T. Pigot ♂ Roundup, Mont.; Western University Faculty of Medicine, London, Ont., Canada, 1900; member of the House of Delegates of the American Medical Association, 1922-1934; past president of the Medical Association of Montana; secretary of the Musselshell County Medical Society; served during the World War; city and county health officer;

fellow of the American College of Surgeons; on the staff of the Musselshell Valley Hospital; aged 55; died, October 12, of pneumonia.

George Forrest Martin ♂ Lowell, Mass.; New York Homeopathic Medical College and Hospital, 1890; fellow of the American College of Surgeons; member of the school committee, 1894-1895; in 1909 member and in 1910 chairman of the board of health of Lowell; senior surgeon to the Lowell General Hospital; for many years chairman of the board of trustees of the State Infirmary, Tewksbury; aged 71; died, November 4, of coronary thrombosis.

Stanley Stillman, San Francisco; Cooper Medical College, San Francisco, 1889; member of the California Medical Association, the American Surgical Association and the Pacific Coast Surgical Association; fellow of the American College of Surgeons; professor of surgery emeritus, Stanford University School of Medicine; aged 73; consulting surgeon to the Lane Hospital, where he died, October 15, of pneumonia.

William Scott Campbell, Chicago; Rush Medical College, Chicago, 1885; member of the Illinois State Medical Society; past president of the Tippecanoe County (Ind.) Medical Society; for many years health commissioner of Tippecanoe County, Ind.; aged 77; died suddenly, November 3, at his home in Oak Park, Ill., of angina pectoris.

Stephen August Stadler, Kansas City, Mo.; St. Louis University School of Medicine, 1917; member of the Missouri State Medical Association; served during the World War; on the staffs of the Kansas City General and St. Joseph hospitals; aged 44; died, November 1, of hemorrhage from esophageal varices and cirrhosis of the liver.

Arthur Freeman ♂ Surg., Lieut. Commander, U. S. Navy, retired, Washington, D. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1914; entered the Navy in 1917 and retired in 1932 for incapacity resulting from an incident of service; aged 48; died, October 20, in the U. S. Naval Hospital, of esophageal abscess.

Paul Ewing McDonnold ♂ P. A. S., Lieut. Commander, U. S. Navy, retired, Riverside, Calif.; Columbian University Medical Department, Washington, D. C., 1898; entered the navy in 1901 and retired in 1910 for incapacity resulting from an incident of service; aged 61; died, September 20, of chronic rheumatic endocarditis.

Arthur C. Merriam, Washington, D. C.; Columbian University Medical Department, Washington, 1889; served during the World War; formerly connected with the U. S. Public Health Service; aged 68; died of drowning, coronary thrombosis and embolus when he fell from a yacht in the Anacosta River, October 11.

James Bernard O'Neill, Portland, Maine; Harvard University Medical School, Boston, 1887; member of the Maine Medical Association; veteran of the Spanish-American War; formerly on the staff of the Maine Eye and Ear Infirmary; aged 74; died, October 20, of heart disease and arteriosclerosis.

Lester F. Newbern, Monroe, Mich.; State University of Iowa College of Medicine, Iowa City, 1908; member of the Michigan State Medical Society; past president of the Monroe County Medical Society; on the staff of the Monroe Hospital; aged 50; died, November 11, of heart disease.

Richard Aloysius McGillicuddy ♂ Turners Falls, Mass.; Baltimore Medical College, 1903; for many years member and chairman of the school board; on the staff of the Farren Memorial Hospital, Montague City; aged 55; died, November 4, of chronic valvular heart disease.

John Victor Lynn, Ridgefield, N. J.; Hahnemann Medical College and Hospital, Chicago, 1905; member of the Medical Society of New Jersey; served during the World War; aged 58; on the staff of the Holy Name Hospital, Teaneck, where he died, November 13, of heart disease.

Eugene A. Harris ♂ Navasota, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1890; president of the Grimes County Medical Society; on the staff of the Brazos Valley Sanitarium; aged 65; died suddenly, October 26, of heart disease.

William T. Morgan, Braddock, Pa.; University of Maryland School of Medicine, Baltimore, 1884; for many years president and on the staff of the Braddock General Hospital; aged 76; died, October 9, at his home in Swissvale, of carcinoma of the stomach.

Burgett Woodcock, Greeley, Colo.; Medical College of Alabama, Mobile, 1896; member of the Colorado State Medical Society; served during the World War; formerly on the staff of the Greeley Hospital; aged 59; died, October 19, of heart disease.

Joseph Wright Allen, Monongahela, Pa.; Cleveland Homeopathic Medical College, 1907; member of the Medical Society of the State of Pennsylvania; on the staff of the Memorial Hospital; aged 52; died, August 11, of cerebral hemorrhage.

Leigh Hubbard Womble Jr., Mitchell, Neb.; University of Nebraska College of Medicine, Omaha, 1933; aged 24; died, October 18, of a gunshot wound received in the premature discharge of a shotgun in the hands of a hunting companion.

Julian Raymond Blackman, Salt Lake City, Utah; Johns Hopkins University School of Medicine, Baltimore, 1906; served during the World War; aged 56; died, November 11, in the Veterans' Administration Hospital, of angina pectoris.

Joseph Jordan Robertson @ Kingsville, Texas; University of Texas School of Medicine, Galveston, 1913; served during the World War; aged 48; on the staff of the Kleberg County Hospital, where he died, October 5, of nontropical sprue.

Howard F. Hansell, Philadelphia; Jefferson Medical College of Philadelphia, 1879; emeritus professor of ophthalmology at his alma mater; formerly ophthalmologist to the Philadelphia Hospital; aged 78; died, November 5, of heart disease.

George Leslie Lynch, Amador City, Calif.; College of Physicians and Surgeons of San Francisco, 1906; for many years county health officer; aged 60; died, October 6, in the Sutter Hospital, Sacramento, of streptococcal septicemia.

Samuel L. Friduss @ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; on the staff of the Englewood Hospital; aged 64; died, November 10, of carcinoma of the bladder.

Thomas W. Moorhead @ Terre Haute, Ind.; College of Physicians and Surgeons of Indiana, Indianapolis, 1876; aged 78; formerly on the staff of St. Anthony's Hospital, where he died, November 8, of carcinoma of the rectum.

Albert Ward Preston @ Middletown, N. Y.; Columbia University College of Physicians and Surgeons, 1896; on the staff of the Elizabeth A. Horton Memorial Hospital; aged 65; died, October 12, of coronary thrombosis.

James A. Clark @ Chicago; Chicago Medical College, 1885; aged 73; formerly on the staff of St. Anthony's Hospital; on the staff of the West Side Hospital, where he died, September 29, of uremia, following a prostatectomy.

William I. Timmer, Cicero, Ill.; Chicago College of Medicine and Surgery, 1911; member of the Illinois State Medical Society; on the staff of the West Suburban Hospital; aged 54; died, November 14, of heart disease.

Geoffrey Orlando Tunison, Oxford, N. J.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of New Jersey; aged 71; died, November 4, of septicemia, prostatitis and arteriosclerosis.

William Ralph Eddleman, Anna, Ill.; University of Tennessee College of Medicine, Memphis, 1912; aged 46; died, October 17, as the result of injuries received in an automobile accident and of cirrhosis of the liver.

Edward Walker Blackburn, Ozark, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; member of the Arkansas Medical Society; also a druggist; aged 59; died, October 31, of cerebral hemorrhage.

William H. Pauley, St. Louis; Marion-Sims College of Medicine, St. Louis, 1896; member of the Missouri State Medical Association; aged 60; died, October 21, in the City Hospital, of cerebral hemorrhage.

Charles Henry Pope @ St. Louis; Barnes Medical College, St. Louis, 1904; served during the Spanish-American and World wars; aged 58; was found dead in his automobile, November 3, of heart disease.

Fred Fernando De Vore, Toledo, Ohio; Medical College of Ohio, Cincinnati, 1900; served during the World War; for many years county health officer; aged 55; died suddenly, October 21, of heart disease.

James Sigel Wiltshire, Londonderry, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association; aged 74; died, October 30, of chronic nephritis and prostatitis.

James Oliver Mohn, Gowen City, Pa.; Jefferson Medical College of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 66; died suddenly, October 2, of angina pectoris.

Joel Sperans, Los Angeles; University of Buffalo School of Medicine, 1905; aged 70; died, September 6, in the Cedars of Lebanon Hospital, of uremia, chronic nephritis and hypertrophic prostatitis.

Albert S. Munson, DeLand, Fla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1873; member of the Florida Medical Association; aged 83; died, October 22, of bronchopneumonia.

Edwin K. Wilson, Romney, W. Va.; Jefferson Medical College of Philadelphia, 1877; member of the West Virginia State Medical Association; aged 80; died, October 14, of cardiac insufficiency.

James Edward Johnson, Grantsburg, Wis.; Marquette University School of Medicine, Milwaukee, 1914; on the staff of the Community Hospital; aged 53; died, November 4, of heart disease.

John Brown Harris, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1901; aged 84; died, November 5, of uremia and fracture of the right femur as the result of a fall.

James Lafayette Ledgerwood, Tishomingo, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1886; aged 73; died, July 27, in the Hardy Hospital, Ardmore, of uremia.

William F. Schwartz, Baltimore; University of Maryland School of Medicine, Baltimore, 1907; aged 49; died, October 25, in St. Joseph's Hospital, following an operation for gastric ulcer.

David John @ Yonkers, N. Y.; L.R.C.P., London, and M.R.C.S., England, 1882; for many years on the staff of St. John's Hospital; aged 76; died, November 10, of heart disease.

Francis Marion Granger, Russell, Ohio; Medical College of Ohio, Cincinnati, 1873; member of the Ohio State Medical Association; aged 87; died, November 14, of heart disease.

George P. Gerichten, San Francisco; California Medical College, Oakland, 1901; aged 59; died, September 6, in the Franklin Hospital, of acute atrophy of the liver.

Fred E. Tuttle @ Cattaraugus, N. Y.; University of Buffalo School of Medicine, 1880; aged 77; died, July 10, of bronchopneumonia and carcinoma of the prostate.

Othello C. Scarborough, Joplin, Mo.; University of Louisiana Medical Department, New Orleans, 1874; aged 84; died, October 11, of chronic valvular heart disease.

Stephan Stephanson, The Pas, Manit., Canada; Manitoba Medical College, Winnipeg, 1912; aged 48; died, September 18, in Winnipeg, of acute appendicitis.

Henry Franklin McCool, Evansville, Ind.; Miami Medical College, Cincinnati, 1887; aged 71; died, October 24, in St. Mary's Hospital, of heart disease.

Charles Frank Rotter @ St. Louis; Marion-Sims College of Medicine, St. Louis, 1896; aged 73; died, October 7, of chronic myocarditis and nephritis.

Thomas Franklin Oates @ Mexia, Texas; College of Physicians and Surgeons, Baltimore, 1884; aged 78; died, September 16, of heart disease.

Wheeler Hayes Melvin, Los Angeles; University of Illinois College of Medicine, Chicago, 1905; aged 52; died, September 14, of pneumonia.

Dorothea A. Storck, Indianapolis; Hahnemann Medical College and Hospital, Chicago, 1913; aged 58; died, September 21, of acute nephritis.

Augustus P. Myers, Mobile, Ala.; Homeopathic Medical College of Missouri, St. Louis, 1888; aged 76; died, November 1, of arteriosclerosis.

George W. Bodey, North Lewisburg, Ohio; Kentucky School of Medicine, Louisville, 1892; aged 69; died, November 8, of heart disease.

William F. Quinlivan, Philadelphia; Maryland Medical College, Baltimore, 1907; aged 54; died, September 8, of cerebral arteriosclerosis.

Walter Wilbur, Lynden, Wash.; University of Michigan Medical School, Ann Arbor, 1881; aged 84; died, August 23, of heart disease.

F. C. William Obert, East Alton, Ill.; American Medical College, St. Louis, 1890; aged 71; died, October 16, of arteriosclerosis.

James Oscar Meharg, Fort Worth, Texas; Fort Worth School of Medicine, 1905; aged 58; died, September 21, of carcinoma.

William S. Price, Tangier, Ind. (licensed in Indiana in 1897); Civil War veteran; aged 90; died, October 28, of senility.

Herman Partsch, Berkeley, Calif.; University of California Medical Department, 1884; aged 84; died, September 6.

Correspondence

THE LANGUAGE OF MEDICINE

To the Editor:—The last paragraph of the editorial *The Language of Medicine* in the September 15 issue of *THE JOURNAL* is so important and interesting that more should be written about it.

Even if the language is far from perfect, an article written with the sincere desire to convey information may be interesting and hold the attention of its readers, as may also an article written to entertain. An informative medical article would hardly be suitable for displaying slang; but the writer is often guilty of an equally grave offense—the display of technical learning or high-sounding words.

A research worker who has made a profound study of a subject should not forget that the profession as a whole and even eminent scientists who specialize in other branches know little or nothing about what seems simple to him. When explaining the truth that he has discovered, he must discard every technical term possible and confine himself to simple good English if he is going to get his message across. He must remember that *THE JOURNAL* is sent to every country in the world and that in some places the doctors are not so well educated as in the United States. Our object must be to spread American culture.

The following paragraph taken from a study of yaws and syphilis will illustrate the point:

"The early metastatic polypapillomatous lesions in yaws are uniform to such an extent as to tend to monotony. The medical observer coming from a nontropical country will at once be reminded of multiple impetiginous. The metastatic polypapillomata are raised above the skin's surface seeming to fungate, much more than in syphilitic lesions. This is easy to understand considering their histopathology, i. e., an oedematous, verrucous (acanthotic) plasmoma, like the mother-yaw but of smaller size."

Three questions may be asked about this style of writing:

1. Does this paragraph convey a clear picture of the early symptoms of yaws to the average doctor who has not seen a case?
2. Is such a doctor able to clarify the paragraph by aid of a dictionary?
3. Is a trained medical writer able to reconstruct this paragraph so that it conveys a clear picture to the average doctor? If so, it would be interesting to see it done.

BERTEL SKOU, Manila, P. I.

COMPLICATIONS IN INJECTIONS OF VARICOSE VEINS

To the Editor:—In *Queries and Minor Notes* in *THE JOURNAL*, October 6, page 1088, a New York physician tells of having injected 3 or 4 minims (0.2 cc.) of 5 per cent sodium morrhuate into a leg vein and having the vein suddenly disintegrate, allowing the solution to become free in the tissues. Following this an ulcer developed. I too am at a loss to know what he means by a "sudden disintegration of the vein." In my seven years experience in this work, neither in my clinic nor in my private work have I ever seen such an occurrence. During the past year and a half we have used several hundred cubic centimeters of 5 per cent sodium morrhuate in my clinic without a slough. There have been several cases in which at least 0.1 to 0.2 cc. has been deposited in the tissues incident to the various accidents attendant on the injection treatment. Hard, tender to painful masses develop at these sites but none have broken down and sloughed as they did when the combined

sugar and salt solutions were used. In cases in which, accidentally, enough solution is injected into the tissues to form a wheal, it is our procedure to inject immediately 2 cc. of a sterile 1 per cent solution of procaine hydrochloride in a four point injection (0.5 cc. each) around the area. This not only serves as a diluent but also acts as an anesthetic to control the burning pain. A firm, pressure dressing is then applied over the area.

G. D. BRAND, M.D., St. Paul.

[The letter was referred to Dr. I. G. Frohman, who replies:]

To the Editor:—The word "disintegrate" was chosen because it describes better exactly the unusual occurrence that took place. I am certain that no sodium morrhuate previously entered the tissues. Earlier injections in the same patient were uniformly successful.

The small vein in question was about one-half by one-eighth inch in dimensions. Aspiration gave blood and the injection proceeded slowly as the vein swelled with the fluid. Suddenly the vessel just disappeared and the blood-colored liquid was free in the surrounding tissues. The patient screamed with pain and would allow no subsequent injection in the area to dilute and anesthetize.

A slough later followed, which was very slow to heal. The patient, who is of a hysterical make up, complained for weeks of intense and agonizing pain. She will allow no surgical treatment or pressure bandage but insists on ointments of varying types. Because of the long-standing pain, I have used butesin picrate, nupercaine and later sulphonated bitumen, scarlet red and balsam.

If there is any explanation for the long standing, severe pain and for the behavior of the venule, I should be glad to hear of it.

I. G. FROHMAN, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ARTERIOSCLEROSIS AND HYPERTENSION

To the Editor:—A man about 40 years of age has always had fairly good health except that a specialist in tuberculosis once made the statement that his lungs showed some fibrosis. A urologist later said that the urine showed shreds, and he gave prostatic massage treatments many times. The patient is zealous in the care of his diet and came to me in 1930 for a small exostosis-like body on the finger, which was roentgenographed with negative results for any solid growth, but it was noted on the film that the radial arteries were distinctly atheromatous, which condition had never been suspected by the heart specialist. I had a check up set of roentgenograms taken this year of both arms, which appear much the same as in 1931; I also had roentgenograms taken of the lower extremities, which show a similar condition of the arteries of lower extremities. He is in the best of health. There has never really been any definite focus of infection determinable. The blood pressure is about 130 systolic, 75 diastolic, but two years ago it was somewhat higher. As previously stated, the patient takes good care of himself in every way. The urine is normal. The Wassermann reaction is negative. The patient does not use whisky. The thing that concerns me is the outlook for a man with so definite an arteriosclerosis. He has asked me how long he will live. Are conditions such as described of frequent occurrence in men so young? Doubtless this condition has been present for many years. It would seem that a heart examination is incomplete without a roentgenogram.

M.D., California.

ANSWER.—The case described is typical of the often forgotten fact that arteriosclerosis of the larger arteries, with or without calcification, is an entirely separate entity from hypertensive disease. In the minds of many there exists a notable confusion of these two diseases. Arteriosclerosis involves the larger vessels, often with no abnormality of the arterial tensions, whereas hypertensive arterial disease involves the smallest arteries and arterioles. Despite the not infrequent coincidence of the two processes, their fundamental independence and individuality warrants emphasis.

The incidence of arteriosclerosis is difficult to evaluate (Sydenstricker, Edgar, in Cowdry, E. V.: *Arteriosclerosis*, New York, Macmillan Company, 1933, pp. 131-151). Arteriosclerotic

changes are more frequent in professional and business groups than in industrial and agricultural workers. The following data from studies regarding the age incidence of arterial thickening in white male and female policyholders afford a good general picture of the relation to age in those persons of moderate or better than moderate means:

Age Groups	Males, Per Cent	Females, Per Cent
20-29 years	6.4	3.2
30-34 years	7.8	5.6
35-39 years	10.0	8.0
40-44 years	12.8	11.1
45-49 years	16.1	15.7
50-54 years	22.9	23.6
55-59 years	28.3	28.4
60 and over	38.4	37.3

Of considerable interest is the lower incidence in females in the younger age groups; this difference disappears at about the average age of the appearance of the climacteric.

Statistical data on the death rate in arteriosclerotic individuals are unsatisfactory because of changing and unstandardized terminology, inaccuracy of diagnosis unless necropsies have been made, and extremely variable methods of tabulation. In the United States registration area the federal Bureau of the Census in 1928 includes arteriosclerosis as a cause of death under the vague and almost meaningless and useless term "other diseases of the arteries." The total mortality rate for all ages was 29 per hundred thousand. Of these deaths 59 per cent occurred in persons 75 years of age or older and 25 per cent in persons in the decade from 65 to 74 years. Thus, 83 per cent of deaths attributable to arteriosclerosis occur after 65 years of age. Overweight, according to the insurance investigations, greatly increases the mortality rate (Dublin, L. I.: *Human Biology*, May 1931, p. 170).

In view of the fact that a little over 12 per cent of men over 40 years of age give evidence of arterial thickening, the case cited cannot be considered unusual. The etiology of this disease is still extremely obscure, which makes prognostication difficult. The fact that the man showed no evidence of cardiac or renal disturbance and had a negative blood Wassermann reaction (which, of course, does not prove the absence of syphilis) and a normal arterial tension, should be encouraging factors in evaluating the prognosis. It is not known whether the frequency of arteriosclerosis is increasing, especially in younger persons. In this connection it may be appropriate to mention that presenile calcification of the sternal cartilages is being noted by roentgenologists far more frequently than formerly. Calcification of these cartilaginous structures is being observed quite commonly in the chest films of young people between 20 and 40 years of age. Perhaps, as a pure and unconfirmed speculation, the far more general and liberal use of vitamin concentrates and sunshine may be regarded as a possible contributing factor to such an unusually early tendency to the deposition of calcium.

Persons may live in good and vigorous health for many years despite marked calcification of the arteries of the extremities. The fact that such changes are demonstrable in the extremities does not necessarily imply that similar or as extensive degeneration has involved the cerebral, cardiac or visceral vessels. This patient should have annual or semiannual electrocardiographic studies, which may give warning of involvement of the coronary arteries.

CORPORA LUTEA IN HEMOPHILIA—TOXOID IN DIPHTHERIA—VERSION IN OBSTETRICS

To the Editor:—1. Does the use of corpora lutea in a male child with hemophilia tend to control this disturbance? 2. Is there a serum or vaccine that will give a life immunity from diphtheria? 3. Do you consider that there is a definite and rather rapid trend toward the use of version to supplant the Scanzoni maneuver in the treatment of persistent occipitoposterior position in obstetrics? Please omit name.

M.D., Alabama.

ANSWER.—1. There are conflicting reports concerning the use of corpus luteum in cases of hemophilia. Hynek (*Ann. de méd.* 14:122 [Aug.] 1923) observed normal clotting time of the blood in hemophilia after the use of corpus luteum. On the other hand, Neihans (*Schweiz. med. Wchschr.* 60:18 [Jan. 4] 1930) found that implantation of whole ovary produced no benefit in this disease but that when pieces of ovary without corpora lutea were implanted there was improvement. Interest in the use of ovarian substance in hemophilia was recently aroused by the reports of Birch (*Proc. Soc. Exper. Biol. & Med.* 28:752 [April] 1931; Hemophilia and the Female Sex Hormone, *THE JOURNAL*, July 25, 1931, p. 244; Hemophilia, *ibid.* Nov. 5, 1932, p. 1566). Among nineteen cases of hemophilia treated with ovarian substance, nine were considerably improved, nine showed some betterment and only one failed

to respond to treatment. Following the report of Birch a few papers were published reporting improvement in cases of hemophilia after the use of ovarian preparations, but other reports indicated that ovarian substance failed to give relief for this blood dyscrasia. Thus Stetson, Forkner, Chew and Rich (Negative Effect of Prolonged Administration of Ovarian Substances in Hemophilia, *THE JOURNAL*, April 7, 1934, p. 1122) reported on the use of ovarian substance or estrogenic substance in seven cases of hemophilia. In spite of the fact that large amounts of eight different preparations were used, in no instance was the coagulation time of the venous blood found to be depressed as the result of such therapy, nor was any clinical improvement noted that could be attributed to the ovarian therapy.

2. There is no serum or vaccine that will give life immunity from diphtheria, but there is a toxoid (anatoxin-Ramon) that will tend to do so in the majority of cases. The toxoid is far more satisfactory for purposes of immunization than diphtheria toxin-antitoxin.

3. Since Potter reintroduced and popularized the operation of version and extraction, a large number of these operations have been performed. While a few individuals deliver a high proportion of their patients by this maneuver, nearly all obstetricians resort to this operation only for definite obstetric indications. In the type of case cited, occiput posterior, version has become popular in the cases in which the fetal head is not engaged. This popularity is deserved because usually, when the head is high in the pelvis, delivery can be accomplished only by a difficult high or mid forceps delivery. In such cases, version and extraction are preferable. Of course neither a forceps operation nor version and extraction should be attempted if there is a disproportion between the fetal head and the pelvis. In cases of occiput posterior in which the head is engaged, the general practice is to rotate the occiput anteriorly with forceps or manually. DeLee and his associates advocate manual rotation, while Bill is the most prominent authority in favor of instrumental rotation. The same good end results may be obtained with either procedure, provided one makes an accurate diagnosis and uses appropriate care and skill in the delivery. Green soap as a lubricant in the vagina is of valuable assistance. When satisfactory rotation with the hand or instrument proves impossible and especially when the head rests on the perineum, it is preferable to deliver the head as an occiput posterior. However, an extensive episiotomy must be made to prevent a deep laceration. When the head is well engaged, it is not good practice to displace it and perform a version.

COMPLEMENT FIXATION TEST IN TUBERCULOSIS

To the Editor:—Could you discuss through *THE JOURNAL* the value of the complement fixation test for tuberculosis, both in regard to prognosis and in regard to diagnosis? Kindly omit name and address.

M.D., New York.

ANSWER.—The literature on the complement fixation test in tuberculosis is voluminous. Among the hundreds of articles on this subject there are those which come to the conclusion that the complement fixation test approaches 100 per cent in diagnosis and prognosis. On the other hand, some authors conclude that the test is of but little value either in diagnosis or in prognosis. Between the two extremes are numerous articles giving various evaluations to the test.

The positive test is thought to be dependent on absorption from the lesion, since in the absence of absorption there is no antibody formation. Therefore, before absorption occurs there is no antibody content. The antibody content is usually low when absorption begins but increases with the increase of absorption from the focus and decreases as the focus comes under control and less absorption takes place. Thus, the test may be looked on as one that aids in the determination of the activity of the disease; that is, the positive reaction presents reasonably good evidence that there is some absorption from the lesion, and a negative test indicates that no absorption is taking place.

However, there are some factors that may inhibit the reaction. It is also true that in far advanced terminal cases the antibody curve rapidly falls and the test may become negative. Thus, a tuberculous lesion may exist over a considerable period of time with the complement fixation test negative, owing to the fact that there is little or no absorption. Again, as the lesion is coming under control and absorption ceases, the test becomes negative, yet the lesion is still present and capable of reactivating. In the childhood type of tuberculosis there is little or no absorption in most cases, and the complement fixation test has been found to be of little or no value. Certainly the test is not as final as the Wassermann test in the diagnosis of syphilis.

It is often stated that the complement fixation test in tuberculosis is of greatest value when negative; for example, in the differential diagnosis of chest diseases, such as abscess, bronchiectasis and tumor. In recent years other valuable diagnostic aids, such as the bronchoscope, have been added to the armamentarium. After all, the use of this instrument, and the biopsy that is made possible through it, often gives the final word in diagnosis of nontuberculous chest conditions, which no other means can afford. The complement fixation test is of less value in the diagnosis of tuberculosis in other parts of the body than the lungs, since in these forms of the disease it is not so frequently positive.

In prognosis, particularly among advanced cases of pulmonary tuberculosis, a strongly positive complement fixation test is a better indication than one that reacts weakly. When the test is carefully performed, it is positive in from 60 to 80 per cent of cases of tuberculosis. Obviously, a test that fails in from 20 to 40 per cent cannot be of great value in diagnosis or prognosis. Therefore, although it is used by a number of workers it is of uncertain value, since it does not determine with certainty the clinical activity of all lesions and since it may be negative in very definite cases of tuberculosis and positive in cases with no demonstrable disease. For this reason it is not a test that is depended on much by the clinician, particularly since new diagnostic aids are resulting in less need for such a test. However, considerable research on the complement fixation test is now in progress, and it is possible that refinements in technic or new methods may bring it to a more valuable position than it holds at present.

ECZEMATOID RINGWORM INFECTIONS

To the Editor:—I have a patient, a woman, aged 29, a stenographer, whose hands, especially the palms, and feet are infected by a papular rash with oozing and intense itching. She has been under the treatment of dermatologists for seven months. No results have followed the use of hot permanganate baths, Burrow's solution of various ointments. Skin tests and blood examination are negative. Is the diagnosis ringworm, trench foot or chronic eczema? What can be done?

M.D., New Jersey.

ANSWER.—The occurrence of a palmar eruption, with extension to the dorsum of the hands and associated involvement of the feet, as described, is a part of the picture seen in eczematoid ringworm infections. In addition to a "papular rash, with oozing and intense itching," one also notes, in these cases, deep-seated vesicles, scaling and maceration between the toes. In many the hand involvement is a toxic (dermatophytid) eruption, secondary to the involvement of the feet. It is essential that all active infection of the feet be completely cleared if one is to guard against recurrence. The contributory factor of external irritants and sensitivity to certain foods may also play a part in the causation of the eruption. The continuance is suggested of warm compresses of 1:3,000 potassium permanganate solution to the hands and feet, morning and night. After the night compress, the parts should be covered thoroughly with a 3 to 5 per cent crude coal-tar ointment, which should be washed off in the morning with olive oil. After the active infection is controlled, any residual scaling dermatitis may be treated with half-strength Whitfield's ointment, to which may be added from 3 to 5 per cent of precipitated sulphur. A dusting powder may be used between the toes during the day, and the use of an iodine paint to the scaling patches in the morning, such as 3 per cent iodine in benzene. X-rays in fractional doses are a valuable adjunct in treating these cases. One should guard against reinfection by the wearing of white cotton anklets, which should be changed frequently and boiled before wearing again.

DRUGS IN TIC DOULOUREUX

To the Editor:—Please tell me what drugs are most effective in the treatment of tic douloureux? Please omit name if published.

M.D., North Carolina.

ANSWER.—The drug treatment of tic douloureux is notoriously unsatisfactory. Nevertheless, it should be undertaken before injection treatment and surgery are advised. With somewhat of an attempt at causal therapy, one should employ quinine (from 1 to 2 Gm. daily for a considerable time) if malarial, or iodide if syphilitic etiology is suspected, iron and arsenic if there is anemia, sodium salicylate (0.6 Gm. every hour or two for a few days, then three times daily) with sodium bicarbonate if a rheumatic causation might exist, or castor oil (from 15 to 30 cc. daily for several weeks, if intestinal intoxication needs to be excluded). From a standpoint of what might possibly be called alternative therapy, strychnine hypodermic injections (from 2 mg. gradually increasing to 12 mg. daily), cannabis (fluidextract from 0.1 to 0.2 cc. or even

more three times daily); or fluidextract of gelsemium (0.05 to 0.2 cc. or more every two to four hours until dizziness, double vision, dilatation of the pupils or dropped lids become manifest) might succeed in changing conditions in the nervous system so as to result in at least temporary improvement. The latest addition to the armamentarium in this condition is trichlorethylene, of which from 20 to 25 drops placed on a piece of gauze should be inhaled three or four times daily for a period of from four to six weeks before being discontinued. During the inhalation the patient should be in a recumbent position, as dizziness or drowsiness may be produced. The use of opiates is strictly contraindicated, as there is greater danger from the habit engendered thereby than there would be from destructive injections into the nerves or surgical evulsion of the nerves.

IRRADIATION OF FEMALE PELVIS

To the Editor:—A Catholic priest, administering to his people in a local Catholic hospital, has asked me for information which he can quote with authority concerning the effect of x-rays and the quantities of x-rays that can be administered to the pelvis especially, and to any other part of the body of a pregnant woman. I will appreciate receiving your answers to these questions, and also references to which this party may refer to back up his interpretations.

M.D., Iowa.

ANSWER.—Regardless of religious belief, irradiation of the pelvis of a pregnant woman or the fertilized egg is a serious procedure and should never be used unless the pregnancy is to be terminated. The results of this procedure are usually retarded cerebral development known as microcephaly. D. P. Murphy (Ovarian Irradiation, *Surg., Gynec. & Obst.* 47:201 [Aug.] 1928) gives the incidence of defectives as 61.3 per cent following irradiation of pregnant animals. In a later paper (*Surg., Gynec. & Obst.* 48:766 [June] 1929) the same author reports fifty-three pregnancies in which postconception pelvic radium or roentgen irradiation was administered. Abortion occurred in twenty-three instances (43.4 per cent). Twelve per cent of the thirty full term pregnancies presented some more or less serious disturbance of health or development. These defects in many instances were quite serious and tended to conform somewhat to a type. In summing up his observations in the litters of thirty-four female albino rats irradiated when pregnant Murphy concludes (*Surg., Gynec. & Obst.* 50:861 [May] 1930) that the deforming of five offspring was due to the radiation, as similar deformities have not been duplicated in a series of 125,000 nonirradiated control animals.

In applying radiation to other parts of the body of a pregnant woman, great care must be exercised to screen the pelvis. If this is carried out, no effect is noticed on the offspring.

Roentgenographic studies of the pregnant pelvis to determine anomalies of the mother or the fetus are not harmful.

ESTROGENIC SUBSTANCES IN BREAST ATROPHY

To the Editor:—A 25 year old white married mother, one year after a normal delivery of her first child, presents herself with a marked atrophy of both breasts. During her early puerperium she had a breast abscess, which necessitated incision and drainage and which interrupted further nursing. Her return menstrual history has been normal in every way. There is now just a slight premenstrual enlargement of both breasts, which begins about seven days before and is maintained throughout the period (five days). Will female sex hormone as obtained in antuitrin-S or that obtained in the ovarian product theelin restore the normal consistency and size of the breasts? Which one is here indicated? It seems peculiar to me that, if there is here an adequate ovarian hormone output as judged from the uterine response and normal menstrual history and therefore behind it all a proper anterior pituitary function, there should nevertheless be such an abnormal mammary response despite the history of breast abscess. Please omit name.

M.D., New York.

ANSWER.—"Female sex hormone" is the name applied by Frank to the estrogenic principle of the ovary. It is not applicable to "antuitrin-S," which is a commercial extract of the anterior pituitary-like gonadotropic principle obtained from the urine of pregnancy. It is preferable for many reasons not to employ the term "female sex hormone" even for theelin; this too is obtained from the urine of pregnancy.

It has been reported that injection or ingestion of estrogenic substance (theelin, theelol, Amniotin and so on) may produce hypertrophy of the breasts. It does not follow from the fact that the patient mentioned has apparently normal menstruation that the normal amount of estrogenic substance is produced by her ovaries; apparently normal bleeding can be induced by amounts of estrogenic principle well below the threshold for the production of normal progestational proliferation of the endometrium. The only way to determine whether adequate amounts are produced is to perform assays on blood

and urine repeatedly during the menstrual cycle, as advocated by Frank. While theoretically the best way to produce mammary enlargement would be to stimulate the ovaries to produce more estrogenic substance, the action of anterior pituitary or anterior pituitary-like principles is not sufficiently controllable to warrant their trial in this case.

Estrogenic substance need not necessarily be injected, as its effects can be obtained by oral administration of rather large doses. It is probable that any effect that may be obtained will not be permanent and that continuous administration of the preparation will be necessary; the disadvantages of this must be kept in mind.

INFECTION OF GLANDS OF THE NECK

To the Editor.—I am writing for some advice regarding a condition that has recently come under my observation. The patient is a woman, aged 21. At the age of 4, a lump was noticed on her neck on the right side anterior to the sternomastoid muscle. This was opened and drained from time to time. The tumor mass shifted over a period of years until it finally came to the midline just over the manubrium. Three years ago it was again incised and drained, and it appeared to heal completely. There was no sign of it to eighteen months, when a small lump appeared just below the lobe of the right ear. It enlarged to the size of an egg, and the patient had great difficulty in opening her jaws. A surgeon incised this mass and curetted out a quantity of cheesy material. The symptoms subsided for about six months, but during the past ten months there has been a constant purulent discharge from an opening one inch anterior to the lobe of the right ear. There have been times when a clear watery fluid flowed out in considerable quantity. This was especially noticeable at meal time. Otherwise the patient appears to be in good health. What would you advise therapeutically?

JOHN A. MOONEY, M.D., Kenton, Ohio.

ANSWER.—The diagnosis probably lies between tuberculosis or a pyogenic infection of the glands of the neck and a branchial cyst. The cysts secrete a sebaceous material and are usually lined by squamous epithelium. They are single and usually lie along the anterior border of the sternocleidomastoid muscle. The center of the cyst is usually about the level of the great cornu of the hyoid.

It is possible that the condition may be a pyogenic or non-tuberculous infection of some chronic type, such as syphilis or actinomycosis. The usual laboratory tests should be made to rule these out, including examination of the discharge and blood tests. While the origin is almost certainly in the lymph glands, owing to its change in location and repeated breaking down, it is possible that the salivary glands may be involved.

Systemic tests are not satisfactory for tuberculosis of the glands, but examination and injection into a guinea-pig of the discharge should establish the diagnosis. If these tests are negative, a biopsy should be made and a microscopic examination of the tissue.

The treatment must depend on the condition. Careful search must be made for some focus of infection in the nose and throat, such as infected tonsils and teeth or sinuses. These infections should be eliminated.

General measures are often of value. Locally, roentgen and light treatment may relieve the condition; if not, further surgery may be necessary. But the facial nerve should be avoided.

CHOLECYSTIC DISEASE

To the Editor.—Please let me know whether a diseased gallbladder can spontaneously recover after several years and become a normal gallbladder. My only daughter, aged 21, has suffered a great deal with many pains and because of her illness has virtually become an invalid. In February 1931 a physician roentgenographed her and besides finding a visceroptosis in a gastro-intestinal series saw her gallbladder outlined and warned me of future gallbladder trouble. She had a long double-kinked and movable appendix. In October 1932 Dr. Edward Blaine found a subnormal gallbladder in that its concentrating power was considerably reduced and the distended appearance was compatible with a hydrops. A "low grade gallbladder" was present. In view of the roentgen examination of February 1931, the present examination is distinctly corroborative. Two months ago a good internist made a roentgen examination and diagnosed a normal gallbladder filling and emptying normally. The appendix did not visualize. My daughter is still a sick person and gradually she is becoming more helpless. A splendid local surgeon has not operated for two years but my child is worse. She had spells of epigastric pain and has general depression. M.D., California.

ANSWER.—Although reference is made only to the report of the roentgen examination of the gallbladder in 1931, the patient presumably had attacks of upper abdominal pain simulating biliary tract disease which led to this examination. In the last sentence it is stated, "My child is worse. She had spells of epigastric pain." If it is assumed that these attacks of epigastric pain simulate biliary colic and the patient is becoming worse, abdominal exploration, particularly of the gallbladder, stomach and duodenum, should be carried out. In a problem of diagnosis, the patient's clinical history, her general condition,

and the result of the physical examination should be the determining factors in influencing one's decision as to whether or not intra-abdominal disease exists.

In most cases, roentgen examination of the gallbladder is helpful, when positive, as corroborative evidence of cholecystic disease. However, filling and emptying of the gallbladder do not exclude the possibility of cholecystitis or cholelithiasis.

EROSION OF TEETH

To the Editor.—Will you kindly tell me the underlying causes and appropriate treatment of erosion of the teeth occurring at the gum line? I have seen a number of cases in which the enamel is apparently worn off just above the gum line with no evidence of infection or irritation of either gums or teeth. This condition occurs in apparently healthy people who evidently employ sufficient mouth hygiene. I have asked a number of dentists about this condition and have received as many different answers, all of which have been unsatisfactory so far as revealing the cause. Kindly omit name and address. M.D., New York.

ANSWER.—The cause or causes of erosion of the teeth are not fully understood. There is one variety that is produced by the abuse of the teeth in cleaning them through improper use of the brush and the employment of abrasive dentifrices. Another variety is considered to be the effect of secretions either from the parotid or from the mouth mucous glands. Such secretions in persons suffering from this form of erosion are believed to be capable of dissolving enamel and dentin and tend to stagnate in the groove between the gums and the teeth in places opposite the opening for the discharge of the parotid secretion. The former condition is easily managed but the latter, although likely to be associated with fluctuations, does not seem to respond favorably to any known form of treatment. If fillings are placed in the defects, erosion recurs around the filling margins; the use of alkaline preparations is not associated with any considerable degree of improvement, and the effort so far to control the condition by diet or drug therapy has been equally unavailing.

GOLD TRIBROMIDE IN WHOOPING COUGH

To the Editor.—In THE JOURNAL, July 28, I note a question regarding use of gold tribromide for whooping cough. Will you please inform me what preparation is used and the dosage for children? Kindly omit name. M.D., Iowa.

ANSWER.—Gold tribromide is slowly soluble in water and may be prescribed for very young children in doses of 0.002 Gm. and to larger children in doses of from 0.003 to 0.006 Gm. three times daily, each dose dissolved in a teaspoonful of distilled water. Its virtues are not yet established.

CLIMATE FOR SINUSITIS

To the Editor.—In Queries and Minor Notes in THE JOURNAL, October 13, page 1175, Dr. Henry Wallace of New York, under "Climate and Sinusitis," says "Florida also is not a good place" after finding (in one case) San Diego not agreeable. Let me remark after having lived here in San Diego since 1921, and in Florida twenty years in eye, ear, nose and throat work, that, as in all other things medical, there are patients helped here and patients helped in Arizona, and many in Florida, if the physician knows how to segregate them. Patients in whom drainage is better on rainy days are helped in Florida. Those with much secretion are better in Arizona or Texas, and ordinary patients with neither extreme are better in southern California. Of course I am presuming that all medical and surgical treatment has been given and every assistance besides that of climate first resorted to. It is often a vital matter to patients to change environment, and this should never be done thoughtlessly. I say it unobtrusively that few physicians have had the many years of observation in sinus cases that I have had in both Florida and California, and such observation should have some weight. I do agree with Dr. Wallace that all patients should remain in the new environment at least two years for results.

FREDERICK J. WALTER, M.D., San Diego, Calif.

FUNCTION OF THE EPIGLOTTIS IN SPEECH

To the Editor.—In the answers to the question on the function of the epiglottis in Queries and Minor Notes in THE JOURNAL, September 22 and November 3, no mention was made of the conclusions of G. O. Russell (Speech and Voice, New York, Macmillan Company, 1931):

The tip of the epiglottis may lie well back against the wall of the pharynx (p. 175). . . . It assumes characteristic positions in the production of the various vowels (p. 145). The tubercle, cushion or pulvinar of the epiglottis functions as a soft-surfaced filter to lower pitch and mellow the quality in tones when cooperating with the cartilages of Wrisberg (p. 175). When the tonal quality is distinctly nasal, the cushion of the epiglottis is often seen almost to close on the cartilages of Wrisberg (p. 240).

It seems to me that this information would be the most pertinent to the speech teacher.

CHARLES H. VOELKER, Columbus, Ohio.
Professor of Speech Pathology, Capital College.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 7. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates)*. The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates)*. New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates)*. The examination will be held in various cities of the United States and Canada, March 23. *Final oral and clinical examination (Group A and Group B candidates)*. Atlantic City, N. J., June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 10. *Application must be filed at least sixty days prior to date of examination*. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: *Basic Science*. Tucson, Dec. 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical*. Phoenix, Jan. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

COLORADO: Denver, Jan. 18. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Dec. 27-28. *Medical*. Washington, Jan. 14-15. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

ILLINOIS: Chicago, Jan. 22-24. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Jan. 3-5. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 11-12. Sec., Dr. C. H. Ewing, Larned.

MARYLAND: *Regular*. Baltimore, Dec. 11-14. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore. *Homoeopathic*. Baltimore, Dec. 11-12. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 2-3. Sec., Dr. J. Charney McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 15-17. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science*. Omaha, Jan. 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 28-31. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 1-4. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OKLAHOMA: *Reciprocity*. Oklahoma City, Dec. 11. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

OREGON: Portland, Jan. 2-4. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-12. Sec., Board of Medical Education and Licensure, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 3-4. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 15-16. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

TENNESSEE: Memphis, Dec. 20-21. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VIRGINIA: Richmond, Dec. 12-14. Sec., Dr. J. W. Preston, 28½ Franklin Rd., Roanoke.

WASHINGTON: *Basic Science*. Seattle, Jan. 10-11. *Medical*. Seattle, Jan. 14-16. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: *Basic Science*. Milwaukee, Dec. 15. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 8-10. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse.

THE TRAINING OF PHYSICIANS IN RUSSIA

Decree of the Central Executive Committee,
U. S. S. R., Sept. 3, 1934

The following decree, published in *Ekonomicheskaya Zhizn*, Moscow, September 4, has been translated by Peter T. Swanish, Ph.D., of Loyola University, Chicago:

The Central Executive Committee, U. S. S. R., notes that despite the general increase in the number of students in higher institutions of medical education, from 26,100 in 1928 to 48,000 on Jan. 1, 1934, and the growth in the number of such institutions throughout the Soviet Union from twenty-five to forty-nine, the training of physicians, as a consequence of poor administration by the People's Commissars of Health of the Federated Republics, is unsatisfactory.

In the latter connection, the People's Commissars of Health have failed to give sufficient attention to the training of "attending practitioners" of medicine required in urban and rural

localities, while at the same time there has been an extraordinary increase in the number of students receiving training in the preventive branches (doctors of hygiene and the like).

Education in the medical schools has not provided a fundamental and general training. The fundamental medical disciplines (normal and pathologic anatomy and physiology, biologic chemistry, clinical subjects) have not been given a sufficiently important place in the curriculum. Students have not been adequately supplied with textbooks despite opportunities for revision of courses and the adoption of improved methods of foreign specialists.

Within recent years, clinics of medical institutions where research in medicine is concentrated have lost their didactic rôle and have become ordinary hospitals; and with respect to equipment and class of patients, their organization does not meet the needs of medical education. Scientific laboratories and lecture halls and anatomy rooms are insufficient in relation to the number of students; laboratory equipment is worn out and has not been adequately maintained or replaced.

For the purpose of eliminating the intolerable conditions that exist in the education of physicians, the committee:

1. Decrees an increase in the number of physicians in the country to provide for better care of urban and village population, the number of students to be admitted to higher institutions of medical training being fixed as follows: 1934, 15,610; 1935, 23,900; 1936, 30,600; 1937, 33,500.

2. Decrees: (a) The establishment in all medical institutions in the Soviet Union, for the training of practicing physicians, of faculties in therapeutics, surgery and obstetrics-gynecology in the fifth year of the medical course.

(b) The organization of faculties for the training of pediatricians in fourteen higher institutions of medical education.

(c) The organization of faculties in sanitation and hygiene, bacteriology-epidemiology and food sanitation, the specialization of physicians in these branches to begin in the fifth year, in ten higher institutions of medical education.

(d) A five-year course in all the foregoing institutions and faculties.

3. Decrees the establishment of the following proportions in the distribution of students as between different faculties (in all the republics): general medicine, 75 per cent; pediatrics, 15 per cent; sanitation and hygiene, 10 per cent.

4. Decrees specialization in the various branches of medicine (obstetrics, gynecology, eye, ear, nose and throat, and so on) and the improvement in qualifications of general practitioners, to be carried out as follows:

(a) Continuance of status as intern or clinical assistant in approved institutions and hospitals.

(b) The pursuit of courses of study in special branches of medicine by physicians attached to urban industry.

(c) Compulsory attendance once every three years of lectures and courses in institutions for medical training by all physicians practicing in rural localities and remote settlements, and the payment of stipends covering living costs and the usual compensation of such physicians.

5. (a) Decrees and considers as expedient the preparation of practicing physicians of the second grade in evening courses covering a five-year period.

(b) Forbids the training of physicians by means of correspondence courses.

6. Instructs the People's Commissars of Health of the Federated Republics to submit by Oct. 1, 1934, a new curriculum and program of study.

7. Decrees the compulsory examination by the state of all students completing courses in higher institutions of medical education. Such examination must be given by special examining boards appointed by the People's Commissars of Health of the Federated Republics.

8. Instructs the People's Commissars of Health of the Federated Republics to supply on time the issue of textbooks for medical schools for the year 1934-1935.

9. Authorizes the appropriation from the state budget, from Jan. 1, 1935, of the necessary financial resources for improving clinical instruction.

10. Authorizes, as of Sept. 1, 1934, additional compensation for senior teaching staffs in clinics for scientific research.

11 Authorizes a more rational and planned use of persons completing medical education and their distribution as between republics, regions and territories of the Soviet Union

12 Instructs the Soviet of People's Commissars, U S S R, to reexamine the question of additional appropriations for medical education for the year 1934 and for the years 1935-1937

A CHERVAKOV
A ENUKIDZE

President and Secretary, respectively, Central
Executive Committee, U S S R

Colorado July Report

Dr William Whitridge Williams, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, July 3-6, 1934. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined, 53 of whom passed and 1 failed. Twelve physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1934)	84.4
University of Colorado School of Medicine		(1934)	81.1
81.4, 82, 83, 83.2, 84, 84.84, 84.1, 84.3, 85, 85			
85, 85.1, 86, 86, 86, 86.3, 86.3, 86.4, 87, 87,			
87, 87, 87.1, 87.2, 87.2, 87.3, 87.3, 87.3, 89.1, 89.3,			
90, 90, 90, 90, 91			
Rush Medical College		(1933)	88
Creighton University School of Medicine		(1934)	84.4
University of Nebraska College of Medicine		(1933)	83.5, 86.2
Julus Maximilians Universität Medizinische Fakultät,			
Würzburg, Germany		(1924)*	83.4
Osteopaths †	78.6, 79, 79	80.6, 84, 86	88
	FAILED	Year Grad	Per Cent
Osteopath †			71

School	LICENSED BY ENDORSEMENT	Year Grad	Per Cent
Loyola University School of Medicine		(1932)	Illinois
Northwestern Univ. Med. School	(1913) Illinois	(1929)	California
Indiana University School of Medicine		(1930)	Indiana
Hospital College of Medicine, Kentucky		(1904)	Kentucky
Tulane University of Louisiana School of Medicine		(1933)	Louisiana
St. Louis University School of Medicine		(1931)	Missouri
Washington University School of Medicine		(1897)	New Mexico
Columbia Univ. College of Physicians and Surgeons		(1918)	New York
N. Y. Univ., Univ. and Bellevue Hosp. Med. College		(1926)	New York
Western Reserve University School of Medicine		(1932)	Ohio
University of Tennessee College of Medicine		(1933)	Tennessee

* Verification of graduation in process

† Examined in medicine and surgery

Indiana June Examination

Dr William R. Davidson, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held in Indianapolis, June 19-21, 1934. The examination covered 16 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and thirty-nine candidates were examined, 135 of whom passed and 4 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine		(1934)	83
Loyola University School of Medicine		(1933)	83.7
(1934) 79.7, 80.2, 82.7, 85.7*			
Northwestern University Medical School		(1934)	80.7, 83.4
Rush Medical College	(1926) 78	(1930) 78.7	(1934) 80.8, 84.2
University of Illinois College of Medicine	(1928) 83.8	(1931)	80.6
Indiana University School of Medicine		(1933)	79.3
80.8, 84.1, (1934) 76.4, 76.5, 76.6, 76.9, 77.3, 77.5,			
77.7, 77.9, 78.7, 79.1, 79.2, 79.3, 79.5, 79.5, 79.5, 79.7,			
79.7, 79.8, 79.8, 80, 80, 80.1, 80.1, 80.3, 80.5, 80.6,			
80.6, 80.7, 80.7, 80.7, 80.8, 80.8, 80.8, 80.9, 80.9, 80.9,			
81.1, 81.1, 81.1, 81.2, 81.2, 81.3, 81.3, 81.3, 81.3,			
81.3, 81.3, 81.5, 81.5, 81.5, 81.7, 81.7, 81.9, 82, 82.1,			
82.1, 82.1, 82.2, 82.2, 82.3, 82.3, 82.3, 82.3, 82.4,			
82.5, 82.5, 82.5, 82.6, 82.6, 82.6, 82.7, 82.8, 82.8,			
82.8, 82.8, 82.9, 82.9, 82.9, 83.1, 83.3, 83.4, 83.5,			
83.7, 83.7, 83.8, 83.8, 83.9, 84, 84.3, 84.5, 84.5, 84.5,			
84.6, 84.7, 84.8, 84.8, 85, 85.1, 85.2, 85.4, 85.5, 85.7,			
85.8, 85.9, 86.3, 87.3, 87.9			
University of Louisville School of Medicine	(1934) 79.5, 81.4	84.1	
University of Michigan Medical School		(1933)	79.1
Hahnemann Med. College and Hospital of Philadelphia		(1934)	77.4
University of Pennsylvania School of Medicine		(1934)	80.6
McHarr, Medical College		(1933)	83.4
University of Wisconsin Medical School		(1932)	79.1
University of Manitoba Faculty of Medicine		(1923)	77.6

School	FAILED	Year Grad	Number Failed
Rush Medical College		(1919)	1
University of Illinois College of Medicine		(1934)	1
Indiana University School of Medicine		(1934) 2	2

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship

Book Notices

Bronchoscopy, Esophagoscopy and Gastroscopy. A Manual of Peroral Endoscopy and Laryngeal Surgery. By Chevalier Jackson M.D. Sc.D., F.A.C.S., Professor of Bronchoscopy and Esophagocopy, Temple University, and Chevalier L. Jackson A.B., M.D. M.Sc., Professor of Clinical Bronchoscopy, Temple University. Third edition. Cloth. Price \$9. Pp. 485 with 240 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

In this edition, gastroscopy is not only mentioned in the title but more freely discussed in the text. The authors have extended their investigations in this field and with the help of the new Wolf-Schindler flexible gastroscope have brought to light many interesting facts. This instrument at present, unfortunately, is too expensive for the average bronchoscopist. Nevertheless its use, where available, is likely to lead to new observations which may prove of far reaching value to internists and surgeons. This entire chapter is intensely interesting. The new edition is considerably larger than the previous one. Many of the old illustrations have been replaced and new ones added. Also there are several additional colored drawings in the inimitable style of the elder Jackson, all delightfully graphic as usual. The chapters on diseases of the tracheobronchial tree and esophagus are more ample than in the previous edition and include the latest information on the subject. Physical examinations and roentgen studies are again emphasized and gone into thoroughly. The subject of tracheotomy is as complete as one could possibly desire and may be read and reread with profit not only by the surgeon but by interns and nurses as well. Among the topics that have been amplified are the care of chronic tracheal stenosis, the treatment of esophageal diverticula and the repair of tracheal fistulas. From the numerous types of operations suggested in these conditions the authors have selected only those which in their experience have yielded successful results and they have presented them with clarity and brevity. They offer a welcome guide to the perplexed laryngologist who may see these cases only occasionally. All in all this work is easily the foremost of its kind. Its text is never ambiguous, its illustrations are numerous and appropriate, and its scope is all embracing. Based as it is on vast experience, keen observation and thorough study, it lacks nothing that any endoscopist might require of a textbook.

Human Sterility: Causation, Diagnosis, and Treatment. A Practical Manual of Clinical Procedure. By Samuel Raynor Meaker M.D., Professor of Gynecology, Boston University School of Medicine. Medical Aspects of Human Fertility Series issued by the National Committee on Maternal Health. Inc. Cloth. Price \$4. Pp. 276 with 27 illustrations. Baltimore: Williams & Wilkins Company, 1934.

To those familiar with Meaker's former contributions to the subject of sterility, the present work will indeed be welcome. Published under the auspices of the National Committee on Maternal Health, the book represents a contemporary aspect of the subject presented in a simple, direct and acceptable form. The major portion of it is devoted to the causation and diagnosis of sterility and is described in accordance with the plan adopted by Meaker and his associates for the group study of married couples. Complete outlines are given for study and analysis of causative factors in both partners, and the various steps in procedure are briefly but adequately discussed. The conception that fertility and sterility represent respectively success or failure in human matings is stressed, the results of the union of male and female elements rather than a consideration of the individuals separately is emphasized. The fertility threshold is explained. The last quarter of the book is devoted to treatment, in which a most conservative and highly commendable attitude is adopted. Radical surgical treatment as has been handed down year after year in textbooks on gynecology and urology is completely debunked, and only the most rational procedures are advocated. In regard to endocrine gland treatment, the author has deemed it advisable to mark time, in the light of the present state of knowledge and experience in this field. Thyroid gland therapy alone is advocated in cases warranting its use, carefully controlled by repeated basal metabolic tests. The book will be found to fill a real need in the medical literature and should be widely read by the profession at large. A criticism that may justly be mentioned is a paucity of illustrations, which for the general medical reader are always

desirable and instructive. The limited references to the published literature on the subject of sterility may be justified by the fact that the book is based largely on the author's own clinic experience.

Nephritis and Allied Diseases: Their Pathogeny and Treatment. By Robert Platt, M.D., M.R.C.P., Physician, Royal Infirmary, Sheffield. Cloth. Price, \$2.75. Pp. 166, with 8 illustrations. New York & London: Oxford University Press, 1934.

The object of this book is briefly to present, in textbook style, what the author has found of most practical value in existing knowledge of Bright's disease. The book is not intended as a first introduction to the physiology or pathology of the kidney but is rather for the senior student or practitioner, who is assumed to have a certain familiarity with such clinical conditions as edema, high blood pressure and albuminuria and to have seen cases of nephritis in the hospital wards or in private practice.

In line with the modern tendency to simplify rather than to expand the classification of renal disease, the author considers the major types of nephritis under three headings: acute nephritis, subacute nephritis and nephrosis (discussed together), and chronic nephritis. He justifies his discussion of subacute nephritis and nephrosis together on the grounds that the former has all the symptoms and signs found in the latter, with the addition of certain others, and that it is inconceivable that the albuminuria in nephrosis can occur merely as the result of tubular degeneration. He concludes that it is due to an increase in venous pressure. It therefore may be looked on as a variety of subacute nephritis in which some of the clinical signs are minimal or lacking. He admits, however, that distinctions between "subacute nephritis," "nephrosis" and "lipoid nephrosis," if used in a reserved way, are useful and instructive.

Additional chapters are devoted to the structure and function of the kidney; the renal function in disease; the blood and urine in diseases of the kidney, with a brief consideration of tests of renal function; the classification of nephritis; the "pregnancy kidney" and eclampsia; uremia; renal dwarfism and polycystic kidney; essential hypertension and nephrosclerosis; embolism, poisons and surgical disorders as special causes of renal insufficiency; bacterial infections of the kidney (including a few pages on the use of ketogenic diets for bacilluria; he commends this method of treatment, which promises to displace all others in suitable cases); albuminuria without nephritis, and methods of examination of blood and urine.

So far as possible, the author explains the clinical observations and chemical alterations on the basis of the pathologic changes peculiar to the type of disease under discussion. When no conclusive statement can be given, an attempt is made to review briefly the opposing theories. The treatment of each type of nephritis is outlined; this includes diet and its indications and contraindications, and the newer mercurial diuretics. At the end of each chapter of clinical description, a synopsis of three or four representative cases is briefly appended. The bibliography is brief but adequate for the purposes of such a text. While the author expresses some original opinions on the relationship between certain clinical and pathologic features, he has summarized concisely the theses of others and reviewed what the practitioner should know regarding the function of normal and diseased kidneys, in order to treat his patients in the most accepted manner. The result is a useful and acceptable handbook.

Psychopathology: A Survey of Modern Approaches. By J. Ernest Nicole, L.M.S.S.A., D.P.M.R.C.P. & S., Senior Assistant Medical Officer, Lancashire County Mental Hospital, Winwick. With foreword by W. H. B. Stoddart, M.D., B.S., F.R.C.P. Second edition. Cloth. Price, \$4.75. Pp. 283. Baltimore: William Wood & Company, 1934.

This book has been well received in its first edition. It is a relatively brief summary of all the schools of modern research and thought that have a bearing on psychopathology. It is intended (1) to be a reference book that will give a survey of the conception and views of the different schools, (2) to show where some of the different lines of thought approximate one another, and (3) to indicate the directions in which further reading might be profitable. It accomplishes its purpose but, to a greater extent than any other book of a similar type, brings together many strange bed fellows. Psychiatric treat-

ment, like surgical treatment, offers various avenues of attack on the various disease processes. Unlike surgery, the operation of choice in psychiatry is seldom clearly indicated, for the evaluation of a pathologic process in a mental disease is seldom made on the same basis by any two psychologists. The present volume reduces all the cults and schools of psychopathology to a dead level. The Freudian school, which is growing more and more dominant in this country, is given no more emphasis than Berman's chauvinistic gland theories. Nicole stresses adlerian psychology, which in England has a firmly established place, no more than behaviorism, which, after all, is not a school of psychopathology but merely a technic of studying mental reactions. If, however, one remembers that the scope of this book is vast, one realizes that the author approximates his purpose by including chapters, short it is true, dealing with almost every leading school of psychologic and psychiatric thought of today. The physique theory of Kretschmer, the chemical theories, the social-psychiatric schools of Malinowski and Rivers, the purely psychologic schools of McDougall, Spearman and Watson, are dealt with in order to round out discussions of the work of Jung, Adler and Freud and their disciples. No criticism can be made of the accuracy and validity of Nicole's summaries. To the beginner in psychopathologic work the book may be strongly recommended as a stimulant and guide post for further studies; to the experienced psychiatrist it may reveal some approaches that had not previously been called to his attention.

A Student's Handbook of Clinical Electrocardiography. By William Evans, M.D., M.R.C.P., Assistant Physician and Assistant Director of the Medical Unit, London Hospital. Cloth. Price, 3s. Pp. 49, with 64 illustrations. London: H. K. Lewis & Company, Ltd., 1934.

This small volume consists of a collection of sixty-four electrocardiograms, each being accompanied by a brief explanatory note and a diagnosis. The book is well made, the illustrations are good and the text is simple, but the field for such a volume will be limited, as there are a sufficient number of good works on the subject, several being almost as concise as this one. Its greatest field of usefulness will probably be among interns and those who wish to acquaint themselves merely with interpretation of simple electrocardiograms.

Fases biológicas de la mujer (cartas a Paloma): Pubertad, noviazgo, boda, embarazo, parto, puerperio, crianza, aborto, esterilidad, completo de maternidad, procreación consciente, edad crítica, menopausia. Por Francisco Haro. Paper. Price, 5 pesetas. Pp. 230. Madrid: Javier Morata, 1934.

This book is presented in the form of personal letters from the author to an imaginary daughter or young friend and deals with puberty, love, marriage, pregnancy, labor, the puerperium, nursing, abortion, sterility, maternity, the maternal instinct of women, the critical age and the menopause. The object of the book is to present women in any social stratum of life and at any age with a book of consultation and of teachings on the biologic aspects of woman's life.

Modern Advances in Diseases of the Throat. By Arthur Miller, F.R.C.S., D.L.O., Surgeon for Diseases of the Ear, Nose and Throat, French Hospital, London. Cloth. Price, 10/6. Pp. 120, with 43 illustrations. London: H. K. Lewis & Company, Ltd., 1934.

In this booklet the author attempts to summarize current views on some of the important phases of diseases of the throat. Most of the space is taken up with the tonsil question, and Kaiser's material is freely drawn on in this connection. The chapters on anatomy, physiology and bacteriology of the tonsils are rather brief, while those on indications, complications and end results of tonsillectomy are somewhat more comprehensive. Here and there one finds interesting paragraphs on such topics as tonsillectomy in diabetic patients, tonsillectomy in singers and removal of the tonsils by diathermy. The remainder of the book is taken up with a sketchy review of the adenoids and brief discussion of some of the more common inflammatory processes in the throat. On the subject of neoplasms a few pages are devoted to malignant conditions of the tonsils and palate. The book is hardly thorough enough for the specialist but may well be recommended for the general practitioner. The text is clear, the illustrations are adequate and the bibliography is valuable to those who wish for further details.

Medicolegal

Accident Insurance: Typhoid Carrier Not "Totally and Permanently Disabled."—The defendant insurance company issued a policy to the plaintiff, a dairy farmer, which provided certain benefits if he should become totally and permanently disabled, either physically or mentally, from any cause whatever, to such an extent as to render him wholly, continuously and permanently unable to engage in any gainful occupation. While the policy was in force, the state commissioner of health declared the plaintiff to be a typhoid carrier, permanently quarantined him from all connection with the production or sale of milk or of any other food product, and excluded him from his own dairy farm. Because he was a typhoid carrier, the plaintiff could not obtain work. He sought compensation from the insurance company on the ground that he was totally and permanently disabled, the insurance company denied liability, and he sued on the policy. The trial court dismissed the complaint and he appealed to the supreme court, appellate division, fourth department, New York.

The rights of parties to an insurance policy, said the supreme court, must be determined by the policy itself. In construing the total disability provisions of this policy, this court must give effect to what would be ordinary lay interpretation. Can it be said that, when this policy was written, the parties had in mind that a typhoid carrier, affected in no other manner, was physically disabled? Would the ordinary business man in making one of his customary contracts ever consider a typhoid carrier as physically unable to work? A carrier does not have typhoid fever; he is not ill; he simply harbors bacilli and excretes them; his strength is not impaired; his constitution is in no way weakened or undermined; he has the same capacity for labor which he always had; his mental powers are not affected; he suffers no pain or impairment; he would never know that he was a carrier if fecal or urine specimens were not submitted for laboratory examination. His inability to get work is not due to any physical impairment but to the edict of the state, or to fear of infection on the part of others. As the insured concedes in his brief, the carrier state in and of itself, if the carrier's duty to the public and the law of the state be disregarded, would not prevent him from milking cows and handling milk. Physically he is fully able to continue the manual tasks associated with the dairy business. His disability is social in its nature, rather than physical. While it is true that he has found himself unable to earn a livelihood, his inability is not caused by physical impairment of his body, and he is not physically disabled within the meaning of the policy.

The supreme court accordingly affirmed the judgment of the trial court dismissing the plaintiff's complaint.—*Gates v. Prudential Ins. Co. of America (N. Y.)*, 270 N. Y. S. 282.

Malpractice: Contemporaneous Tonsillectomy and Extraction of Teeth.—Hughes was suffering from rheumatism and chronic myocarditis. His physician advised the removal of his tonsils and an x-ray examination of his teeth, which examination was made by the defendant Brown, a dentist. The defendant Desmond, a physician, was then called in and advised the removal of the tonsils and the extraction of at least some of the teeth while the patient was under the anesthetic for the tonsillectomy. The defendant physician performed the tonsillectomy, and the defendant dentist extracted some infected teeth, but only sixteen of them, although the patient had insisted on the extraction of all his teeth. The patient died one week later. Contending that it was improper, in view of the patient's condition, to remove the tonsils and so many teeth at one time, his widow sued the defendant-physician and dentist. A verdict was given for the plaintiff and the defendants appealed to the Supreme Court of Colorado.

All that was required of the physician and dentist, said the Supreme Court, in this case, in diagnosing and treating their patient, was such a degree of skill and care as was ordinarily possessed by those in the practice of their respective professions, under similar circumstances and in their particular locality. Whether or not these requirements are met can

usually be determined only from the opinions of witnesses learned in the corresponding professions. There is no actionable violation of a duty when only the best judgment, under the circumstances of the case, is required and is used. The burden is on the plaintiff to establish negligence. The evidence here shows that the defendants possessed ordinary and reasonable learning and skill in their professions and that the practice they followed had been successful in similar cases. The plaintiff called several expert witnesses, some of whom said that they would not have pulled more than two or three teeth but the majority of whom testified that such matters were to be left to the best judgment of the operator. The defendants called many experts, who testified, in substance, that operations similar to those performed in this case are advisable under like or similar circumstances and many times are followed with desirable results. Who can say with certainty that the defendants abandoned the field of accepted practice? There must be a clearer case of total abandon than here appears before liability occurs, otherwise the learned judgment of the skilled professions of medicine and dentistry would be lost to the human race.

Further, said the Supreme Court, the burden was on the plaintiff to show that the acts of the defendants were the direct cause of death. No such evidence was produced. The fact that there is a lamentable result does not of itself satisfy that burden imposed on the plaintiff. The burden is not met by showing that death might have resulted from the operation complained of, and it is improper to allow jurors to conjecture as to the efficient and proximate cause. The possibility of death as the result of such operations is not sufficient; there must be evidence eliminating the intervention of other causes which might exist.

For the reasons stated, the judgment in favor of the plaintiff was reversed.—*Brown v. Hughes (Colo.)*, 30 P. (2d) 259.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Levin, 104 South Michigan Boulevard, Chicago, Secretary.
American Association for the Study of Neoplastic Diseases, Dec. 27-29. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D.C., Secretary.
Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
Society of American Bacteriologists, Chicago, Dec. 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.
Southern Surgical Association, Sea Island, Ga., Dec. 11-13. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Conference on Rheumatic Diseases

First Annual Meeting, held at Cleveland, June 11, 1934

(Continued from page 1734)

The Care of the Joints in Chronic Proliferative Arthritis of Children

DRS. FRANK R. OBER and WILLIAM T. GREEN, Boston: In any disease in which the etiology is unknown, the treatment must be symptomatic or directed toward the general or local manifestations of the disease. Proliferative (atrophic) arthritis is no exception to this rule. After the adoption of general measures that improve the health and nutrition of the patient and empirically seem to be helpful, and removal of definite focal infection at least for its general effect, there remains the local care of the joints. In our opinion the latter, the proper care of the joints themselves, is 60 per cent of the therapy in proliferative arthritis of children. The joints should hold one's interest from the very beginning of the disease.

The changes that occur in proliferative arthritis are due not only to the disease directly but also to muscle spasm and

inactivity in a position of deformity. Muscle spasm, nature's way of immobilizing a joint, forces the cartilaginous surfaces together and cannot but increase injury to the joint surfaces. Trauma increases the inflammatory reaction and the spasm of the muscles. Therefore the first principle of therapy in the acute stages of the disease is rest and the avoidance of all trauma; this presupposes freedom from weight bearing and some degree of immobilization. However, motion is necessary even in a normal joint to preserve its integrity. The second consideration, then, in the care of the joints, is the prevention of those changes that are the result of disuse. This implies not only prevention of deformity but performance of active motions, to minimize nutritional changes in the joints and also to decrease atrophy of bones and muscles. The general nourishment of these children is nearly always below par. Some of them look as if they had celiac disease. With a large number there is recession of the lower jaw. A diet high in vitamins is prescribed, including yeast, fresh fruits, green vegetables and meat, with reduction but not elimination of carbohydrates.

The problem, then, is to rest the joints and prevent deformity, eliminate all trauma, control muscle spasm, and yet keep the joints moving. It is of importance to educate the mothers of the patients. The measures found to be most useful in the prevention of deformities include periods of rest and fixation, periods of traction, the use of pulleys that can be managed by the patient himself, periods of exercise in a pool with water at 96 F., special exercises for quadriceps, gluteal and abdominal muscles, and crocheting and other types of occupational therapy.

We should like to emphasize (1) the value of counterpoised motion in allaying muscle spasm and developing motion of the joints in proliferative arthritis of children and (2) the fact that hit or miss physical therapy, with only a vague purpose in mind, is not the solution. These may be helpful, but the primary measures are well planned active exercises, which must be carried out frequently and regularly by some one who spends a great part of the time with the patient, in the usual instance, the mother, who is carefully trained and supervised.

The Management of Atrophic Arthritis

DRS. W. P. HOLBROOK and DONALD F. HILL, Tucson, Ariz.: Insufficient attention has been paid to the variations of management necessary during the different phases of atrophic arthritis. Many good therapeutic aids have not only been used unwisely but often discarded because they were used at the wrong time. The course of atrophic arthritis may vary from a rapidly progressing, febrile and exceedingly severe illness, in which the patient becomes helpless almost immediately, to an afebrile illness with little discomfort over a period of years but which may just as certainly go on to a crippling deformity. Because of these wide variations in onset and course it seems advisable to consider the therapeutic measures in relation to the stage of the disease.

Our conception of atrophic arthritis does not admit a known, single specific etiologic agent, or specific cure. We have previously reported carefully controlled experiments with various types of therapy. These consisted of placing about 400 patients with atrophic arthritis on a program that included diet and bowel management, prevention and correction of deformity, rest, exercise, general physical therapy, and proper climatic conditions. After a control period of several months 100 patients had foci removed, 100 were given blood transfusions, 100 were treated with vaccine, and 100 were given special heliotherapy. Progress was observed over periods ranging from months to years. The results of this study emphasized the nonspecificity of any single therapeutic agent used.

Our present program of treatment includes the following measures: The early establishment of a correct routine of living. This may mean partial or total elimination of business or domestic responsibilities, avoidance of conditions producing nervous strain, and establishment of regular hours. The amount of rest and general activity depends entirely on the severity or phase of the disease process, and the latter should be pushed to tolerance, which may roughly be determined by the presence of increasing fatigue or pain that persists during rest after exercise. The patient may be guided by the rule that pain during exercise is of little or no significance, provided it does not continue after exercise. Proper sedatives are used for

nervousness and to insure adequate sleep. Local heat, splints and acetylsalicylic acid are helpful. Corrective exercises, occupational therapy and avoidance of painful postures are indicated. As most patients with atrophic arthritis are undernourished we favor a diet high in calories and vitamins with plenty of red meat, starches, fresh fruits and green vegetables, and the use of yeast, wheat germs and cod liver oil. Belladonna, dilute hydrochloric acid and insulin are sometimes prescribed. When the weight is normal, a diet low in starch and high in vitamins may be used. If obesity is present a diet low in starch and low in fat is prescribed. To regulate elimination, liquid petrolatum, agar, oil-retention enemas and glycerin suppositories generally suffice. High enemas or colonic irrigations are of questionable value.

The various accepted measures for the correction and prevention of deformity must be used as necessary: physical therapy, splints, specific exercise and supports. Before removing foci, we favor a preliminary period of constitutional treatment to avoid acute exacerbations following focal removal. Preoperative transfusions are frequently used, and the removal of foci is generally avoided in the acute phases of the disease. Vaccines have only occasionally proved of undoubted merit. We favor the intravenous use of minute doses of antigen to which the patient is strongly skin sensitive. A series of small blood transfusions often occasions marked relief for patients with acute or subacute arthritis; they seem of little help in chronic afebrile cases.

At the proper time and in proper amounts, heliotherapy may be most useful, and the climatic advantages of Arizona seem definite. It must be understood, however, that without a proper routine of living, arthritis, even on the Tucson desert, can continue as a sad and crippling disease. Too many people come to the Southwest believing that climate performs miracles.

DISCUSSION ON PAPERS OF DRS. SLADEN, ENSIGN AND MCCOLL, DRS. OBER AND GREEN, AND DRS. HOLBROOK AND HILL

DR. ROBERT B. OSGOOD, Boston: Attention should be called to the great disparity in the ratio between the 128 cases of hypertrophic arthritis and ten cases of atrophic arthritis of Drs. Sladen, Ensign and McColl. I have been inclined to believe that the influence of diet was greater in the atrophic than in the hypertrophic type, and that the matter of quality was more important than quantity. This study suggests that quantity is important, especially the lack of what they properly call "protective foodstuffs," which most physicians speak of as vitamins. A lack of the protective foods in effect constitutes a deficiency diet. What Minot has spoken of as an "optimum diet" is still of great importance in the treatment of chronic arthritis, and most earnest attempts should be made to determine what constitutes such an optimum diet, not for both types or even for one or the other type, but for each individual who is suffering from the disease. It would seem wise not to attempt any rigid standardization of diet but to study the alimentary aberrations of each patient and strive to meet their individual needs of both optimum intake and efficient outgo. Drs. Ober and Green's paper and moving pictures speak for themselves. Prevention of deformity is of supreme importance. This means not just the routine use of physical therapy but the use of measures especially designed and persistently carried out not only to prevent deformity but also to retain and increase joint mobility and improve joint circulation. This is not, I am sorry to say, what physical therapy means to the average physician. Physical therapy is one of the most effective weapons against eventual restriction of function in the atrophic type of arthritis. Of course this presupposes that the generalized disease is being attacked by all other weapons, such as rest, fresh air, sunlight, diet, and the removal of sources of infection. I do not quite agree with Drs. Holbrook and Hill when they say that "regardless of treatment there are recurring periods of exacerbation and remission." I agree that periods of exacerbation and remission often occur in spite of treatment, but not all patients go through these periods, nor is such periodicity regular. When therapy becomes more intelligent, and mental and physical extraneous conditions can be controlled, it will not be necessary to consider such exacerbations as inevitable. In connection with the management of the

bowels, they might well have mentioned abdominal massage after the Drown method and Hugh Owen Thomas's cure for constipation. This consists in making the foot of the bed 6 inches higher than the head, whereby posited and kinked intestines crowded into the pelvis may be given more room to function during the night of recumbent relaxation. These mechanical measures I have found to be strong adjuvants in improving alimentation. I agree with the authors' views as to the removal of foci of infection and the employment of vaccines. When the attitude of clinicians in general toward chronic arthritis becomes as sane as that of Drs. Holbrook and Hill, it seems reasonable to hope for fewer tragedies and more successes in the management of the different phases of chronic atrophic arthritis.

The Relation of Dietetics to the Reduction of Tissue Swelling in Arthritis

DRS. C. W. SCULL and RALPH PEMBERTON, Philadelphia: A certain amount of swelling of tissue is an accompaniment of chronic arthritis, and the results of successful therapy include reduction of this swelling as well as of pain and stiffness in joints. This study concerns itself with the influence of diet and postural therapy on such swelling of soft tissues, to be noted especially on the dorsum of the hands. The rapidity with which this swelling is at times reduced suggests that it represents an accumulation of fluid. Since adequate methods for the direct determination of this possibility are not available, the use of indirect methods is necessary; namely, a study of water balance during the interval when swelling is subsiding.

Approximate determinations of water balance indicate that the convalescing arthritic patient experiences a net loss of water from the body. Several factors may be responsible, among them the recumbent position of hospital patients and the effect of diet. On standing, blood becomes concentrated; during recumbency, water is transferred from tissues to the circulating blood. The specific gravity of the venous blood of standing patients averaged 1.028, as compared to 1.026 during recumbency. Such a change is indicative of a transfer of water from tissues to blood in the latter position.

Dehydration and reduction of soft tissue swelling can be demonstrated during the use of submaintenance diets. Calculations indicated to us that tissue catabolism did not account for the amount of water lost, and it was concluded that this loss was of pathologic, not physiologic, fluid. We believe that the benefits frequently resulting from the use of diets low in calories and carbohydrates may thus in part be explained. Such benefits accrue to patients both with atrophic and with hypertrophic arthritis, and the restriction of such therapy to just one type seems at present unwarranted. We believe that disturbances in the distribution of water in tissue may represent a significant pathologic deviation in the rheumatoid syndrome and that the diets used tend to correct such disturbances. The more drastic methods of dehydration, such as by vigorous sweating, purgation and diuresis, have proved of little value and may be dangerous. The more sustained and "physiologic" method of dehydration by suitable diets is preferred.

DISCUSSION

DR. A. ALMON FLETCHER, Toronto: The symptoms of an arthritic patient may change abruptly following a number of events: atmospheric change, removal of foci, use of vaccines and so on. A patient will experience marked stiffness and pain, with increase of swelling noted on arising in the morning. A few hours later he is much better. A varying edema of tissue has been considered a possible cause of morning stiffness. It is interesting to learn that Drs. Pemberton and Scull have noted abrupt improvement, with shifts in water balance and metabolism under the influence of diets low in calories. One must, however, be careful in the application of such observations, as physicians in general are apt to resort to one favorite method of treatment and may be led to use submaintenance diets to the exclusion of other useful therapeutic measures. Patients with arthritis are suffering with a chronic disease due to a variety of factors. All measures calculated to overcome these various factors must be used, and the sentiment of patients and physicians to use one measure, such as a diet, to the exclusion of others, should be combated, for diets alone may be ineffective.

DR. F. J. SLADEN, Detroit: Fearful of the possible harm that might result from the use of starvation periods, such as advocated by Dr. Pemberton as a preliminary measure to further treatment by diet of patients with severe arthritis, I have considered them justified only in relative emergencies, when nothing else has helped. Although I have never understood why, I have had very satisfactory results when I have tried them. I am interested in the explanation suggested now by Drs. Scull and Pemberton. However, I believe there must be a more profound factor at work that hasn't yet been discovered.

DR. RALPH PEMBERTON, Philadelphia: I welcome Dr. Sladen's comment that care must be taken in prescribing submaintenance diets in these cases. There are definite dangers inherent in undernutrition as there are in many of the other measures used for arthritis. Our laboratory work is of an academic nature chiefly, an attempt to study some of the physiologic factors underlying the production and reduction of swelling. I know of no way to explain the presence of this tissue swelling. It may be an inflammatory exudate, although it is difficult for me to interpret it as such.

DR. WALTER BAUER, Boston: From the data presented, one is not justified in drawing any final conclusions concerning the water balance. Not until one actually determines the total acid-base metabolism and insensible perspiration throughout the experimental period can one state with certainty whether there has been an actual loss or gain of water.

DR. C. W. SCULL, Philadelphia: These patients were subjected to a fairly constant regimen, so that there was little likelihood of increasing or changing the sensible loss from day to day. We therefore considered that it represented a constant. We included observations on acid-base balance. We admit that these experiments are somewhat preliminary in nature.

The Peripheral Blood Circulation in Chronic Arthritis and the Influence of Vasodilators

DR. JOSEPH KOVACS, New York: Defective peripheral circulation and disturbed blood supply to affected joints are apparent in many cases of chronic arthritis. Questions arise as to which part of the peripheral circulation (larger arteries, veins, capillaries) is disturbed in chronic arthritis and which disturbances can be considered etiologic factors or merely aggravating agents. Although ligation of arteries to the patella of animals results in changes similar to hypertrophic arthritis, in man the obliteration of major vessels has a more destructive effect on soft tissue and does not produce arthritis, as witness the absence of the latter in endarteritis obliterans. Varicose veins present in many cases of arthritis have an aggravating, not an etiologic, rôle. Phlebitis likewise is a complication, not a cause, of rheumatic infection.

In arthritis, disturbances of peripheral circulation involve chiefly the minute vessels. In cases of atrophic arthritis I found small constricted capillaries in 53 per cent, a slow blood flow in 65 per cent, and a decreased number of capillaries in nailbeds peripheral to joints with definite swellings. In hypertrophic arthritis I found small capillaries in 28 per cent of cases, a slow blood flow in 53 per cent, and decreased number of capillaries near Heberden's nodes. Subnormal skin temperatures were found in 53 per cent of the combined types. Although I am not certain that articular vessels are similarly affected, a similarity in state possibly may be rightly assumed.

The use of vasodilating drugs to increase peripheral circulation, therefore, seems indicated. The oral use of cholin compounds, histamine and nitrites is ineffective, and they produce only brief dilatation when administered subcutaneously. I have studied the effects of iontophoresis, the introduction of drugs through the skin by means of the polar effect of the galvanic (direct) current. Others have found histamine iontophoresis helpful in muscular rheumatism, unsatisfactory in chronic arthritis. Acetylcholine is rapidly destroyed by body fluids and blood. The new compound acetyl-beta-methylcholine chloride (mecholin) is preferable, as it is more potent, more stable and less toxic. The local and general effects of iontophoresis with mecholin have been compared to those with histamine. Locally, mecholin acts mostly on arterioles and produces an increased

skin temperature for from two to eight hours, increased sweating for from four to ten hours, transitory "goose-flesh," an increased oscillometric reading, a faster capillary flow, and a slight increase in the local leukocyte count. I have treated fifty-two patients with chronic arthritis, thirty with the atrophic type and twenty-two with the hypertrophic type. Definite improvement resulted in 90 per cent of the cases of atrophic arthritis, including stubborn cases, and in 80 per cent of those of hypertrophic arthritis. In the latter group, however, similar benefits resulted from other and more usual measures. Reduction of joint swellings and an increased capillary flow were features of the result. Iontophoresis is contraindicated for febrile patients and in the presence of asthma, cardiac disease and advanced senility. Further investigation is needed to determine the amounts of these drugs absorbed during iontophoresis and their mode of action. Experiments indicate that the effects are specific and not simple galvanic effects.

DISCUSSION

DR. PHILIP S. HENCH, Rochester, Minn.: Dr. Kovacs contends that there are significant alterations in capillary blood flow in both atrophic and hypertrophic arthritis, that these alterations may be of etiologic importance, and that most patients are materially improved when these alterations are corrected, at least in part. I agree that arthritis is not primarily associated with occlusive vascular disease of large vessels. I have never seen a related arthritis among a large number of cases of thrombo-angiitis obliterans. In a number of rheumatic diseases, pathologic changes are found in small vessels. In chronic atrophic arthritis, there are often very obvious alterations in general blood flow: low blood pressure, cold clammy extremities, and lowered skin temperature. Dr. Kovacs and others anticipate finding constricted capillaries in the nailbeds of the arthritic patient. At the clinic, Dr. George Brown, Miss Roth and I have studied the capillary flow in a large number of cases of atrophic and hypertrophic arthritis. Like Prusik, we have been unable to find consistent alterations. In many cases the size of the capillaries is unaffected, or slightly dilated, but not constricted. Often, however, flow is slow. Some arthritic patients exhibit vasomotor alterations long before the onset of their joint symptoms. In others they develop fairly early in the course of the disease. Many severe cases exhibit them rather late. The fact remains that the alterations are not consistently present and, during the past five years, while selecting cases suitable for sympathectomy, we have seen many patients with marked, even advanced, arthritis with warm extremities and without changes in capillary size or flow. Dr. Kovacs himself finds changes in only about half the cases of atrophic and in only about a fourth of those of hypertrophic arthritis. It has been an attractive idea that arthritis is the result of "blood hunger," that the changes in joints are secondary to an inadequate supply of blood. One must distinguish between atrophic and hypertrophic arthritis. Recall that when patellar vessels are ligated and the blood supply is sharply diminished, resulting alterations in bone are chiefly hypertrophic, not atrophic. This is what one should expect if one accepts the recent dictum of Jones and Roberts that bone undergoes increased calcification if its blood supply is decreased. However, it undergoes decalcification if its blood supply is increased. If this is true, one might better search for an augmented, not a decreased, blood supply to account for bone atrophy in atrophic arthritis, and indeed such a state has been suggested as being present in the form of hyperemia and the formation of new vessels. Raynaud's disease presents an outstanding example of diminished blood supply from vasospasm. If vasoconstriction is the cause of arthritis, isn't it strange that arthritis occurs in less than 5 per cent of cases of Raynaud's disease? Since vasomotor changes are so inconsistently present in chronic arthritis, early in one, late in another, and not at all in a third, they must represent not the cause of the disease, not even an essential part of the disease, but a complication appearing at varying times and in varying degrees as the sympathetic nervous system is perhaps variously affected by the "toxins" of the disease. As Dr. Kovacs pointed out, an interpretation of alterations in the capillaries of the nail-bed can be made only with consideration of the age grouping. What is needed even more than this is a study of capillaries correlated to the localization, duration and severity of the disease. I

have not used iontophoresis and cannot discuss its merits. I am sure that Dr. Kovacs will agree that, while iontophoresis may be effective, the ultimate goal is some method of vasodilatation requiring neither the cutting of the sympathetic nerves nor the use of electric machines beyond the financial province of most patients. The work of Starr, and more recently of Goldsmith, indicates that mecholol given orally in much larger doses than Dr. Kovacs used produces fairly prolonged significant vasodilatation. The effects of such doses should be compared to iontophoresis. When I suggest the desirability of vasodilatation I do not necessarily mean capillary vasodilatation; arteriolar vasodilatation is preferable. They are not the same, and I think that too much stress should not be laid on the significance of capillary constriction or capillary vasodilatation used as an infallible criterion of improvement. Skin temperature is dependent on arteriolar, not capillary, tone. Cold, clammy hands signify arteriolar, not necessarily capillary, constriction. Indeed, the capillaries may be dilated although their flow is sluggish. The size of capillaries is relatively unimportant, as their tone is dependent on the state of arteriolar circulation. Fix the arterioles and the capillaries will take care of themselves, as is demonstrated after sympathectomy when, in the presence of arteriolar dilatation and an improved flow, the capillaries are not more, but less, dilated than before operation.

DR. IRVING S. WRIGHT, New York: One of the most interesting observations is that arthritis rarely occurs in cases of occlusive vascular disease. When the obstruction to blood flow to a part is sudden or gross, arthritis is not produced. Occlusive disease of large vessels is not a causative factor in arthritis. Studies on the size and flow of capillaries lead me to feel that capillary alterations are not the cause of arthritis, although frequently they accompany it. At any rate, from studies of surface capillaries and skin temperature it is impossible to draw definite conclusions as to the condition of articular circulation. Dr. Kovacs' revival of an old method of treatment is worthy of careful consideration, and my observations indicate that the effect of these drugs by means of iontophoresis is more prolonged than by the oral or hypodermic route. Dr. Kovacs has made no claim as to the curative value of mecholol iontophoresis, but if it will relieve pain and discomfort it has a rightful place in therapy. In considering the high percentage of results, one must remember that the psychologic effect of a rather elaborate technique may be very definite. Further time and work will be necessary to determine the permanence of its effects.

DR. D. E. KAUFMAN, St. Louis: I have used mecholol in twenty-three cases of chronic arthritis with benefit to the large joints but none to the small joints, such as those of the fingers and wrists. In six cases the knees have been gratifyingly benefited by treatments three times a week.

DR. JOSEPH KOVACS, New York: I agree with Dr. Hench that the impaired capillary circulation cannot be accounted for as an etiologic factor in chronic arthritis. On the other hand, it has been found, in more than half the cases of arthritis, that there is an impaired capillary circulation aggravating the arthritic condition. Relieving it, one surely benefits the patient. The simplest way of medication is oral administration, I admit, but the simplest method is not in every case the most satisfactory one. The large doses administered by Goldsmith seem to me to be quite expensive therapy. The need for these large doses proves that most of the drug is destroyed in the stomach before it is absorbed, and the part that gets in the circulation causes a mild, general vasodilatation. In arthritis one needs primarily to increase the local circulation of the affected joint or joints, and iontophoresis seems to me the most adequate method for accomplishing this. I usually administer treatment twice a week and have had better results on small joints. It increases, first of all, the circulation of the affected joints and produces only a slight, general reaction. I agree with Dr. Wright that further time and work will be necessary to determine the permanence of acetyl-beta-methylcholine chloride iontophoresis. Dr. Kaufman's observations prove only that there is still a large field unexplored, and much more work must be done before the therapeutic effects of acetyl-beta-methylcholine chloride iontophoresis can be fully evaluated.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

10:1 142 (Oct.) 1934

- *Investigation of Patency of Peripheral Arteries P Formijne, Amsterdam, the Netherlands—p 1
- *Treatment of Chronic Heart Disease by Total Ablation of Thyroid Gland VII Heart in Artificial Myxedema D Davis, A A Weinstein, J E F Riseman and H L Blumgart, Boston—p 17
- *Determination and Significance of Areas of Ventricular Deflections of Electrocardiogram F N Wilson, A G Macleod, P S Barker and F. D Johnston, Ann Arbor, Mich—p 46
- Studies in Rheumatic Heart Disease Analysis of One Hundred and Nineteen Hearts, with Especial Reference to Relationship of Auricular Fibrillation to Mitral Valvular Deformity and Certain Rheumatic Tissue Changes C E de la Chapelle, I Graef and A Rottuno, New York—p 62
- Hearts of Ricksha Pullers Study of Effect of Chronic Exertion on Cardiovascular System C L Tung, C K Hsieh, C W Bien and F R Dieuaide, Peiping, China—p 79
- Patency of So Called "Anatomically Open But Functionally Closed" Foramen Ovale P Gross, Cleveland—p 101
- Electrocardiogram of Normal Heart in Pregnancy L Feldman and H H Hill, Chicago—p 110

Investigation of Patency of Peripheral Arteries—Formijne describes a method for the registration of arterial oscillations in the fingers and the feet, which is used as a test for the patency of the main arteries. By alternative compression of the radial and ulnar arteries on the hand and of the posterior tibial and dorsal pedal arteries on the feet, the composition of the oscillations can be studied. The so called occult blood pressure in the fingers and the big toes was studied by the method of Gaertner. The influence of compression of arteries on the occult blood pressure was studied and used for testing the patency of these arteries. A third method, called the shock method, was used for testing the patency of almost totally occluded arteries. Most of these arteries were found to have some degree of patency. The relation between the results of arterial palpation and the compression method was investigated in different groups of patients.

Chronic Heart Disease and Total Ablation of Thyroid.—Davis and his collaborators present observations concerning the rate and character of changes in the size of the heart in thirty seven patients, and changes in electrocardiographic voltage in thirty-two patients in whom artificial myxedema was produced by total ablation of the normal thyroid. These patients were observed from one and one-half to twelve months after operation. The degree of the hypothyroid state was estimated by measurements of the basal metabolic rate, the velocity of blood flow and the blood cholesterol, and the signs and symptoms of myxedema. Changes in the size of the heart and electrocardiographic voltage were interpreted on the basis of these indexes. After total thyroidectomy, fifteen of twenty-two patients having congestive failure showed an increase of more than 0.5 cm in the transverse cardiac diameter, three showed no change, and four showed a decrease of more than 0.5 cm. Of eleven patients having angina pectoris, eight showed an increase in the size of the heart and three no change, of four patients with no heart disease, three showed an increase in the size of the heart and one no change. The variations in changes in the size of the heart in the patients who had congestive failure before operation were the result of two opposing factors: the effect of the hypothyroid state tending to increase the size of the heart, and the restoration of circulatory compensation tending to decrease its size. Observations on the changes in the electrocardiographic voltage of P and T waves in thirty-two patients gave the following results. Of twenty

patients having congestive failure, fourteen showed a decrease, five no change and one an increase in voltage, of eight patients with angina pectoris, five showed a decrease and three no change in voltage, four patients without heart disease all showed a decrease in voltage. The rate and extent of increase in the size of the heart and of decrease in electrocardiographic voltage of these patients paralleled the development of the hypothyroid state and were a manifestation rather than a secondary consequence of myxedema. These changes generally showed no progression when the metabolism was fixed at a given decreased level by thyroid medication and regressed if the metabolism was raised significantly. In spite of these changes in heart size and electrocardiogram, the patients studied showed a disappearance of signs and symptoms of congestive failure or of angina pectoris with persistence of improvement from three to twelve months and an increased capacity for work as measured by standard exercise tolerance tests. "Myxedema heart" in the sense of a condition aggravating or precipitating attacks of congestive failure or angina pectoris does not develop when hypothyroidism is produced by total ablation of the normal thyroid in patients whose metabolism is maintained at about minus 30 per cent.

Areas of Ventricular Deflections in Electrocardiogram.—Wilson and his associates state that by measuring the areas of the ventricular deflections of the electrocardiogram it is possible to determine the mean electrical axis of QRS, which gives the direction in which the excitatory process spreads over the average element of ventricular muscle, and the mean electrical axis of T, which gives the inverse of the direction in which the recovery process spreads over the average element of ventricular muscle. If all the ventricular muscle passed through the period of excitation at the same time and in the same way, the area of QRS and the area of T would be equal in absolute magnitude but opposite in sign, and the area of QRST would be zero. The area of QRST is a measure of the electrical effects produced by local variations in the excitatory process. The mean electrical axis of QRST gives the direction of the line along which these local variations are greatest. The local variations in the excitatory process that determines the mean electrical axis of QRST are dependent on factors that act on different parts of the ventricular muscle with different intensities. They are not materially influenced by the course of the excitatory process over the ventricular muscle.

American Journal of Diseases of Children, Chicago

48:7 948 (Oct.) 1934

- Study of Teeth of Group of School Children Previously Examined for Rickets Martha M Eliot, Susan P Souther, B G Anderson and S S Armin, New Haven, Conn—p 713
- Osteomyelitis of Maxilla in Nurslings and in Infants H G Poncher and J R Blayne, Chicago—p 730
- Tumors of Brain in Infancy Clinical and Pathologic Study S W Gross, Cleveland—p 739
- *Etiology of Mongolism, with Especial Reference to Its Occurrence in Twins A J Rosanoff and Leva M Handy, Los Angeles—p 764
- Thoracic Aortic Aneurysms in Children Their Relation to Rheumatic Fever J K Calvin and S J Nichamin, Chicago—p 780
- *Cutaneous Reactions of Children to Pneumococcus and Streptococcus Vaccines M de Bruin and A Vedder, Amsterdam, the Netherlands—p 791
- Family Periodic Paralysis Review of Literature L Schoenthal, New York—p 799
- *Repeated Sedimentation Tests L D van Antwerp, Meriden, Conn—p 814
- Blood Proteins of Children II Distribution in Same Specimen of Blood of Hydrolyzable, Amide, Humin, Basic Amine and Mono Amine Nitrogen of Whole Blood, Red Cells and Serum Proteins A Bernhard, J S Leopold and I J Dreker, New York—p 819

Etiology of Mongolism—Rosanoff and Handy summarize fifty-nine cases of mongolism in twins and report five new cases. In utilizing this material in their study of the etiology of mongolism they find that the etiologic factors are narrowed down to those that must be at work in the germinal or early embryonic period of environment. There is definite statistical correlation between the incidence of mongolism and the age of the parents. An attempt is made here to show, however, that the real etiologic factor is the age of the mother, that of the father having only an indirect bearing by reason of being in statistical correlation with the age of the mother. Similarly the size of the family, the order of birth, "uterine exhaustion," and so on, play no part in the etiology of mon-

golis; they stand out in the statistics only by reason of their correlation with the one real factor: the age of the mother. Mongolism is more common among boys than among girls. This finding is so constant as to force one to assume that, although injury to the ovum is the essential cause of mongolism, the spermatozoon is not without its influence. The X-chromosome in the female-producing spermatozoon seems in some cases to have the power of protecting an injured ovum against its tendency to develop into a mongolian child. It is pointed out in this connection that mongolism varies greatly in the severity of its manifestations and, on the whole, is milder in girls than in boys, possibly owing to partial protection by the additional X-chromosome. All the known facts concerning mongolism seem to point to some condition of the ovary as underlying its pathogenesis. No systematic pathologic investigation of the ovaries of women who have given birth to mongolian idiots has been made, to the authors' knowledge. Coarse or diffuse lesions seem to be excluded as a possible cause. All available evidence seems to justify the speculation that foci of tissue change—perhaps scars—marking the sites of old ovulation are the cause of the trouble.

Cutaneous Reactions to Vaccines.—De Bruin and Vedder observed that infants younger than 3 months react weakly or not at all to intracutaneous injections of vaccines of dead pneumococci and streptococci. Older infants and young children react in a gradually increasing percentage of cases. No type specific or species specific differences between the vaccines were observed. Vaccines of pneumococci and green producing and hemolytic streptococci act the same. The reaction is specific for the group of pneumococci and streptococci. Children who have suffered from bronchitis, lobular pneumonia and other conditions in which pneumococci and streptococci are of etiologic importance often give a positive reaction; other children, a negative reaction. Possibly as a result of such a condition, a negative reaction changes into a positive one. Older children and adults (students) in the majority of cases react positively. Children who have suffered from lobar pneumonia, acute rheumatic fever and chorea almost never react to the vaccines. In persons having suffered from erysipelas the percentage incidence of negative reactions is the same as the chance of recurrence. In erysipelas a positive reaction points to immunity; a negative one indicates that a chance of recurrence exists. In lobar pneumonia and rheumatic fever also some relation exists perhaps between a negative reaction and the incidence of recrudescence. The skin reaction has a significance analogous to the tests of Pirquet and Mantoux.

Repeated Sedimentation Tests.—Van Antwerp points out that the fact that sedimentation rates in children show an unexplained tendency to vary widely without intervening clinical causes should be of value to pediatricians, regardless of the cause. That this occurs commonly is demonstrated by the fact that 27 per cent of his patients gave readings erroneous enough to mislead in their interpretation. His experience, however, shows that a repeated test will usually give the correct reading. Occasionally a repeated test will show a persistently high rate, though this is not common. In such an event, careful clinical search should satisfy one as to the presence or absence of any condition warranting a high rate. A persistently high rate need serve, therefore, only as a warning of the possibility of the presence of a pathologic condition; it need not be held as conclusive. The author performs two sedimentation tests on successive days on all newly admitted patients, the lower rate being taken as the one reflecting the presence or absence of a destructive lesion. He believes that apprehension on the part of the patient is a factor in erroneous results in sedimentation tests, though he has not thus far been able to prove it. If such is the case, it will be necessary to repeat tests on patients giving a high rate, as basal metabolic tests are now repeated. It is already well known that certain types of insanity are characterized by high rates of sedimentation and it is interesting to consider the possibility that the factor influencing the rate in this class of patients may be that of apprehension, because of emotional instability. Later observations comparing blood sugar content with rates of sedimentation will be offered as a factor of proof or disproof of the contention that apprehension influences the rate of sedimentation.

American Journal of Public Health, New York

24: 1005-1098 (Oct.) 1934

- Public Health Awaits Social Courage. H. Emerson, New York.—p. 1005.
The Tennessee Valley Authority's New Deal in Health. E. L. Bishop, Knoxville, Tenn.—p. 1023.
Vitamin D Studies, 1933-1934. E. C. McBeath, New York.—p. 1028.
Solution of Streptococcus Carrier Problem. C. W. Bonyng, Los Angeles.—p. 1031.
Approval of Laboratories for Surgical Pathology in New York State. A. Wadsworth and Ruth Gilbert, Albany, N. Y.—p. 1035.
Industrial Hygiene Section 1914-1934. E. R. Hayhurst, Columbus, Ohio.—p. 1039.
Use of Dinitrophenol in Nutritional Disorders: Critical Survey of Clinical Results. M. L. Tainter, W. C. Cutting and A. B. Stockton, San Francisco.—p. 1045.
Concurrent Immunizations. A. B. Ingels, Globe, Ariz.—p. 1054.
Relapsing Fever Problem of California. G. E. Coleman, San Francisco.—p. 1056.
Current Mortality Releases. S. G. Thompson, Jacksonville, Fla.—p. 1065.
Endemic Typhus. J. N. Baker, J. G. McAlpine and D. G. Gill, Montgomery, Ala.—p. 1068.

American Journal of Surgery, New York

26: 1-228 (Oct.) 1934

- Status Lymphaticus. D. Symmers, New York.—p. 7.
Pulmonary Embolism Following Surgical Operation. H. E. Robertson, Rochester, Minn.—p. 15.
*Thrombosis of Veins of Lower Extremity and Pulmonary Embolism as Complication of Trauma. B. M. Vance, New York.—p. 19.
Clinical Diagnosis of Fat Embolism. B. M. Vance, New York.—p. 27.
Operation and Trauma as Cause of Coronary and Cerebral Thrombosis. D. A. De Santo, New York.—p. 35.
Wounds by Firearms in Civil Life. T. A. Gonzales, New York.—p. 43.
Unusual Fatal Stab Wounds of Head and Neck with Examples of Unrecognized Ice Pick Wounds of Brain. M. Helsen, New York.—p. 53.
Injuries to Thoracic Duct. S. P. Snedecor, Hackensack, N. J.—p. 64.
Trauma and Malignant Tumors. Leila Charlton Knox, New York.—p. 66.
*Traumatic Peptic Ulcer. G. B. Eusterman and J. G. Mayo, Rochester, Minn.—p. 74.
Trauma and the Aged Patient. J. J. Moorhead, New York.—p. 82.
Characteristic Contact Bruises, Abrasions and Other Injuries in Automobile Accidents. C. G. Berardinelli, Newark, N. J.—p. 88.
*Puerperal Infection, with Especial Reference to Importance of Anatomic Pathways in Spreading of Pyogenic Infection. H. S. Marland, Newark, N. J.—p. 90.
Epidemic of Fatal Estivo-Autumnal Malaria Among Drug Addicts in New York City Transmitted by Common Use of Hypodermic Syringe. M. Helsen, New York.—p. 111.
*Complications Associated with Treatment of Burns. G. C. Penberthy and C. N. Weller, Detroit.—p. 124.
Traumatic Intraocular Hemorrhages. T. Leary, Boston.—p. 133.
So-Called Spontaneous Subarachnoid Hemorrhage: Résumé with Its Medicolegal Consideration. W. D. Ayer, Syracuse, N. Y.—p. 143.
Head Injuries. G. W. Swift, Seattle.—p. 152.
Management of Urologic Complications in Injuries to Spine: Report of Fifty-Four Cases Without Single Infection in Urinary Tract. J. F. Connors and J. E. Nash, New York.—p. 159.
Medicolegal Aspects of Deaths Associated with Chloroform or Ether. A. O. Gettler, New York.—p. 163.
Metallic Poisoning Simulating Acute Surgical Abdomen. R. C. Fisher, New York.—p. 175.
Relation of the Physician to Workmen's Compensation Insurance. E. T. Bell, Minneapolis.—p. 182.
Relationship of Organic Disease to Injury. A. V. St. George, New York.—p. 185.
Roentgenograms as Means of Identification. F. M. Law, New York.—p. 195.
Suggestions for Improving Medicolegal Court Procedure. R. Spillman, New York.—p. 199.
Medical Testimony. J. F. Connor, New York.—p. 204.
Institutes of Legal and Sociologic Medicine: Suggested Program for American Medical Schools. J. Catton, San Francisco.—p. 207.
Asphyxiation: Basic Problem in Medical Education. W. Phillips, New York.—p. 216.

Pulmonary Embolism in Trauma.—Vance discusses the incidence of pulmonary embolism in the traumatic cases and what factors tend to produce the complication. A detailed examination of sixty post-traumatic cases of pulmonary embolism disclosed the following facts: 1. The sex incidence showed that thirty-seven were women and twenty-three men. 2. The age incidence indicated that 50 per cent of the cases occurred between the ages of 40 and 60 years. 3. The types of trauma that injured the patients were the ordinary casualties encountered in any large city. The lesions varied in severity from severe fractures of the pelvis or of the shaft of the femur to mere contusions and abrasions of the extremities. 4. The interval that elapsed between the onset of the trauma and the sudden death by pulmonary embolism varied between four days for

the minimum and fifty-four days for the maximum. 5. When the trauma involved the bones and soft parts of one of the lower extremities, thrombosis was found in the veins of the corresponding lower extremity in thirty-two instances. In fourteen cases of this type a thrombus could not be found. In nine cases, thromboses of the femoral vein were found. A traumatic lesion near the femoral vein or its tributaries has an influence on the production of thrombosis in that vein. In addition, femoral vein thromboses and fatal pulmonary embolism occurred in nontraumatic cases of all sorts, so that the basic etiology of this condition is some factor besides physical injury. 6. Microscopic investigation of the thrombosed veins of the lower extremity, both in the traumatic and in the nontraumatic cases, disclosed that in almost all instances there was a phlebosclerosis, a subacute phlebitis or a periphlebitis of greater or lesser degree. In many cases these lesions probably antedated the trauma. In others the effects of the trauma, whether general or local, probably precipitated the inflammation and produced a nonseptic thrombosis, which resulted eventually in a fatal pulmonary embolism. 7. In seventeen of twenty-one cases which the author examined personally, various acute and chronic disease conditions were present, which may have contributed to the formation of the thrombosis in the veins of the lower extremity.

Traumatic Peptic Ulcer.—Eusterman and Mayo believe that there is apparently adequate evidence to justify the contention that under exceptional circumstances a chronic ulcer of the stomach can have its origin in external, nonpenetrating trauma to the epigastric region. In one case, fairly characteristic symptoms of a hemorrhagic gastric ulcer developed following a severe blow to the left epigastric region. Roentgenoscopy confirmed the presence of a penetrating ulcer near the lesser curvature five months after the injury. Following hospitalization and intensive medical treatment, the lesion disappeared completely and clinical cure resulted. In any case in which a plaintiff claims that a gastric or duodenal ulcer followed external trauma, the physician whose opinion is sought should see that the four postulates of Liniger and Molineux are satisfied. A second cause of ulcer is chronic trauma from within. The commonest form of ulcer of this nature is that secondary to congenital (nontraumatic) diaphragmatic hernia; foreign bodies in the stomach may also cause ulcer. Such secondary lesions are not indurated as a rule and all tend to heal readily following reduction of the hernia or removal of the foreign body.

Puerperal Infection.—Martland believes that the problem of puerperal infection is almost entirely anatomic, depending on anatomic pathways for its spread, on physical and mechanical phenomena of stasis, on drainage and on cellular reactions called forth for defense, and that it has little to do with fancy theories of immunity and selective affinity of certain strains of bacteria for certain tissues. In addition, the condition of septicemia, which denotes only the ability to recognize bacteria in the circulating blood, is in many of these cases intermittent and at times does not exist. In other words, bacteria do not multiply and grow in the blood but are discharged into it from primary, secondary or tertiary depots in the various organs, usually in an intermittent fashion. When they are thrown into the circulating blood, nature makes every effort to rid the blood quickly of their presence through its organs of elimination and filtration. The application of chemotherapy in the intravenous injections of mercurochrome, gentian violet and other like substances is excusable only on the premise of attempting to kill those organisms circulating in the blood at the time of the injections and thus prevent the establishment of secondary foci in other parts of the body. Medication is, then, of no avail; vaccines and serums are equally useless. Only supportive blood transfusions seem to be of any benefit. The more radical the treatment, the higher the mortality. The best results are obtained by those who do the least. While the anatomic view of the subject leads one immediately to the possibility of radical surgery in its eradication, the obvious difficulty in knowing how far the process has extended greatly restricts surgery to the incision and drainage of localized collections of pus and to rare, selected cases in which either the immediate ligation of thrombosed veins or a quick hysterectomy for a uterus containing multiple abscesses might be seriously

considered. According to Williams the latter two surgical procedures were in his experience indicated only once in every few years.

Complications in Treatment of Burns.—Penberthy and Weller present eleven cases illustrating the result of what may be considered maltreatment of burn lesions. Each case has been selected to emphasize this factor, as evidenced by the application of improper or incomplete methods of treatment. Attention is called to the long periods of morbidity, the local and general conditions as presented at the time of admission, and the difficulty in obtaining a satisfactory end result by subsequent treatment. The fact that legal procedures have not been instituted is perhaps a matter of good fortune. Strict adherence to the accepted principles of treatment as proposed by Davidson and others will, the authors believe, in the majority of cases prevent the unfortunate occurrence of these all too common complications. Prompt application of local treatment, proper supportive measures, follow-up care and attention, together with the correction of deformities as indicated, offer a reasonable hope for success.

Archives of Dermatology and Syphilology, Chicago

30: 489-610 (Oct.) 1934

- Dextrose and Water Content of Normal and of Inflamed Skin. D. M. Pillsbury and G. V. Kulchar, Philadelphia.—p. 489.
Urinary Proteose in Eczema. T. Cornbleet and M. A. Kaplan, Chicago.—p. 497.
Iodide Therapy for Relief of Pain in Ainhum: Report of Case. S. Irgang and E. R. Alexander, New York.—p. 508.
*Ulcer Vulvae Acutum Accompanied by Disease of Skin and Oral Mucosa. J. Z. Talalov, Perm, U. S. S. R.—p. 510.
Dermatitis Produced by Hymolal Salts (New Soaplike Material). C. C. Carpenter, Summit, N. J.—p. 517.
*Tubercloid Reaction in Lymph Nodes. C. W. Laymon, Minneapolis.—p. 518.
Epidermolysis Bullosa Acquisita: Successful Treatment with Iron Caco-dylate, Blood Coagulant, Calcium (with Phosphorus) and Roentgen Rays. H. E. Kittredge, Washington, D. C.—p. 537.
Danlos Syndrome Associated with Congenital Lipomatosis. N. Tobias, St. Louis.—p. 540.
Dermatofibrosis Lenticularis Disseminata and Osteopoikilosis. Helen Ollendorff Curth, New York.—p. 552.
Neurosyphilid of Unna as a Manifestation of Congenital Syphilis: Forme Fruste of Late Cutaneous Syphilis. T. B. Hall and H. Schaeffer, Kansas City, Mo.—p. 561.
Acneiform Responses to Patch Tests: Follicular and Papulopustular Reactions to Selectively Pilosebaceous Irritants. Marion B. Sulzberger, New York.—p. 566.

Acute Ulcer of Vulva with Disease of Skin and Oral Mucosa.—Talalov reports two cases of acute ulcer of the vulva associated with lesions on the skin and mucous membrane of the mouth. In the first case, a girl aged 16 suddenly had a chill, fever, pustular and papulopustular lesions on the skin, numerous ulcers typical of acute ulcer of the vulva on the genitalia and perineum, round the anus, in the inguinal creases and in the right axilla, and aphtha-like lesions on the mucosa of the mouth. The smears from the ulcers on the genitalia, in the armpit and in the oral mucosa, as well as the histologic sections of the ulcers from the armpit, showed *Bacillus crassus*. In the second case, a woman aged 28 had aphthous stomatitis and, in connection with the menses, extremely painful ulcers on the genitalia, one of which persisted for one and one-half years. Histologic investigation in the two cases revealed essentially similar pictures both in the ulcers of the armpit and in those of the genitalia. In both cases the changes were revealed chiefly in the region of blood vessels, round which the infiltrate was concentrated. In the first case the clinical symptoms were caused by the general *Bacillus crassus* infection, with metastases to the skin and mucous membranes; in the second, acute ulcer of the vulva was accompanied by aphthosis.

Tubercloid Reaction in Lymph Nodes.—Apparently normal, superficial nodes that were excised from fifty-five patients with carcinomas of the lower lip and breast were studied microscopically by Laymon and compared with regional nodes that were removed from sixteen patients with nonspecific infections and from seventy patients with early untreated syphilis. One inguinal node from a patient with a primary tuberculous ulcer of the ankle and forty-nine nodes from twenty-five patients with fatal visceral tuberculosis were also examined. The author appraises the reports of other investigators and surveys the results of his study. Epithelioid cells in lymph nodes, according to the studies of

Maximow on tissue culture, most likely originate from both reticular cells and lymphocytes. Giant cells, in turn, develop from epithelioid cells by fusion and amitotic division. The tubercloid reaction does not occur in normal nodes. No section showed evidences of this type of structure. The tubercloid reaction in the lymph nodes in the group of so-called non-specific infections is rare. Such histologic structure was not observed in the nodes that were removed from patients with acute pustular dermatitis, furunculosis, pyoderma and similar conditions. Specific tubercloid structure was illustrated by the observation of microscopic tuberculous lymphadenitis in three of twenty-five patients, who showed no gross manifestations of tuberculosis of the inguinal nodes. The inguinal node from the patient with a primary tuberculous ulcer of the ankle presented a definite tubercloid structure. The lymphadenitis in early syphilis presented definite tubercloid structures in approximately 15 to 25 per cent of the cases. In the group of seventy patients, 15.7 per cent were found to have a tubercloid structure in the nodes. No parallelism between the tubercloid reaction and the results with luotest or the Mantoux test could be shown. The exact significance of this reaction cannot be proved, owing to the long course of syphilis and the placing of all the patients on an equal basis by chemotherapy. The clinical course of the disease indicates that the tubercloid reaction is not a manifestation of precocious tertiarism or malignant syphilis. If a direct comparison of the reactivity of lymphoid tissue with that of the skin could be done, the tubercloid reaction might be considered an index to a higher degree of immunity than was possessed by patients who presented only banal inflammatory changes in the nodes. The tubercloid reaction in lymph nodes may be considered only as a particular response against an invader and it does not possess the immunologic significance that it has when present in the skin.

Canadian Public Health Journal, Toronto

25: 411-460 (Sept.) 1934

- Public Health Progress in Quebec. A. Lessard, Quebec.—p. 411.
The Visiting Nurse Association as a Community Health Asset. R. A. Bolt, Cleveland.—p. 417.
Summary of Results of Treatment in Early Syphilis. E. J. Trow, N. Black and H. H. Elliott, Appendix by Mary A. Ross, Toronto.—p. 422.
Carbon Monoxide Poisoning. H. M. Barrett, Toronto.—p. 430.
Two Years' Experience with Proposed Form for Registration of Stillbirths. P. Parrot, Quebec.—p. 439.
Educational Objective of Public Health Nursing. Marion Lindeburgh, Montreal.—p. 443.

Colorado Medicine, Denver

31: 329-368 (Oct.) 1934

- Sewage Disposal: Major Public Health Problem in Colorado. E. N. Chapman, Colorado Springs.—p. 327.
Teaching the Patient to Observe Symptoms of Ovulation. C. W. Anderson, Denver.—p. 344.
Embryonal Carcinoma of Testicle: Report of Two Cases; One Eleven Year Cure. L. E. Likes, Lamar.—p. 349.
Early Syphilis: Diagnosis and Treatment Graphically Represented. H. L. Friedman, Denver.—p. 353.

Florida Medical Association Journal, Jacksonville

21: 135-178 (Oct.) 1934

- Röntgenologist as Consultant in Acute Abdominal Conditions. O. O. Feaster, St. Petersburg.—p. 143.
Need for Sanatorium Beds in Control of Tuberculosis. A. S. Anderson, St. Petersburg.—p. 145.
Preoperative and Postoperative Management of Surgical Patients with Mention of Choice of Anesthetic. J. R. Wells, Daytona Beach.—p. 147.
Some Comments Regarding Psychotic. A. T. Cobb, Chattahoochee.—p. 151.

Iowa State Medical Society Journal, Des Moines

24: 507-548 (Oct.) 1934

- Medical Clinics: Latent Syphilis as Cause of Heart Disease: Hypertensive Heart Disease. R. W. Scott, Cleveland.—p. 507.
Arteriosclerotic Heart Disease: Relation Between Angina Pectoris and Coronary Occlusion. B. F. Wolverton, Cedar Rapids.—p. 512.
Diagnosis and Treatment of Renal Tuberculosis. L. E. Pierson, Sioux City.—p. 515.
Diagnosis and Clinical Significance of Auricular Fibrillation. L. E. Cooley, Dubuque.—p. 517.
Diagnosis and Treatment of Bronchial Asthma. Julia Cole, Iowa City.—p. 519.
Peptic Ulcer in Children: Case Report. Pauline V. Moore, Solon.—p. 523.

Journal of Bacteriology, Baltimore

28: 323-432 (Oct.) 1934

- Basal Medium for Primary Isolation of Pathogens: Quickly Prepared Medium Including Accessory Growth Factors from Fish Roe or Quahaugs. W. E. James, Burlington, Vt.—p. 323.
Evaluation of Some Factors Influencing Phenol Resistance of *Staphylococcus aureus*. H. F. Smyth Jr., Philadelphia.—p. 333.
Coagulase and Hemolysin Tests as Measures of Pathogenicity of *Staphylococci*. G. H. Chapman, C. Berens, Adeline Peters and Lillian Curcio, New York.—p. 343.
Cultivation of Organisms Concerned in Oxidation of Thiosulphate. R. L. Starkey, New Brunswick, N. J.—p. 365.
Production of Polythionates from Thiosulphate by Micro-Organisms. R. L. Starkey, New Brunswick, N. J.—p. 387.
Partial Purification of Yellow Fever Virus Through Adsorption and Elution. T. P. Hughes, New York.—p. 401.
Systematic Study of Micro-Organisms Which Decompose Specific Carbohydrates of *Pneumococcus*. Grace M. Sickles and Myrtle Shaw, Albany, N. Y.—p. 415.

Journal of Pharmacology & Exper. Therap., Baltimore

52: 121-234 (Oct.) 1934

- Studies on Barbiturates: VIII. Distribution of Barbiturates in the Brain. T. Koppányi, J. M. Dille and S. Krop, Washington, D. C.—p. 121.
Id.: IX. Effect of Barbiturates on Embryo and on Pregnancy. J. M. Dille, Washington, D. C.—p. 129.
Studies in Absorption, Distribution and Elimination of Ethyl Alcohol: I. Quantitative Determination of Ethyl Alcohol in Air, Blood and Urine by Means of Iodine Pentoxide. H. W. Haggard and L. A. Greenberg, New Haven, Conn.—p. 137.
Id.: II. Excretion of Alcohol in Urine and Expired Air; and Distribution of Alcohol Between Air and Water, Blood and Urine. H. W. Haggard and L. A. Greenberg, New Haven, Conn.—p. 150.
Id.: III. Rate of Oxidation of Alcohol in Body. H. W. Haggard and L. A. Greenberg, New Haven, Conn.—p. 167.
Studies on Phytoxic Index: II. Menstrual Toxin ("Menotoxin"). W. Freeman and J. M. Looney, with technical assistance of Rose R. Small, Worcester, Mass.—p. 179.
Diuretic Effect of Posterior Pituitary Extract in Anesthetized Animal. E. E. Nelson, Ann Arbor, Mich.—p. 184.
Atropine Tolerance in Infants and Children: Negative Action of Serum of Tolerant Subjects. J. D. Pilcher, Cleveland.—p. 196.
Comparative Actions of Atropine and Its Constituents, *l* and *d* Hyoscyamine, in Infants and Very Young Children. J. D. Pilcher, Cleveland.—p. 206.
Relative Anesthetic Effects of Some Urea Derivatives. E. J. deBeer and A. M. Iljort, Tuckahoe, N. Y.—p. 211.
Relative Anesthetic Effects of Some Aliphatic Ureas. E. J. deBeer, J. S. Buck and A. M. Iljort, Tuckahoe, N. Y.—p. 216.
Studies on Barbiturates: X. Acute Barbitol Poisoning in Dehydration and Diuresis. T. Koppányi, W. S. Murphy and S. Krop, Washington, D. C.—p. 223.
Reabsorption of Water During Pituitary Antidiuresis. I. Gersh, Baltimore.—p. 231.

Atropine Tolerance in Infants.—Pilcher found that the blood serum of several atropine tolerant infants and children did not neutralize the physiologic actions of atropine. But small amounts of atropine could be recovered from the urine of a tolerant subject after larger subcutaneous injections of atropine. Large doses of atropine or its constituents, *l* and *d* hyoscyamine, produced deep sleep in tolerant subjects, with practical absence or slight evidence of the usual signs of atropine action and no preliminary period of excitation such as is commonly seen in atropine poisoning.

Kentucky Medical Journal, Bowling Green

32: 501-558 (Oct.) 1934

- Ambiasis: Medical Aspects. M. Flexner, Louisville.—p. 507.
Id.: Surgical Aspects. H. H. Hagan, Louisville.—p. 510.
Id.: Case Reports. H. S. Frazier, Louisville.—p. 513.
Traumatic Surgery of Facial Structures. E. C. Hume, Louisville.—p. 520.
Dentistry: Yesterday, Today and Its Relation to Modern Medicine. J. E. Sullivan, Covington.—p. 522.
Craniopharyngiomas. F. Jelsma, Louisville.—p. 526.
Surgery Under Difficulties. N. M. Garrett, Brodhead.—p. 527.
Proctology in General Practice. W. J. Martin, Louisville.—p. 528.
Fractures of Lower Extremity: Some Newer Considerations. R. A. Griswold and R. O. Joplin, Louisville.—p. 532.
Infectious Diseases as Related to Eye, Ear, Nose and Throat: Prevention and Treatment of Complications of Acute Infectious Diseases as Regards the Ear. W. R. Pryor, Louisville.—p. 541.
Id.: Nasal Complications of Common Infectious Diseases. W. R. Pryor, Louisville.—p. 543.
Id.: Diagnosis: Complications of Common Infectious Diseases in Throat and Carriers of These Infections as Related to Nose and Throat. K. N. Victor, Louisville.—p. 544.
Id.: Ophthalmologic Symptoms and Complications of Common Acute Infectious Diseases of Children. C. D. Townes, Louisville.—p. 547.
Bromoderma: Report of Case Complicated by Pregnancy. A. B. Loveman, Louisville.—p. 553.

Maine Medical Journal, Portland

25: 203-220 (Oct.) 1934

Continuous Drainage in Treatment of Cerebrospinal Infections: Report of Cases. L. H. Smith, Wintertown.—p. 205.
Concerning Diagnostic Problems in General Country Practice. F. H. Badger, Wintertown.—p. 210.

Missouri State Medical Assn. Journal, St. Louis

31: 377-412 (Oct.) 1934

Medical Aspects of Thyroidectomy for Organic Heart Disease. J. Jensen, St. Louis.—p. 377.
Thyroidectomy for Organic Heart Disease. D. S. Allen, St. Louis.—p. 379.
Skin Testing in Allergy. H. J. Rinkel, Kansas City.—p. 382.
Allergy in Internal Medicine: Acute Allergic Abdomen: Preliminary Report. L. P. Gay, St. Louis.—p. 385.
High Protein and High Potassium Diet in Treatment of Obesity. H. A. Rusk, St. Louis.—p. 390.
Blood Platelet Count in Postoperative Thrombosis. R. B. H. Gradwohl and S. J. Hiller, St. Louis.—p. 392.

New Jersey Medical Society Journal, Trenton

31: 553-612 (Oct.) 1934

Treatment of Erysipelas in Infants and Children: Based on Series of One Hundred and Sixteen Cases Treated at the Essex County Isolation Hospital During the Past Five Years. K. Blanchard, East Orange, and H. O. Bell, Belleville.—p. 559.
*Prevention of Acne Vulgaris in Adolescent Children. S. Nichols, Asbury Park.—p. 566.
X-Ray Diagnosis of Pneumonia. J. E. Roberts, Camden.—p. 568.
*Prenatal Care and Its Relation to Maternal and Infant Mortality. R. L. DeNormandie, Boston.—p. 570.
The Acute Surgical Abdomen. G. Blackburne, Newark.—p. 577.
Present Day Methods of Treating the Mentally Sick. J. B. Gordon, Marlboro.—p. 581.

Acne Vulgaris in Adolescent Children.—Nichols states that if seen early acne vulgaris and its disfiguring after effects may be controlled in more than 80 per cent of adolescent children. The method that he recommends consists mainly of keeping the skin dry and rather chapped by the use of mild and later stronger soaps and lotio alba of increasing strength and concentration. If the scalp is oily, it should be washed every ten days with castile soap. The face and skin must be made dry looking, with a slightly chapped appearance, and kept that way all the time. The treatment should be continued until at least the age of 15. To keep the skin dry, the face is washed before going to bed with mild castile soap and fairly hot water; then well sopped for five minutes with lotio alba one-fourth strength, allowed to dry on the skin and remain over night, to be washed off in the morning. This treatment should be continued until the skin is dry and rather chapped. If at any time it gets too chapped, the lotio alba should be omitted for three days. As the skin gets used to this treatment, the strength of the soap and lotion should be increased. Patients who have a tendency toward acne are benefited by gradual exposure to the sun or artificial ultraviolet radiation. Foci of infection, constipation, unbalanced diet and general hygiene should receive attention. The author used this method of treatment in forty-seven children between the ages of 8 and 12. In thirty-seven cases, after from three months to four years of treatment, the acne is virtually unnoticeable and well under control. Five cases are much improved and five are moderately improved.

Relation of Antepartum Care to Maternal and Infant Mortality.—DeNormandie suggests that following a minute surgical, clinical, mental and menstrual history a complete physical examination must be made to establish what the patient's condition is at that time. A vaginal examination determines whether microscopic examination of a smear should be made. A speculum examination is most important to discover a marked erosion of the cervix, a possible polyp or rarely an early cancer. A Wassermann test should be made. The hemoglobin should never be omitted, otherwise the anemias of pregnancy cannot be discovered early and proper treatment instituted. The patient's diet, exercise, recreation and rest should be inquired into and supervised. As pregnancy goes on, the visits should be made regularly at least once a month for the first six months and then every three weeks, during the eighth month every two weeks, and the last month once every week or ten days. A creeping up of the diastolic pressure is a most important point to be observed. The urinary examination for albumin and sugar should be done. The weight must be

watched carefully. At each visit abdominal palpation and measurement of the fundus should be done and the observations should be recorded. Between the seventh and the eighth month a careful vaginal examination should be made to determine the relation of the size of the baby to the pelvis. By the last month of pregnancy the physician should make up his mind as to the probable method of delivery that will involve the least risk to the mother and the baby. As the patient progresses in her pregnancy, the appearance of bleeding should suggest a placenta praevia until it is definitely proved otherwise. The vaginal examination that is made between the seventh and eight months will in most cases rule out placenta praevia. It will not, however, rule out a low attached placenta. A separated placenta is an emergency. It is often impossible in rural districts for the physician to see his patients as often as necessary, and in such cases the well trained public health nurse, carefully supervised, can be of tremendous help. The author believes that intelligent supervision during pregnancy has a real bearing on the incidence of septicemia as a cause of maternal mortality. Infant mortality will be lowered unquestionably if the cases are carefully studied and the proper method of delivery carried out in each case. A further reason for unsatisfactory antepartum care is that the rank and file of patients have not been educated to the necessity for seeking such care early.

New York State Journal of Medicine, New York

34: 865-898 (Oct. 15) 1934

Carcinoma of Tonsil: Clinical Study of One Hundred and Seventy-Six Cases with Histologic Diagnoses. J. J. Duffy, New York.—p. 865.
Sputum Examinations and the Practicing Physician. R. E. Plunkett and N. S. Lincoln, Albany.—p. 870.
Study of One Thousand Two Hundred and Fifty Basal Metabolisms During Pregnancy: Clinical Presentation of Cases. E. C. Hughes, Syracuse.—p. 873.
Prophylactic Postoperative Roentgenotherapy for Carcinoma of Breast. M. Lenz, Virginia Kneeland Frantz and H. H. Kasabach, New York.—p. 881.

Oklahoma State Medical Assn. Journal, McAlester

27: 349-388 (Oct.) 1934

Crippling from Accidents. W. K. West, Oklahoma City.—p. 349.
Nephrosis in Children. F. S. Etter, Bartlesville.—p. 352.
Treatment of Craniocerebral Injuries. L. Davis, Chicago.—p. 354.
Skin Grafting. J. F. Burton, Oklahoma City.—p. 363.
Transurethral Surgery of the Prostatic Gland. F. C. Gallaher, Shawnee.—p. 367.

Surgery, Gynecology and Obstetrics, Chicago

59: 569-712 (Oct.) 1934

Anatomic and Experimental Observations on Air Embolism. W. H. Chase, Montreal.—p. 569.
Aspiration Biopsy. H. E. Martin and E. B. Ellis, New York.—p. 578.
*Symptom Complex of Complete External Pancreatic Fistula: Report of Case. R. W. Garis and W. C. Merkel, Baltimore.—p. 590.
Value of Estimations of Amylase of Blood in Diagnosis of Suspected Pancreatic Disease: Experimental Study and Review of Literature. J. M. McCaughan, St. Louis.—p. 598.
Preoperative Preparation of Peritoneum in Surgery of Large Intestine. E. L. Young Jr. and G. A. Marks, Boston.—p. 610.
Malignant Disease of Female Generative Organs in First Three Decades of Life. B. F. Schreiner and W. H. Wehr, Buffalo.—p. 616.
*Dial-Urethane for Obstetric Analgesia. P. Brown, Salina, Kan.—p. 622.
Intrathoracic Goiter. F. H. Lahey and N. W. Swinton, Boston.—p. 627.
Interposition of Os Purum in Osteosynthesis After Osteotomy, Resections of Bones and Joints (Interposition-Osteosynthesis). S. Orell, Styrsön, Sweden.—p. 638.
Benign Stricture of Intestine Due to Irradiation of Carcinoma of Cervix Uteri. E. N. Collins and T. E. Jones, Cleveland.—p. 644.
Vascular Disease of Lower Extremities: Review of Amputation Criteria. R. W. McNealy and P. F. Shapiro, Chicago.—p. 650.
*Torsion of Fibromatous Uterus: Surgical Emergency. M. A. McIver and C. L. Buxton, Cooperstown, N. Y.—p. 663.
Cervical Neurofibroma. C. W. Mayo and K. W. Barber, Rochester, Minn.—p. 671.
Toxemias of Pregnancy. W. J. Dieckmann, Chicago.—p. 678.

Complete External Pancreatic Fistula.—Garis and Merkel suggest that complete exclusion of pancreatic juice from the intestine with loss by external fistula produces a highly characteristic clinical syndrome consisting of striking anorexia, nausea, intermittent vomiting, steatorrhea, extreme exhaustion, anhydremia and emaciation, with lethal termination. A clinical example of this symptom complex is presented, corresponding in all important respects with the deleterious and fatal effects of complete pancreatic fistula in experimental animals. The necessity for totality of the fistula in producing the complete

syndrome is stressed, presupposing in every instance a complete obstruction of the duct of Wirsung and an absence or obstruction of accessory duct openings into the intestine; hence the rarity of the condition. It appears that partial or incomplete pancreatic fistula may in certain instances be associated with such symptoms as anorexia, weakness, loss of weight and steatorrhea. Concomitant biliary principle and absence of trypsin or erosive properties in the fistulous fluid may lead readily to errors in diagnosis. The question is raised as to whether the exclusion of pancreatic juice from the intestine in some types of complete obstructive jaundice may not be the major factor in the rapidly fatal outcome, as for example in carcinoma of the ampulla of Vater and carcinoma of the pancreas.

Dial-Urethane for Obstetric Analgesia.—Brown contends that by making the injections of dial-urethane slowly (about 1 cc. per minute) it is possible to adjust the dosage to the individual patient much more accurately than by a fixed volume dose, as used by Nelson. The patient is told that she will feel relaxed and sleepy from the injection; otherwise, alarm may be experienced over the peculiar sensation. The solution, 4 cc., is drawn up into a 5 cc. syringe and the needle is thrust through the wall of the vein. Injection is made slowly, the patient being constantly questioned, and the injection is discontinued when she no longer responds. In some cases 2 cc. of the solution will suffice; in others it may be necessary to inject the full 4 cc. The author has never given more than the latter amount in any single injection. If sound sleep does not occur between pains, a second injection of 2 cc. is given in thirty minutes. Further injections, each of 2 cc., may be given, but he has not exceeded a total of 8 cc. in the course of any labor. He has used the dial-urethane solution in fifty-six cases and he is convinced definitely that, used according to his method, it is the most satisfactory obstetric analgesic that he has ever employed.

Torsion of Fibromatous Uterus.—McIver and Buxton report a case of torsion of a fibromatous uterus occurring in a woman 62 years of age and producing acute symptoms and collapse. Preoperative treatment consisted of transfusion and intravenous dextrose infusions. A supravaginal hysterectomy was performed under local anesthesia, with recovery. Approximately 140 cases have been reported. In considering the pathology it is noted that the tumor responsible for the twist is usually large and may be single or multiple, sessile or pedunculated. The changes taking place in the uterus and fibroid depend on the extent to which the circulation is cut off and vary from edema and congestion to necrosis. The torsion usually takes place at the isthmus; the twist is commonly from left to right and may be through as few as 90 degrees or as many as 450. There are a number of etiologic factors that are not clear, though certain facts may be noted. Before the rotation occurs there is usually a thinning and stretching of the isthmus as the tumor increases in size, so that this structure forms a pedicle, which may be twisted readily. Asymmetry in the growth of the tumor may be a factor in the torsion; movements of the body may be important in initiating the twist. The cases fall into two clinical groups: one giving an acute, fulminating picture similar to that encountered in twists of an ovarian cyst or pedunculated fibroid, the second presenting mild symptoms, which sometimes continue over a period of years. Laparotomy is indicated in the acute group and probably in most of the chronic variety. In the acute group it is desirable that operation be carried out before secondary degenerative changes occur. In collapse, appropriate treatment should be carried out before operation. The type of operation selected depends on the pathologic condition found. Supravaginal hysterectomy is usually indicated, although at times a more conservative procedure, such as myomectomy, is the operation of choice.

Tennessee State Medical Assn. Journal, Nashville

27: 379-424 (Oct.) 1934

- Bone Tumors. W. C. Campbell, Memphis.—p. 379.
Intravenous Dextrose Therapy. G. D. Boone, Paris.—p. 388.
Relation of Practicing Physician to Control of Tuberculosis. A. E. Keller, Nashville.—p. 393.
Amebic Dysentery. J. Witherspoon, Nashville.—p. 401.
Aspergillosis. W. R. Smith, Knoxville.—p. 407.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

18: 561-624 (Oct.) 1934

- Telangiectatic Granuloma: Botryomycosis. A. Hagedoorn.—p. 561.
Ocular Pemphigus. B. W. Rycroft.—p. 571.
Simultaneous Bilateral Rodent Ulcer of Cornea, Cured by Combined Curetting, Thermocautery and Massive Cyanide Subconjunctival Injection. E. L. Jones.—p. 579.
Primary Erysipelas of Conjunctiva Bulbi: Case. N. I. Shimkin.—p. 583.
X-Ray Treatment of Blepharitis. N. Abu-Saif.—p. 589.

British Journal of Physical Medicine, London

9: 75-96 (Sept.) 1934

- New Method of Approach in Certain Respiratory Disorders in Elderly Persons. J. B. Christopherson and Marjorie Broadbent.—p. 77.
Deafness of Advancing Years. G. C. Cathcart.—p. 80.
Importance of Exercises and Recreations for Elderly People. R. K. Brown.—p. 82.
Kidney Disease as Affecting Old Age. J. W. Carr.—p. 85.
Skin Affections of Old Age. S. E. Dore.—p. 87.
Biophysical Treatment in Some Nervous Disorders. F. H. Humphris.—p. 89.

British Journal of Radiology, London

7: 577-640 (Oct.) 1934

- Ewing's Bone Sarcoma. R. Stewart-Harrison.—p. 580.
*A Dosage System for Gamma Ray Therapy: Part I and Part II. R. Paterson and H. M. Parker.—p. 592.

Dosage System for Gamma Ray Therapy.—Paterson and Parker describe a practical system of dosage measurement, applicable to all forms of radium therapy other than certain types of interstitial implantation. The international roentgen unit is accepted as a satisfactory unit of quantity of gamma radiation, and the international millicurie hours (Imc. Hr.) of Sievert assessed as equal to 8.4 roentgens. Graphs are submitted showing the amount of radium required for various distances on any applicator to produce a dose of 1,000 roentgens over any desired area. A system of rules is also given, defining how, in the situations encountered in actual clinical practice, radium must be distributed on such applicators to produce a reasonably homogeneous radiation over the whole of a treated surface. The effects of certain dosages of gamma radiation on normal and malignant tissue are described. The lethal dose for squamous epithelioma appears to be 6,000 roentgens delivered as continuous radiation for a period of eight days; normal healthy skin tolerates safely the same dose delivered over a like period and normal mucosa tolerates considerably more than that. The physical and mathematical data on which the system is based are outlined.

British Medical Journal, London

2: 619-664 (Oct. 6) 1934

- Use of Narcotics in Treatment of Nervous and Mental Patients. Horder.—p. 619.
Ovarian Conditions as Causes of Pelvic Pain. D. Dougal.—p. 621.
Id. A. H. Davidson.—p. 623.
*Total Thyroidectomy in Treatment of Patients with Congestive Heart Failure and Angina Pectoris. O. Brenner and H. Donovan; anesthetic note by B. L. S. Murtagh.—p. 624.
Traumatic Rupture of Lungs Without Signs of Trauma in Chest Wall. W. E. Cooke.—p. 629.
Morbidity in Family Tree. W. P. Kennedy.—p. 630.
Noise and Health. D. McKenzie.—p. 636.

Thyroidectomy in Congestive Heart Failure and Angina Pectoris.—Brenner and Donovan believe that any measure which promises to prolong in fair comfort the lives of patients with both the congestive and the anginal forms of heart failure, in whom the efficacy of all other forms of treatment has been exhausted, must command serious attention. The removal of the whole thyroid in patients without thyrotoxicosis, incapacitated by congestive or anginal heart failure, is not only comparatively safe but so greatly improves the patients' condition that many of them again become capable of work. They report six cases in which they performed total thyroidectomy. The patients stood the operation well. So far only two patients show signs of slight hypothyroidism. One

of the patients showing the obvious physical signs of hypothyroidism does not show the characteristic mental slowness. Some improvement in the circulatory symptoms occurred in all cases. One patient died of cerebral hemorrhage six weeks after the operation, but it seems improbable that her death was hastened by it. No patient is free from symptoms, but all are capable of more exertion. Some improvement occurred in both the congestive and the anginal symptoms, though previously the patients were steadily regressing in spite of all treatment. The cause of the improvement is not yet entirely beyond doubt. It seems probably that the main factor is the reduced metabolism. Levine pointed out that improvement sometimes occurred when there was no change in the metabolic rate, though the basal metabolic rate usually fell, with further improvement later. This was true in some of the authors' patients. Levine suggests that some of the improvement, especially in patients with angina, is due not to the diminished work of the heart but to humoral changes, particularly an alteration of the reaction of the heart to epinephrine. Though the diminished need of the tissues for blood containing oxygen after thyroidectomy is no doubt the chief factor in the improvement, Blumgart's observations on the velocity of the circulation must not be held to prove this.

East African Medical Journal, Nairobi

11: 177-208 (Sept.) 1934

- Evipan-Sodium Anesthesia. J. A. Carman.—p. 178.
Atabrine and Plasmochin in Treatment of Malaria: Note. R. Mackay.—p. 192.
Control of Malaria. O. R. Arnell.—p. 200.

Edinburgh Medical Journal

41: 513-556 (Sept.) 1934

- *Association of Adams-Stokes Attacks with Cheyne-Stokes Respiration: Case Report. I. G. W. Hill and A. U. MacKinnon.—p. 513.
Continuous Intravenous Infusion. E. L. Farquharson.—p. 530.

Adams-Stokes Attacks and Cheyne-Stokes Respiration.—Hill and MacKinnon present a case of auriculoventricular block in which the degree of the block varied from complete dissociation to simple prolongation of the PR interval; the ventricular complexes, however, were always typical of bundle-branch block, which varied from time to time in type (right and left). Histologic examination of the main stem of the bundle revealed no lesion. The authors attempt to explain the variations in the ventricular complexes and in the degree of dissociation on the basis of bilateral bundle-branch lesions. Adams-Stokes attacks were associated with disturbances of respiration, analysis of which was made from polygraph tracings of the pulse and respiratory movements. Short asystolic pauses were followed by apneic periods brought about apparently by the returning circulation, and, when Adams-Stokes attacks occurred in rapid succession, a form of Cheyne-Stokes respiration was produced. Longer asystolic periods were associated with a frankly asphyxial behavior of the respiration. The mode of the causation of these respiratory disturbances is discussed.

Journal of Laryngology and Otology, London

49: 557-628 (Sept.) 1934

- Nasal Ciliated Epithelium, with Especial Reference to Infection and Treatment. A. W. Proetz.—p. 557.
Action of Cilia and Effect of Drugs on Their Activity. V. E. Negus.—p. 571.
Nasal Flora and Reaction of Nasal Mucus. A. R. Tweedie.—p. 586.

49: 629-708 (Oct.) 1934

- *The Otosclerosis Problem: Reports of Two Cases Examined Pathologically. A. A. Gray.—p. 629.
Lipoid Granulomatosis of Bones (Hand-Schüller-Christian Disease). J. S. Fraser.—p. 666.

Otosclerosis.—According to Gray, the essential causative factor of otosclerosis is a gradually increasing defect in the vasomotor mechanism which governs the nutrition of the structures of the organ of hearing as a whole. The axon reflexes are, of course, included in this vasomotor mechanism, and the stimulus which excites the vasomotor mechanism is sound and sound alone. Consequently the vestibular apparatus and the semicircular canals are unaffected. There is no evidence whatever of any defect in any of the endocrine glands or their

secretions in otosclerosis. Neither is there any evidence of any defect in the bone metabolism of the body. On the contrary the subjects of otosclerosis are, apart from their deafness, perfectly normal persons with ordinary average health. The deafness of otosclerosis bears little relationship to the extent of the disease in the bone. The deafness may be severe when the stapes is hardly fixed at all. The severity of the tinnitus bears no relationship at all to the extent of the disease in the bone. The extent of the change in the bone bears little relationship to the duration of the disease. The extent of the changes in the bone appears to depend on the age of onset of the disease. The earlier the time at which the otosclerosis begins, the more extensive will the bone lesion become. The deafness of otosclerosis is to a large extent functional and is the result of the insufficient supply of blood to all the nerve structures concerned in the perception of sound. The preponderance of women as subjects of otosclerosis is the result of the greater instability of their vasomotor system and the more frequent disturbances to which it is exposed. The changes in the bone show a remarkable bilateral symmetry, even to minute details. This symmetrical distribution is explained readily by the author's view of the causative factor of otosclerosis. The vasomotor nerves governing the nutrition of the organ of hearing are anatomically symmetrical like other nerve structures in the body. If, therefore, structural changes occur as a result of defective functioning of those nerves, such structural changes will be naturally bilaterally symmetrical in their distribution.

Lancet, London

2: 685-738 (Sept. 29) 1934

- The Elderly Primipara. D. M. Stern.—p. 685.
Arterial Hypertension. O. L. V. de Wesselow.—p. 687.
Use of the Diathermy Knife in Malignant Disease of Mouth, Nose and Pharynx with Analysis of One Hundred and Nine Cases. N. Patterson.—p. 694.
Corns and Callosities: Their Diagnostic Value and Treatment. A. T. Frigg and J. K. McConnel.—p. 699.
Serodiagnosis of Syphilis. R. W. Fairbrother and A. L. P. Peeney.—p. 701.
Arterial Embolectomy: Account of Two Cases. F. W. Holdsworth.—p. 703.

2: 739-794 (Oct. 6) 1934

- Gee's Disease. T. I. Bennett.—p. 739.
Uveoparotid Tuberculosis. H. G. Garland and J. G. Thomson.—p. 743.
Uveoparotitis Polyneuritica: Report of Case. T. A. L. Davies.—p. 746.
Uveoparotitis. C. B. V. Tait.—p. 748.
Mikulicz Syndrome in Association with Tuberculosis: Report of Case. W. E. Rees.—p. 749.
Borderline of Dental Surgery. R. Kennon.—p. 751.
"White Bile." N. C. Lake, note by J. Patterson.—p. 753.
"Lily Rash:" Occupational Dermatitis: Possible Preventive Treatment. W. H. Palmer, note by J. Freeman.—p. 755.

Medical Journal of Australia, Sydney

2: 337-372 (Sept. 15) 1934

- Observations on Friedman Test for Pregnancy. J. M. Buchanan and A. Hyams.—p. 337.
*Cell Reactions in Lymph Nodes Draining Sites of Primary Carcinoma: Preliminary Consideration. A. M. Welsh.—p. 345.
Rheumatoid Arthritis, with Especial Reference to Arthritis Clinic at Royal North Shore Hospital of Sydney. A. L. Ducker.—p. 347.

Cell Reactions in Lymph Nodes Draining Sites of Primary Carcinoma.—Welsh investigated the reactions of the lymph nodes draining the site of a primary carcinoma, the effects on the secondary lymph drainage of the primary carcinoma and the reactions of lymph nodes to stimuli which are not in any way cancerous. In comparing the reactions of the lymph nodes in the three types of lesion it is observed that in all three cases the lymph nodes show increased activity of both types of cell (lymphocyte and reticulo-endothelial). But whereas in the case of pyogenic infection there is an accumulation of polymorphonuclear cells both at the site of the lesion and in the blood and no increase of lymphocytes, in tuberculous and syphilitic lesions there is an increase of lymphocytes both at the site of the lesion and in the blood. In contrast to these two, a primary carcinoma may be found surrounded by lymphocytes, but there is no appreciable increase of lymphocytes in the blood. Nevertheless the activity stimulated in the lymph nodes draining the site of a primary carcinoma is a defensive reaction, though the exact mechanism of this reac-

tion is not known. The endothelial cells lining the sinuses of the lymph nodes become transformed into one form of monocyte and thence into the macrophage. The lymphocytes may also on occasion assume the form of macrophage. The macrophage may eventually take the form of fibroblasts. Therefore it is possible that the macrophages derived from both types of cell within the lymph nodes play some part in forming the fibroblastic defensive reaction at the site of the primary carcinoma, in addition to whatever defensive functions they perform within the lymph node. Lymphoid tissue is one of the most sensitive of normal tissues to radiation, especially when it is in a condition of hyperplasia and proliferation. As the immediate lymph nodes draining the site of a primary carcinoma show the greatest hyperplasia, it suggests that they are the chief source of the natural defense against the invading new growth, not only within their substance but also possibly at the primary lesion. If this is so, one should consider whether prophylactic radiation to these nodes could be applied in such a way as to get the maximal benefit without impairing their natural defensive functions.

Practitioner, London

133: 345-552 (Oct.) 1934

- Some Acute Infections of the Autumn. A. H. Douthwaite.—p. 346.
Advances in Treatment of Diseases of Respiratory System. R. A. Young.—p. 356.
Recent Advances in Treatment of Asthma and Hay Fever. G. W. Bray.—p. 368.
Recent Advances in Treatment of Acute Infectious Diseases. W. Gunn.—p. 380.
Recent Advances in Treatment of Tropical Diseases. L. Rogers.—p. 401.
Appendicitis. C. English.—p. 409.
Recent Advances in Treatment of Thyroid Disease. T. Dunhill.—p. 416.
Recent Advances in Treatment of Blood Diseases. L. J. Wits.—p. 426.
Treatment of High and Low Blood Pressure. C. Hoyle.—p. 434.
Advances in Treatment of Disease in Childhood. R. W. B. Ellis.—p. 445.
Recent Advances in Treatment of Chronic Rheumatism. W. S. C. Copeman.—p. 459.
Modern Methods of Treatment in Orthopedic Surgery. R. W. Jones.—p. 466.
Advances in Gynecologic Treatment. W. Shaw.—p. 480.
Recent Advances in Treatment of Rectal Diseases. W. B. Gabriel.—p. 489.
Recent Advances in Urologic Treatment. A. E. Roche.—p. 510.
Treatment in Some Minor Surgical Problems. J. B. Hunter.—p. 522.
Recent Advances in Serum Treatment of Disease. G. F. Petrie.—p. 529.
Recent Advances in Vaccine Therapy. A. Fleming.—p. 537.

Advances in Treatment of Blood Diseases.—Wits states that recent advances in the treatment of diseases of the blood have been effected by the introduction of new remedies and also by refinements or greater precision in the use of old remedies. Improvements in therapeutics have to a large extent been the consequence of improvements in diagnosis; e. g., the clinical resemblance between aplastic anemia and hemorrhagic purpura may sometimes be so close that they can be distinguished only by complete examination of the blood. Purpura haemorrhagica is relieved in the most striking manner by splenectomy, an operation that is not only useless but may be harmful in aplastic anemia. Disorders of blood formation are usually highly specific in etiology and response to treatment, and exact diagnosis must precede successful treatment. The author discusses the present place of the following in the treatment of disorders of the blood: iron, copper, x-rays, arsenic, phenylhydrazine, pentnucleotide, transfusions, splenectomy, and liver and stomach preparations.

Modern Methods in Orthopedic Surgery.—Jones points out that one of the most important advances in orthopedics has been the recognition of the inherent power of tissues to deal successfully with infection that is drained adequately. It has been shown that repair is delayed and not accelerated by frequent dressings and by the application of strong antiseptics. Antiseptics may devitalize organisms, but they also destroy healthy young cells, and, if to the tissue destruction of infection is added the tissue destruction of antiseptics, the volume of discharged pus is increased greatly and there is a corresponding increase in the degree of toxic absorption. Moreover, the daily removal of dressings for inspection of the wound is as useless and as harmful as the daily lifting of a bulb for inspection of its growth.

Archives de Médecine des Enfants, Paris

37: 577-640 (Oct.) 1934

- *Problem of Cure of Tuberculous Meningitis in Nursing. P. Rueda.—p. 577.

Tuberculous Meningitis in Infants.—Rueda describes several cases of tuberculous meningitis in infants and considers the present state of clinical knowledge of the condition. He concludes that the ordinary hopeless outlook is not justified and that the cases of spontaneous recovery should be a considerable stimulus to the study of therapeutic cure. Careful restudy of the anatomopathologic and clinical processes is necessary, this having been delayed by the accepted but unjustified hopeless outlook. The cure of tuberculous meningitis probably depends on the early diagnosis. Minute study of the cerebrospinal fluid should open new horizons for the favorable modification of the prognosis of tuberculous meningitis. Finally, he believes it necessary to change the manner of considering the results obtained by analysis of the cerebrospinal fluid.

Journal de Chirurgie, Paris

44: 513-672 (Oct.) 1934

- Surgery of Suprarenals: Physiologic Bases, Indications and Results. P. Stricker.—p. 513.
*Surgery of Suprarenals: Suprarenalectomy in Obliterative Arteritis. R. Leibovici.—p. 525.
Treatment of Suppurative Arthritis of Knee (Exclusive of War Traumatism). P. Juet and De Fournestraux.—p. 537.
*Pathogenesis and Treatment of Proliferating and Stenosing Proctitis. J. Gatellier and A. Weiss.—p. 554.

Suprarenalectomy in Obliterative Arteritis.—Leibovici discusses the various aspects of suprarenalectomy in obliterative arteritis. The physiologic basis is uncertain. Technically there are several methods available, but in any case as much delicacy as in a neurosurgical operation should be used. Histologic examination is necessary to confirm the authenticity of the suprarenalectomy. He concludes that clinically—the only adequate basis at present—the operation does not seem to produce definite, lasting or general vasodilatation. It does not seem to have diminished the percentage of necessary amputations. In general the author feels that the results do not as a rule justify such a radical procedure.

Pathogenesis and Treatment of Proctitis.—The possible causative factors of proctitis are considered in detail by Gatellier and Weiss. They believe that proliferating and stenosing proctitis constitutes one of the clinical manifestations of a much more generalized condition characterized essentially by a lymphatic process capable of invading singly or simultaneously the different lymphatic systems of the perineum. They feel that in the majority of the cases this proadenolymphitis is due to the virus of inguinal lymphogranulomatosis (Nicholas Favre disease). Study of the histories of 139 cases of inflammatory stricture of the rectum treated by different surgical methods and followed for several years demonstrated the failure of these surgical extirpations, since recurrence was practically the rule. When the present theory of pathogenesis is considered, this failure of surgical treatment is not surprising. Palliative and medical treatment, or especially specific treatment of the causal disease, is to be preferred to surgery, but surgical treatment can still be used favorably in the completely inactive cases.

Presse Médicale, Paris

42: 1529-1552 (Oct. 3) 1934

- *Physiologic and Pathologic Action of Liver in Diuresis. M. Villaret.—p. 1529.
Maintenance of Position of Fractures of Neck of Femur Without Arthrotomy. P. Brocq and R. Dulot.—p. 1532.
Transillumination in Diagnosis of Breast Tumors. R. Huguenin.—p. 1534.
*Barbituric Arthralgias and Myalgias. P. Castin and P. Gardien.—p. 1536.

Action of Liver in Diuresis.—As a result of experimental physiologic studies on the blocking action of the liver and portal circulation, Villaret concludes that the hepatic portal system plays a dominant part in the mechanical regulation of water exchanges. This regulatory action, instead of being simply passive as in the cases of vascular stasis, for example, with a pyelophlebitis or sclerosis of the liver, is also dependent on an active physiologic mechanism—that of the functioning

of the suprahepatic sphincter system. In the first instance the abnormal increases of volume of the circulating medium initiates the damming action of the liver. The second important part of the liver is a system of protection against heterogenous albumins. The intravenous injection of a liquid into a normal person causes less diuresis than oral administration, because of the reflex blockage caused in the liver by a massive increase in fluid. Practically, these views demonstrate the desirability of the therapeutic production of diuresis by fractional fluid injection in the decubitus position rather than massive fluid intake.

Barbituric Arthralgias and Myalgias.—Castin and Gardien report six cases in which joint or muscle pains developed in the course of barbiturate administration. The painful symptoms were unaccompanied by objective signs except for the discomfort connected with the pain. There were no sensory or vasomotor disturbances or abnormalities of the tendon reflexes of the affected limb. Only one patient showed atrophy of the right deltoid. Only one articulation was usually involved, but it seemed that its functional incapacity was due to the muscles which move it. These pains seemed to occur only after prolonged administration of the drug. No marked sexual distribution is apparent, and the age distribution appears to be simply in proportion to the frequency of use. The authors state that, as a general rule the barbituric algias are no more a contra-indication to the use of this drug than are the skin eruptions and other reported complications.

Schweizerische medizinische Wochenschrift, Basel 64: 913-932 (Oct. 6) 1934

- *Ischemic Contracture of Fingers Following Fractures of Elbow or Lower Arm in Children. R. Scherb.—p. 913.
- *Treatment of Anorexia in Nurlings and Small Children. J. Bernheim-Karrer.—p. 916.
- Internal Hemorrhages. R. Meyer-Wildisen.—p. 917.
- Two Observations on Accidental Traumatic Genesis of Appendicitis. O. Oesch.—p. 919.
- *Bilateral Tubal Pregnancy: Case. W. Stahel.—p. 920.
- Autovaccine. R. Freund.—p. 921.
- Influenza Epidemic in Zurich in 1933. E. Ganz.—p. 923.
- Correct Diathermy in Sciatica. A. Keller and M. J. Purtschert.—p. 927.

Ischemic Contracture of Fingers Following Arm Fractures in Children.—According to Scherb, the ischemic contraction of the fingers develops in the following manner: Shortly after the injury (from six to eight hours), severe pains set in and radiate to the fingers. The hand and the bent fingers are bluish red or blue and edematous, and attempts at passive stretching of the fingers are extremely painful. After about two weeks, pains and the swelling subside, but a clawlike position of the fingers develops which is characteristic for ischemic contracture of the fingers, and, depending on the involvement of the peripheral nerves, sensory and trophic disturbances set in. However, the involvement of the nerves does not necessarily belong to the symptomatology of ischemic contracture, for the contraction is of a myogenous nature, in that the muscle tissue necrotizes as the result of a deficient blood supply and is replaced by cicatricial connective tissue. The opinions about the cause of ischemic contracture are still divided. Some assume that it is the result of the bending of the vessels and nerves on the edge of the fractured piece of bone or of an incarceration of the vessels; that is, of a circulatory disturbance at the site of the fracture. The author does not accept this theory but advances evidence indicating that ischemic contracture of the fingers is caused by the subfascial hematoma. The origin of the hematoma makes it understandable why only the flexor muscles of the lower arm become involved. The bandage is not responsible for the contracture, for if this were the case the extensor muscles would likewise become involved. The author thinks that, if the first symptoms of ischemic contracture are observed early, a lengthwise division of the fascia of the lower arm should be done in order to relieve the pressure of the hematoma on the threatened muscles. As treatment he recommends that stretching of the contracted flexors of the fingers should always be tried by conservative measures and states that only slow progress can be expected. If in case of a supracondylar fracture the flexors are completely destroyed, a substitute could eventually be produced by tendon transplantation.

Treatment of Anorexia in Children.—Bernheim-Karrer emphasizes that gastric disturbances are not given sufficient attention in the treatment of anorexia of small children. He thinks this the result of gastrogenic anorexia being frequently confused with neurogenic anorexia. A gastrogenic anorexia may become superimposed on a neurogenic form. Retardation in the evacuation of the stomach alone may lead to loss of appetite. He describes several cases of nurlings and small children. In nervous anorexia the tongue is usually clear; it was coated in the reported cases. Whenever the tongue is coated, a purely nervous origin of the anorexia must be doubted and it is advisable to examine the contents of the stomach. In nervous anorexia the examination of the stomach usually gives negative results or reveals only a slight motor insufficiency or hyperacidity and hypotonia. However, if gastritis exists, there are usually considerable digestive residues. In case of a pronounced hyperacidity, the administration of sodium bicarbonate is helpful. The gastric catarrh may be counteracted by irrigations with Vichy water, but care should be taken that the pressure is not too high, for this would increase the already existing hypotonia of the stomach. In one of the children the anamnesis revealed that the mother and grandmother had had gastric diseases and it is possible that here an organic deficiency was involved. The author stresses as the most important point the efficacy of gastric irrigations.

Bilateral Tubal Pregnancy.—Stahel reports the case of a woman, aged 36. Severe pains in the right hypogastrium with vomiting and constipation led to the diagnosis of appendicitis, but at first the patient did not consent to an operation. A sudden recurrence of the severe pains was diagnosed as perforation of the inflamed appendix or perhaps ruptured tubal pregnancy. The discharge of blood from the vagina and another examination led to the diagnosis of ruptured tubal pregnancy of the right side, and an operation was done at once. A tumor, the size of an apple, which ruptured when it was dislocated, was detected on the right side of the uterus, and the opening discharged blood, a fetus 5 cm. in length, and placental tissue. The right tube and ovary were removed but, in spite of careful hemostasis, bleeding continued. Further examination of the pelvic organs revealed that the left tube was torn, discharged blood and contained a fetus of approximately the same length as the right tube. The left tube was likewise removed but the ovary was left intact. Microscopic examination disclosed a bilateral chronic salpingitis and it may be assumed that this was the cause of the tubal pregnancy. It is possible that this salpingitis in turn was caused by an old gonorrheal infection. Since the two fetuses were approximately of the same size, it is probable that two ova were fertilized simultaneously. The woman recovered in a comparatively short time.

Clinica Medica Italiana, Milan

65: 913-1012 (Oct.) 1934

- Carcinosis of Skeleton Probably Due to Latent Pulmonary Neoplasia. G. Ferrari and G. E. Dolfini.—p. 915.
- *Size of Erythrocytes with Granulofilamentous Reaction in Relation to Physiologic and Pathologic Anisocytosis. G. Angelini.—p. 945.
- *Oxalemia and Oxaluria in Alterations of System Regulating Glycogen Metabolism. G. Battistini.—p. 971.
- Research on Venous Pressure of Limb Subjected to Pressure. G. Martini.—p. 982.
- Subarachnoid Hemorrhages. M. Dalla Palma.—p. 990.

The Size of Erythrocytes.—Angelini studied the size of the reticulocytes and the erythrocytes in normal conditions and in various diseases of the liver. He maintains that anisocytosis may be observed in the early stages of the erythrocyte formation (reticulocytes) in a manner corresponding to the anisocytosis commonly expressed by the erythrocytometric formula. The existence of this anisocytosis of immature cells must be kept in mind in interpreting anisocytosis in general. The reticulocytes offer a formula of larger measurements than the constituents of the general erythrocytometric formula; the smaller elements in the latter formula are not found in the reticulocytes, nor can it be stated that they are even young elements. The variety of the size of the erythrocytes must not be considered merely as an expression of the different phases of their life cycle (large young erythrocytes, small old erythrocytes). There is a sound basis for believing that in the course of their existence the erythrocytes, like other cells, undergo a

reduction in size. Only the extreme examples may be considered products of new formation (maximal erythrocytes) or on the other hand of senescence (minimal erythrocytes). In determining the size of the others, the author advises caution, especially in anisomicrocytosis (hemolytic anemia, infantile splenic anemia and pernicious anemia), in which relatively small forms are also found among the reticulocytes. A similar reduction is missing only in some cases of cirrhosis of the liver with a macrocytic appearance, in which the formula of the reticulocytes coincides with that of the erythrocytes in general.

Oxalemia and Oxaluria in Alterations of System Regulating Glycogen Metabolism.—Battistini determined the oxalic rate of the blood and the urine in various changes of the system regulating glycogen metabolism. All of twenty-four diabetic patients examined presented hyperoxalemia and hyperoxaluria, and the values amounted to two and three times the normal rate. The rate of oxalemia and oxaluria was higher in cases of so-called fat diabetes and less marked in forms of diabetes complicated by acidosis. The oxalemic curve after ingestion of dextrose remained elevated beyond the third hour. By eliminating the carbohydrates from the diet of patients presenting slight forms of diabetes and by administering insulin to patients presenting grave diabetic conditions, the author obtained a lowering of the oxalic rate of the blood and urine. He encountered a marked hyperoxalemia and a slight hyperglycemia in eight cases of atrophic cirrhosis in an advanced stage, in one case of syphilitic hepatitis and in one case of carcinoma of the liver. In these hepatic alterations, after administration of dextrose, the oxalemic curve remained elevated beyond the third hour as in the glycemic curve. The author states in conclusion that the oxalic metabolism is intimately connected with the carbohydrate metabolism, of which it is an intermediate product.

Semana Médica, Buenos Aires

41: 929-1000 (Sept. 27) 1934. Partial Index

- The Two Puericultures. N. Palacios Costa and F. Escardó.—p. 929.
- Dangers of Diathermic Needle. A. J. Manes.—p. 934.
- *Spontaneous Pneumoperitoneum in Perforation of Gastric and Duodenal Ulcers. A. Fernández Saralegui and G. Belleville.—p. 936.
- Sclerotic-Atrophic Encephalitis (Diffuse Sclerosis): Case. R. Carrillo.—p. 938.
- Paracoccidial Granuloma of Pancreatic Localization: Case. R. Marengo, E. A. Caldas and J. M. Raffo.—p. 975.
- *Postoperative Intravenous Injections of Sodium Chloride. H. D. Berri.—p. 979.
- Fractures of Upper Epiphysis of Humerus. W. Tejerina Fotheringham.—p. 981.

Pneumoperitoneum in Perforation of Gastric and Duodenal Ulcers.—Fernández Saralegui and Belleville emphasize the importance of the roentgen examination of the abdomen in acute abdominal conditions in patients with a positive Jobert's sign (disappearance of the hepatic dullness on percussion in the liver area). The sign indicates the presence of spontaneous pneumoperitoneum, the typical syndrome of perforation of a hollow viscus, and its roentgen verification indicates the emergency of an immediate surgical intervention on the patient. The chamber of air in spontaneous pneumoperitoneum following gastric or duodenal perforation shows itself in the roentgen picture as a limited semilunar space of uniform transparency, located between the diaphragm and the convex aspect of the liver, in the upper part of the subphrenic space. The roentgenogram of spontaneous pneumoperitoneum by ulcer perforation may be differentiated from similar roentgenograms, such as those given by spontaneous pneumothorax of the base of the lung and by pyogaseous subphrenic abscess and gaseous peritonitis, by the physical, functional, local and general symptoms, and from the roentgenogram of hepatodiaphragmatic interposition of the colon (Kausch's internal tympanism) by the differential roentgen characteristics of the latter, as described by Chilaidditi. Two cases of spontaneous pneumoperitoneum by perforation of ulcers of the anterior aspect of the pylorus, with atypical and classic clinical pictures, respectively, are reported. In both cases the results of the roentgen examination of the abdomen that confirmed the diagnosis of pneumoperitoneum, based on the presence of a positive Jobert's sign, were the basis for the decision to perform an immediate operation, which saved the life of the patients.

Postoperative Intravenous Injections of Sodium Chloride.—Berri confirms Robineau and Lévy's statements on the prophylactic value of the injections of hypertonic salt solution for the prevention of accidents accompanied by hyperazotemia and hypochloremia, as appeared in the *Presse médicale* 81:1563 (Oct. 11) 1933 (abstr. THE JOURNAL, Dec. 2, 1933, p. 1836). The technic is as follows: A subcutaneous injection of 500 cc. of isotonic dextrose solution is given to the patient in the course of the operation, followed, after awakening from the anesthetic, by an intravenous injection of 400 cc. of a 4 per cent hypertonic solution of sodium chloride. A second and then a third injection of 300 cc. each of a 4 per cent hypertonic solution of sodium chloride, controlled by the previous determination of the chlorides in the blood and in the urine of the patient, are given to him on the second and third days after the operation. The author obtained satisfactory results in three cases. One of the patients had renal insufficiency complicating the prostatic disease for which the operation was performed. In all cases the condition of the patients followed a favorable evolution: Hyperazotemia did not appear, the urinary secretion was practically normal with a nearly normal elimination of chlorides, the loss of weight was minimal, and there was an early elimination of gases during the first twenty-four or forty-eight hours after the operation by which intestinal and painful abdominal complications were prevented.

41: 1001-1072 (Oct. 4) 1934. Partial Index

- Bronchopulmonary Forms of Grip. A. A. Rissotto.—p. 1001.
- *Nontuberculous and Tuberculous Dilatations of Calices of Renal Pelvis. J. Salleras.—p. 1008.
- *Pseudotumoral Form of Syphilis of Bones. Sara Satanowsky and R. Favergioti.—p. 1010.
- Calcium in Human Organism. Herta G. Otte.—p. 1013.
- Encephalitis Sclero-Atrophicans (Diffuse Sclerosis): Clinical and Anatomopathologic Study. R. Carrillo.—p. 1033.
- Oxygen Therapy by Subcutaneous Route in Crisis of Asthma. W. Howard and V. C. Giardinieri.—p. 1050.
- Nocturnal Incontinence of Urine Due to Spina Bifida Occulta: Case. H. D. Berri.—p. 1051.
- Coramin Injection in Fetal Suffering. A. C. Kunz.—p. 1053.

Dilatation of Calices of Renal Pelvis.—Salleras says that pyelography permits the differentiation of the painful nontuberculous form of dilatation of the calices of the renal pelvis from the painful tuberculous form, as well as the establishment of a diagnosis of the association of the two types of dilatation in one and the same kidney. The pyelogram, in cases of painful nontuberculous dilatation, shows the borders of the ends of the renal calices, in their site of papillary implantation, regular and well defined. The image of the kidney is clear. The dilatation is uniform in the main calices of the kidney so that the kidney appears in the pyelogram like the shadow of a clover leaf. The pyelogram in cases of painful tuberculous dilatation shows the presence of tuberculous ulceration, and the shadow of the kidney is blurred and uneven. The pyelogram in the associated form shows blurred spots at the site of tuberculous lesions and the typical clear aspect of nontuberculous dilatation at the nontuberculous areas. Two cases of the painful nontuberculous and the painful associated nontuberculous and tuberculous forms are reported. In both cases the study of the kidney, removed by nephrectomy, permitted the verification of the pyelographic diagnosis.

Pseudotumoral Form of Syphilis of Bones.—Satanowsky and Favergioti say that when a medical antisyphilitic treatment fails to improve bone lesions, which by their roentgen aspect and by the examination of the patient seem to be of syphilitic origin, it is advisable to resort to a different medical antisyphilitic treatment before deciding on the performance of a mutilating operation or even of an exploratory operation. They report the case of a syphilitic patient who had a negative Wassermann reaction and who was suffering from a pseudotumoral syphilis of the femur. A combined treatment consisting of intravenous injections of 0.02 Gm. of mercuric cyanide every other day, and oral administration of 5 Gm. of potassium iodide daily, resulted in a marked deterioration of the patient and in the appearance of a tumor at the site of the bone lesion, which on histologic examination of some fragments obtained during an exploratory operation proved to be a chronic inflammatory process of the muscular tissues with abundant proliferation of the connective tissues and hyaline degeneration of the muscular fibers. The process was interpreted by the authors as a propa-

gation of gummas from the syphilitic bone lesion, which invaded the surrounding tissues. The change of treatment to the administration of quinine-iodide-bismuthate injections, each injection containing 0.16 Gm. of bismuth and given every other week, resulted in the speedy disappearance of the tumor and a marked improvement of the general condition of the patient.

Archiv für Gynäkologie, Berlin

158: 1-172 (Sept. 19) 1934. Partial Index

- Cysts in Vagina of Fetuses. Erna Vilas.—p. 1.
Sarcoma of Renal Capsule Simulating Ovarian Tumor. J. Ruzieska.—p. 14.
Is Intersexuality Cause of Virilism in Ovarian Tumors? G. Krediet.—p. 22.
*Porphyrin Elimination During Normal Pregnancy and Its Relation to Blood Pigment Metabolism. C. Carrié and L. Herold.—p. 54.
Calcium Content of Cerebrospinal Fluid. E. Vogt.—p. 60.
Ovarian Tumors Consisting of Thyroid Tissues. H. O. Kleine.—p. 62.
Dysgerminomas of Myometrium. W. Schiller.—p. 76.
*Clinical Aspects of Ovarian Dysgerminoma. H. O. Kleine.—p. 89.

Porphyrin Elimination During Pregnancy.—Carrié and Herold studied the porphyrin elimination in healthy pregnant women by means of the spectrophotometric method. They found that toward the end of pregnancy there is a gradual decrease in the elimination of porphyrin. They explain the relations between the porphyrin metabolism and the blood pigment metabolism and are of the opinion that the reduction in the porphyrin elimination, in spite of the increase in the disintegration of erythrocytes at the end of pregnancy, is due to the fact that the hemoglobin derivatives (porphyrin) are largely taken up by the fetus to serve in the formation of blood.

Clinical Aspect of Ovarian Dysgerminomas.—Kleine reports the histories of seven patients with dysgerminoma. The patients were free from hermaphroditism, but they were of the hypoplastic asthenic type. Their ages varied between 15 and 24 and one was 30 years old. The author points out that the dysgerminoma is characteristic for young women. In five patients the dysgerminoma was unilateral, in one bilateral, and in one it was at first unilateral but, shortly after the one tumor had been removed, another one developed on the other side. Rapid growth seems to be a characteristic of this type of tumor. Histologic examination disclosed in all cases the typical picture of the solid, large cell, round-cell carcinoma, the growth of which was either alveolar or strand-like. The author compares the hormone reactions of the three types of blastomas of the female gonad, of the granulosa blastomas, arrhenoblastomas and dysgerminomas. The Aschheim-Zondek reaction is negative in all three types, but the folliculin reaction (estrus reaction) is positive in granulosa blastoma but negative in the two other types. The testicular hormone reaction is doubtful in all cases, but it may be positive in some cases of arrhenoblastoma and negative in the other two types. One of the patients observed by the author had a normal delivery before the operation, and another patient gave birth to two normal children following the removal of the left ovary on account of a dysgerminoma, the size of a child's head. This proves that the healthy ovary of a woman with dysgerminoma may retain its function. But, on the other hand, one of the patients died as the result of a rapidly growing dysgerminoma of the left ovary, six months after a dysgerminoma had been removed from the right ovary. Three patients have remained healthy after the removal of the dysgerminoma for periods of seven, sixteen and twenty-four years respectively.

Chirurg, Berlin

G: 633-664 (Sept. 15) 1934

- *Clinical Results with Links' Test in Early Diagnosis of Carcinoma. H. Weber and F. Schüle.—p. 633.
Discussion of Anesthetics and Their Indications. E. Schmutzler.—p. 641.
Perityphlitic Abscess in Childhood. E. Bumm.—p. 645.
Stimulating Expectoration with Primulasaponin in Postoperative Bronchitis. H. Assheuer.—p. 650.
Technic of Operation on Sacral Fistula. D. Kulenkampff.—p. 653.

Clinical Experience with Links' Early Diagnosis of Carcinoma.—Weber and Schüle report their results with Links' serum diagnosis of carcinoma in 100 clinical cases. Blood is drawn from the cubital vein into a receptacle so arranged that each stage of coagulation can be separated, yielding three serum fractions instead of one. The three specimens are subjected

to a chemical analysis consisting of the determination of the number of cations utilizing the potassium and magnesium content of the serum. The three fractions are placed in receptacles and are treated by heat so as to rid them of all organic particles. The resultant clear fluid is examined for its potassium content by titration and for magnesium by a colorimetric micromethod. It is not the total of the six figures obtained but the relationship of the total to the erythrocyte count that determines whether the test is positive or negative. The authors do not furnish further details except to state that figures above 100 are considered a positive test, while those below are considered negative. The test was positive in the forty-one cases of definitely established carcinoma. In a control group of forty-two cases that were definitely not carcinoma, five gave a figure above 100, in other words were positive. This gives 88.1 per cent of correct results and 11.9 of errors. In a third group of eleven suspected cases of malignancy, the test proved to be correct in seven, probably correct in two, and undetermined in two. The authors feel that the small number of cases tested does not allow any conclusions regarding its specificity. It appeared significant, however, that all the sarcoma cases gave a negative result suggesting a specific response of the part of the epithelial tumors.

G: 665-696 (Oct. 1) 1934

- *Sexual Operations. A. Fromme.—p. 665.
Refined Mechanics in Treatment of Fractures. H. Schupp.—p. 681.
Percussion as Diagnostic Means in Acute Surgical Diseases of Abdomen. F. O. Mayer.—p. 684.
Blood Transfusion. P. G. Schmidt.—p. 686.

Sterilization Operations.—In discussing the new law for prevention of hereditary diseases, Fromme states that the German law makers regard sterilization performed for purely social indications as a mutilation subject to severe punishment. Because the operation in man is easy to perform, the law specifies that it may be done in specified institutions only, and by appointed surgeons. Thus far no legislation exists permitting the marriage of a normal person with one congenitally abnormal but sterilized. The author warns that the operation of sterilization may be needlessly performed in cases of azoospermia and cryptorchism. The term vasoresection recommended by Haberland was given legal acceptance. The question of how soon after vasoresection the person is rendered sterile has not been settled. Spermatozoa may remain alive in the seminal vesicles and in the efferent ducts for a long time. The question of the length of quarantine after vasoresection is bound up with the solution of this question. No profound hormone disturbance is to be feared, because spermatogenesis, while temporarily diminished as the result of stasis, soon recovers and may continue for a number of years. That the patency of the duct can be restored by an operation was demonstrated by Monaco in animal experiments. It would therefore be possible for a sterilized person to circumvent the law by having a restoring operation performed outside of Germany. The author is inclined to minimize the effect on the libido in the sense of a Steinach operation after a bilateral vasoresection. In discussing castration the author calls attention to two interesting phenomena recently pointed out by Lange in his observations on 310 castrated men; namely, the development of gynecomastia in thirty-two and an increase in height of more than 2 cm. in persons past the physiologic age of growth. The author is of the opinion that castration will fail in a high percentage of cases to cure the sexual aberration for which it is performed. Not only does the libido as well as potency frequently persist after castration, but it is evident that the libido is grounded at least as much in the psychology of the person as it is in his testicles.

Klinische Wochenschrift, Berlin

13: 1417-1448 (Oct. 6) 1934. Partial Index

- *Influence of Diathermy on Blood Perfusion of Brain. J. Frey and M. Schneider.—p. 1419.
Adenyl Acid in Central Nervous System. C. Riebeling.—p. 1422.
Nervous Complications in Diphtheria. P. Mühlkamp.—p. 1424.
*Takata Reaction and Pregnancy Toxicosis. W. Neuweiler.—p. 1428.
Behavior of Respiratory Sound in Region of Caverns. R. Cobet.—p. 1429.
Leukemic Changes in Bones in Roentgenogram. G. Paschlau.—p. 1430.

Influence of Diathermy on Blood Perfusion of Brain.—Frey and Schneider give a theoretical explanation as to why, in diathermy of the skull, the temperature of the brain can be

elevated only slightly. They demonstrate this fact in experiments on dogs, which revealed that the diathermic heating of a portion of the brain of a living dog amounts to only from 2 to 10 per cent of that of the musculature. However, diathermy of the skull effects a dilatation not only of the vessels of the skin and the muscles but also of the cerebral vessels. This dilatation of the cerebral vessels may be induced by applying diathermy merely to the facial portion of the skull, and, if this is done, the slightest heating of the brain is avoided. The diathermic dilatation of the cerebral vessels is thus not to be explained as a heat action but is doubtlessly due to reflex action. The authors think that the elicitation of the meningeal reflex described by the Schneiders is the important factor.

Takata Reaction and Pregnancy Toxicoses.—Since the Takata reaction is positive in certain hepatic disorders, particularly cirrhoses of the liver, and since pregnancy toxicoses are accompanied by various symptoms of a disturbed hepatic function, Neuweiler determined the outcome of the Takata reaction in the severe toxicoses of pregnancy. He employed the technic described by Jezler. The reaction was negative in healthy pregnant women, in five women with uncomplicated pregnancy kidney, in nine with threatening eclampsia and in six with manifest eclampsia. Even in the severest cases of eclampsia, which ended fatally and in which the histologic examination disclosed severe changes of the liver, the Takata reaction was negative. Five women with severe toxic hyperemesis, in three of whom abortion had to be performed because of severe hepatic disturbances, likewise had a negative Takata reaction. The author made control tests on patients with cirrhosis of the liver and always obtained a positive Takata reaction. He concludes that in pregnancy toxicoses the Takata reaction has no value as a functional test of the liver.

Medizinische Klinik, Berlin

30: 1285-1316 (Sept. 28) 1934

- Treatment of Diseases of Liver and of Biliary Passages. E. Lauda.—p. 1285.
Gymnastics for Women. W. Knoll.—p. 1290.
*Duodenal Diverticulum and Pancreatitis. A. Frentzel-Beyme.—p. 1296.
Does Filling of Bile Passages by Gastric Contrast Mediums Prove Impairment of Liver? H. Engels.—p. 1299.
*Characteristics of Structure of Descendants of Diabetic Patients. Fryda Edelmänn.—p. 1300.
Presence of Tubercle Bacilli in Blood and Cerebrospinal Fluid of Patients with Chorea. E. Loewenstein.—p. 1300.
Pharmacologic Examination of Extract of Pine Needles. G. Taubmann.—p. 1302.

Duodenal Diverticulum and Pancreatitis.—On the basis of seventeen case histories, Frentzel-Beyme explains the connections between duodenal diverticulum and pancreatitis. The characteristic pain on the left side or in the back, the pancreatic stool and the increased or greatly fluctuating diastase values are the most significant of the symptoms indicating pancreatic involvement. Increased blood sugar content and the enlargement of the space of the head of the pancreas may indicate pancreatic involvement, but they are frequently absent. At any rate, a negative roentgenologic examination does not definitely exclude impairment of the pancreas. The author thinks that his observation that in extensive destruction of the pancreas there is usually a gastric subacidity requires further investigations on a larger material. In case of duodenal diverticulum there exist nearly always atypical intestinal disorders (heartburn, nausea, vomiting and a sensation of pressure in the gastric region). If the pancreas is involved from the beginning, which is the case when the duodenal diverticulum is located at the duodenal papilla, typical pancreatic symptoms are generally disclosed by the anamnesis. In these cases the course is usually rather severe and there is danger of acute necrosis of the pancreas. The duodenal diverticulum causes disturbances only when it retains substances and subsequently becomes inflamed. This is the case when the pedicle connecting the duodenal canal with the diverticulum is rather narrow. If the pancreas is in the normal position, it becomes involved in the disturbances only if the diverticulum is on the concave side of the duodenum. The clinical manifestations vary greatly in duodenal diverticulum and the diagnosis requires considerable study.

Descendants of Diabetic Patients.—Edelmänn observed that in women descending from families in which there is diabetes mellitus the extremities, particularly the lower ones,

are extremely slender. This slenderness is especially noticeable immediately above the ankle and the wrist. Moreover, the curvatures resulting from the bellies of the muscles, which are noticeable in normal persons, are generally lacking in these descendants of diabetic families. The author found also that the history of diabetes was usually in the paternal branch of the family. Thus it appears that the hereditary transmission of these characteristics goes through the father and is passed on to the female sex. But the author observed also a number of men with thin and weak lower extremities in whom the ancestry was diabetic. Persons with these characteristics do not necessarily contract diabetes, but those in whom there exists a considerable disproportion between the extremities and the trunk (adiposity of abdomen, hips and breasts) seem to have a predisposition for diabetes mellitus. The author inquired also about the ancestry of persons with extremely plump lower extremities and found that in these cases there was a history of diabetes mellitus in the maternal branch of the family. However, the latter material was comparatively small and further observation will be necessary.

30: 1317-1348 (Oct. 5) 1934. Partial Index

- Research on Allergy and Etc. W. Riehm.—p. 1317.
Medical Problems in Aviation. G. Schubert.—p. 1321.
Diagnosis and Therapy of Cancer of Rectum. F. Mandl.—p. 1326.
*Symptoms Resembling Those of Typhoid, Particularly Intestinal Ulceration, in Hemorrhagic Aleukia and Acute Lymphatic Leukemia. R. Klima and H. Rosegger.—p. 1328.
Large Urinary Calculus in Child. G. Freund.—p. 1334.

Typhoid-Like Symptoms in Diseases of Blood.—Klima and Rosegger describe two cases of hemorrhagic aleukia and one case of acute lymphatic leukemia in which typhoid-like symptoms appeared. After the symptoms of the blood disorders had existed for a time and the patients had been treated for blood disease, there developed metcormism, abdominal pains (colics), tar stools and fever. All three cases terminated in death and the necropsies revealed intestinal ulcerations. Following a review of the literature, the authors stress that they do not deny that hemorrhagic typhoid is possible, for they are aware of the fact that thrombopenia is almost a typical symptom of abdominal typhoid and that some authors have observed a certain parallelism between the seriousness of the typhoid and the hemorrhagic symptoms. However, they think that the cases reported here are a proof that the reverse may be the case; namely, that typhoid-like symptoms may develop in malignant thrombopenia or in hemorrhagic aleukia.

Münchener medizinische Wochenschrift, Munich

81: 1487-1524 (Sept. 28) 1934. Partial Index

- Serotherapy of Pneumonia. H. Becker.—p. 1487.
*Otitides of Nurslings and Connection Between Otitides and Intoxication. M. Litschkus.—p. 1492.
Abortion. Dörfler.—p. 1495.
Acute Suppuration of Middle Ear in Residual Conditions. H. Richter.—p. 1498.
Clinical Aspects of Bone Marrow Impairments in Kyphoscoliosis. J. Schüller.—p. 1503.
*Significance of Overextension of Muscles in Paralysis. P. von Puky.—p. 1505.

Otitides of Nurslings.—Litschkus, after calling attention to the high incidence of otitides in nurslings, points out that these processes remain frequently undiagnosed. He thinks that the ears of a nursling should be examined whenever there is fever and the cause of this fever cannot be determined. In intestinal disturbances that are not caused by faulty nutrition, otoscopy is absolutely necessary. The author thinks that there is a connection between intestinal intoxication of nonalimentary origin and the suppurating processes of the middle ear and that in the majority of these cases the process of the ear is the primary disorder. He stresses that every pediatrician should master the technic of otoscopy.

Overextension of Muscles in Paralysis.—According to von Puky, extensive muscular paralysis may completely disappear after the acute stage of anterior poliomyelitis. In nearly all cases, at least some of the paralyzed muscles regain their function during the stage of reparation; that is, from one to two years after the acute stage. All muscles of the spinal nerve ganglion that have not been destroyed by the infection but have lost their function merely as the result of the pressure

of the inflammatory edema may regain their function during this time. Whether the paralysis of a muscle is due to a destruction or only to an edema of the ganglion cells can be recognized only from the duration of the paralysis. It is therefore important that, after the disappearance of the acute manifestations, the paralyzed muscles receive the right kind of treatment. The author thinks that the effect of galvanization has been overestimated, that in fact it is unnecessary, and that massage and muscular exercise are a better stimulus for the muscles than electricity. However, in resorting to these treatments, measures must be taken to prevent overextension, for, if this is not done, reparation may fail and contractures may develop instead. The contractures result from a disturbance in the muscular equilibrium and in turn cause overextension, which prevents repair of the musculature even if the ganglion cell has become normal again. A paralyzed muscle must be kept relaxed or at least protected against overextension until time (in poliomyelitis about two years) has shown whether the paralysis is a permanent one. The same applies also to paralyses caused by other disturbances: by obstetric trauma, injury, suture of a nerve, neuritis, myelitis and so on. At any rate, the treatment of a paralysis without the proper care for the relaxation of the impaired muscles is a grave mistake. The author shows that overextended muscles can be made to function by removing the contractures. He cites cases in which favorable functional results were obtained after ten years or even longer. He describes in detail one case in which osteotomy of the right foot, tenotomy of the plantar fascia and lengthening of the achilles tendon with a subsequent plaster-of-paris cast resulted in considerable improvement of the function of muscles that for thirty-seven years had appeared to be paralyzed.

S1: 1525-1566 (Oct. 5) 1934. Partial Index

- Oral Bismuth Therapy of Syphilis. P. Mulzer and S. Serefs.—p. 1525.
Epidemiologic Significance of "Atypical" Diphtheria of Skin. T. Grüneberg and F. Weyrauch.—p. 1527.
*To What Extent Can Observations on Cerebrospinal Fluid Indicate Treatment in Syphilitic Disturbances of Central Nervous System? C. Riebeling.—p. 1529.
Severe Icterus. H. Müller.—p. 1533.
Animal Blood in Treatment of Exophthalmic Goiter. Eleonore von Balden.—p. 1541.
Calcium Gluconate as Local Anesthetic. G. Tavares.—p. 1543.

Syphilis of Central Nervous System.—Riebeling emphasizes that malariotherapy is the best method in dementia paralytica that has not been treated as yet, and he considers it wrong to use any other treatment. However, when a repetition of the fever therapy becomes necessary, the choice of treatment is debatable. In discussing the aspects of the cerebrospinal fluid of untreated dementia paralytica the author points out that in the present status of serology it is no longer enough to know that the Wassermann reaction is positive. If the inactivated cerebrospinal fluid does not contain Wassermann reagins, the diagnosis of dementia paralytica must be doubted. The cell count is between 20 and 100, but an increase in cells without other changes is of no value for the diagnosis. An increase in the protein content is characteristic for dementia paralytica, but it should not be overlooked that the protein test may be negative in spite of an increase in globulin. The precipitation of colloids (colloidal gold or mastic) is especially characteristic of dementia paralytica. After stressing that it is advisable to study the different protein fractions and their relations to one another in the cerebrospinal fluid of patients with dementia paralytica, the author points out that after fever therapy the cerebrospinal fluid may present widely varying pictures. He thinks that, if the fluid has a normal number of cells, a negative Wassermann reaction and only a slight increase in the globulin content and, if the colloid curves have become flatter, renewed treatment is not necessary for some time but that it is necessary to keep these patients under constant control. He admits that the improvement of the paralytic patient does not run parallel with the changes in the cerebrospinal fluid, but he shows that the repeated examination of the cerebrospinal fluid is helpful in determining the prognosis and that it is a great aid in deciding whether specific treatment should be repeated. He emphasizes that following unsuccessful malariotherapy a repetition is not only unnecessary but should be avoided.

Wiener klinische Wochenschrift, Vienna

47: 1153-1184 (Sept. 28) 1934. Partial Index

- *Results of Surgical Treatment of Chronic Icterus. W. Denk.—p. 1153.
Metabolic Studies in Diseases of Brain Stem. D. Adlersberg and R. Friedmann.—p. 1156.
Early Diagnosis of Carcinoma. W. Schiller.—p. 1161.
Behavior of Leukocyte and Other Blood Pictures in Case of Mikulicz Disease After Short Wave Therapy. P. Grogg.—p. 1165.
Alleviation of Pain During Delivery by Intravenous Anesthesia with Simultaneous Intravenous Stimulation of Uterine Contractions. G. von Bud.—p. 1169.
Angina Pectoris with Symptoms of Coma in Patients with Diabetes Mellitus. L. Horvai.—p. 1169.
Natural Nutrition. H. Koch.—p. 1172.
Evaluation and Treatment of Uterine Myomas. C. Bucura.—p. 1174.

Surgical Treatment of Chronic Icterus.—According to Denk, the dangers of an operative intervention in chronic icterus are frequently overestimated. He reports his observations in sixty-one cases in which operation was resorted to. He shows that, if the necessary precautions are taken, the surgical risk is not sufficient to justify undue postponement in the hope for a spontaneous recovery. Many surgical failures are caused by complications of the lithiasis, which could have been avoided if the intervention had taken place earlier. In evaluating the measures that aim at the reduction of the operative risk, the author stresses blood transfusion as an excellent prophylactic and therapeutic measure against cholemic hemorrhage. To counteract the retardation of blood coagulation, he recommends the administration of calcium salts. The greatest risk involved in the operation is the complete failure of the hepatic function, because it cannot be counteracted as successfully as the hemorrhagic tendency. Nevertheless, the administration of large amounts of fluid, of dextrose and of insulin will aid the function of the liver sufficiently to prevent its complete failure, provided, of course, the damage has not advanced too far. The form of the anesthesia is likewise of vital importance for the success of the treatment. Chloroform and tribrom-ethanol must be dispensed with at all costs and ether should be used only if absolutely necessary, and then very sparingly. In slender persons the intervention may be made by local and splanchnic anesthesia, and in sensitive corpulent patients nitrous oxide anesthesia is the method of choice, particularly in combination with local anesthesia, because it has no unfavorable effect on the liver. The intervention itself should, if possible, be limited to the removal of the obstruction, to the discharge of the bile. The small, contracted gallbladder should be left alone if possible. If it still contains calculi, they should be removed by cholecystotomy, but not before the completion of the intervention on the choledochus. The choledochotomy is done in the transverse direction, if possible, directly over the calculus or slightly above it. Before completion of the intervention on the choledochus, the papilla should be explored and dilated. If exploration of the papilla proves impossible, the duodenum must be opened and the papilla inspected. It is advisable to avoid external drainage of the choledochus.

Zeitschrift für Kinderheilkunde, Berlin

56: 483-608 (Sept. 11) 1934

- Pemphigus Neonatorum Simplex Congenitus. K. Herzmann.—p. 483.
*Etiologic Significance of Paracolon Bacilli in Enteral Diseases of Nurslings and Children. K. Hassmann and K. Herzmann.—p. 486.
*Investigations on Therapeutic Action of Apple and Banana Diet. T. Baumann and H. Forschuer-Böke.—p. 514.
*Antianemic Action of Monovalent and Bivalent Copper. R. Rohland.—p. 546.
Development of Physical Strength in Children and Young Persons: Their Vital Capacity and Pressure Force. E. Schlesinger.—p. 550.
Anxiety Problem During Childhood. J. K. Friedjung.—p. 578.
Sugars, Structure of Which Resemble Sugars of Body, in Feeding of Nurslings. G. Malvoth.—p. 590.

Paracolon Bacilli in Enteral Diseases of Children.—Hassmann and Herzmann consider paracolon bacilli the atypical colon strains that do not ferment lactose. They found such bacilli in the stools of a large number of nurslings and children with enteral disturbances, during the disorder and frequently also a short while after. Relapsing intestinal disturbances concurred with the presence of paracolon bacilli in the stools. These observations and the demonstration of paracolon bacilli in the punctate of the small intestine in toxic cases seem to demonstrate the etiologic significance of paracolon bacilli for enteral disturbances. Continuous transplantation of the para-

colon strains proved that after a shorter or longer period they changed back into ordinary colon strains. The paracolon strains generally retained their characteristics the longer, the more severe the enteral disturbances caused thereby. On the other hand, studies on ordinary colon strains revealed that they may change into paracolon strains. It may be assumed that such variations develop likewise in the intestine and that they are etiologic factors in enteral disturbances. Paracolon strains may also serve as transfer agents for ectogenous infections. Colon strains that have undergone changes in the intestines of children with enteral diseases may be a source of infection for healthy children. The intracutaneous injection of sterile filtrates of paracolon cultures produced strong local reactions in guinea-pigs and in children. As a rule, the severity of the reactions was related to that of the enteral disturbance from which the paracolon strains had been derived. Filtrates from ordinary colon strains, which had been obtained by successive inoculations of paracolon strains or occurred together with them, caused no reactions or much weaker ones. The etiologic significance of paracolon bacilli in enteral disturbances is proved further by the results of agglutination tests, which, moreover, disclose relations of the paracolon group to the typhoid and paratyphoid groups.

Mode of Action of Apple and Banana Diet.—Baumann and Forschner-Böke show that, although the favorable influence of the apple and banana diet on diarrheal disturbances has been definitely established, the mode of action is still in dispute. Investigations on the latter problem convinced them that the pectins, particularly because of their great swelling capacity, are the most important therapeutic factor. They observed that the swollen, voluminous intestinal contents present in the case of the apple and banana diet stimulate the peristalsis and accelerate the passage, and thus counteract the stagnation of the ingesta, which results from the diarrhea. By the administration of pure pectins, it could be shown that they increase the peristalsis and also have an absorptive action. The fact that the diet provides almost exclusively carbohydrates and that it is practically free from fats and proteins should likewise not be overlooked. The acidification of the gastric contents by the malic acid may be of some influence in that it increases the bactericidal effects; but that this factor is only of minor influence was proved by experiments with neutralized apple and banana diets. The tannin contained in apples and bananas is likewise of only minor significance. That the buffer action of the pectins plays only a minor part in the therapeutic action of apple and banana diets was proved by buffer curves. The authors further report studies on the stools in the apple and banana diet. They determined the pH , the buffering, the water, fat and mineral contents and the organic acids, and they discuss the results of these tests. They conclude that in older nurslings and in young children the banana diet gives better results than the apple diet.

Antianemic Action of Copper.—Rohland induced anemia in rats by a milk diet and then used them for the study of the antianemic action of copper. His studies corroborated that the addition of copper induces a more rapid action of the iron therapy. On the basis of studies on the action of monovalent and bivalent copper, he concludes that the efficacy of monovalent copper is not inferior to that of bivalent copper, and that the difference between these two types of copper is not as fundamental as that between the two types of iron. In cases with low hemoglobin content, monovalent copper seems to surpass bivalent copper, while following the increase in hemoglobin, the efficacy of the two types runs parallel.

Hospitalstidende, Copenhagen

77: 1005-1032 (Sept. 18) 1934

*Hereditary Angiomatosis (Osler's Disease) in Two Danish Families. A. Yde and M. Olesen.—p. 1010.

*Prognosis in Massive Hemorrhages from Ulcers. T. Christiansen.—p. 1023.

Hereditary Angiomatosis in Two Danish Families.—Study of five generations of these families shows that the ratio between the members free from hereditary angiomatosis and those afflicted with it is 55:20. Yde and Olesen conclude that the disorder here apparently depends on a dominant factor.

They say that only the treatment of the anemia gives satisfactory results in this disease; reduced iron is effective and blood transfusion is given in marked cases. Universal therapy is of problematic value. Local treatment is directed partly to immediate hemostasis and partly to the greatest possible protection of the patient against further traumas to the angiomata. On the whole, the patients must be advised to abstain from marked exertion of any kind.

Prognosis in Massive Hemorrhage from Ulcers.—Christiansen's material consists of 289 cases of massive hemorrhages ascribed to gastric or duodenal ulcers, 211 of the patients being men. Purely medicodietetic treatment was given. Twenty-five, or 7.9 per cent, died, the mortality for women being 10.3 per cent and for men 7.1 per cent. In the first group, the patients having hemorrhages for the first time, the mortality was 8.9 per cent and for the second group, those having a recurrence, 5.9 per cent. In the sixteen cases in which necropsy was done, gastric or duodenal ulcers were established. Of the 289 patients 203, or 70.3 per cent, were in the first group; the remaining eighty-six had previously had one or more massive hemorrhages. Positive roentgenologic results were found in 101 of 167 patients, or 60.8 per cent. Ewald's test meal, given to seventy patients after the treatment was ended, showed hypersecretion and hyperacidity in 58.6 per cent. The ages of the patients in the first group ranged from 12 to 82, the maximum being between 30 and 40. For both groups the mortality rises considerably after 40, while recurrence as such does not seem to aggravate the prognosis. The prognosis seems to be better in cases in which the hemorrhage is the first and only symptom of ulcer than in those in which there have been symptoms of ulcers, but the duration of the ulcer symptoms apparently plays a subordinate part. The authors confirm that the prognosis seems to be poorer in recent years than formerly, and they are unable to explain this satisfactorily. Their material affords no evidence of periodicity in the frequency of the hemorrhages.

Hygeia, Stockholm

96: 625-657 (Sept. 30) 1934

*Tumor of Spinal Cord Treated Operatively and Presenting Inversion of Radius Reflex and Paralysis of Facialis: Case, Vera Johnsson.—p. 625.

Inversion of Radius Reflex and Paralysis of Facial Nerve.—Johnsson calls attention to the occurrence of symptoms from the cranial nerves in cervical tumors. In her case in a woman, aged 39, the diagnosis was hour glass tumor passing through the intravertebral foramen between the third and fourth vertebrae. There were only slight signs of injury to the central nervous system. As operation showed considerable compression of the spinal cord by the tumor, the absence of pyramidal symptoms from the lower extremities is regarded as noteworthy. After the operation the neurologic symptoms were accentuated and a number of new symptoms appeared, including inversion of the radius reflex and facial paresis. The only report on facial paresis in cervical tumors found by the author in the literature was that of Kraus and Silberman, in which two earlier cases are cited and seven personal cases of cervical tumors with paralysis of the lower part of the facial nerve are reported.

Ugeskrift for Læger, Copenhagen

96: 1029-1052 (Sept. 20) 1934

Functional Neuroses. H. I. Schou.—p. 1029.

Heart Insufficiency Treated with Digitalis Lanata (Digitalin): Twenty Cases. E. Jacobsen.—p. 1036.

96: 1079-1108 (Oct. 4) 1934

Plugging of Lung as Feature of Surgery of Cavern. J. Gravesen.—p. 1079.

*Blood Picture in Pulmonary Tuberculosis, Particularly Relation Between Sedimentation and Shifting to Left. S. Cold.—p. 1083.

Blood Picture in Pulmonary Tuberculosis.—Cold states that even with the simple technic he employed, with attention almost exclusively to the neutrophils, examination of the blood picture affords a valuable supplement to the sedimentation test, especially in the determination of activity and propagation of the disease, as a symptom of which shifting to the left in purely pulmonary cases seems superior to the sedimentation reaction.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 24

CHICAGO, ILLINOIS

DECEMBER 15, 1934

THE IMMUNOLOGIC ASPECTS OF GONOCOCCIC INFECTION

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PHILADELPHIA

No one would deny that the interest in gonococcic infections is greater today than at any time since the epoch making work of such men as Finger, Neisser and Bumm focused medical attention on this disease as it never had been centered before. They started the march of progress along scientific lines that soon were abandoned to a great degree when physicians began to search for drugs to kill gonococci. This long quest for bactericides that would penetrate tissue and kill gonococci had a definite tendency to narrow the field of vision until one thought almost solely in terms of gonococci and chemicals with which to kill them. But most of this is changed now and physicians are thinking largely in terms of patients and gonococci, with bactericidal dreams far in the background. Assuredly it is in this direction that progress lies.

With such a salutary change in view, it is of extreme importance that a careful analysis be made of those features of gonococcic infections that lend themselves to a classification under the general heading of immunologic aspects; for it is obvious that this disease does not differ in its broader features from those other acute infectious diseases that are dependent for cure on the patient's ability to develop an immunity to them. Each of these diseases has its own peculiarities, but it is questionable whether the immunity responses of any of them are so varied and so easily put in abeyance as are those of gonorrhea. And it is largely because physicians have not sensed these factors fully that results in the treatment of this disease often have been so lacking in brilliance.

The space allowed for the present discussion definitely limits the scope of it and urges the use of direct and seemingly dogmatic statements. It, however, is to be remembered that many of these are based on clinical observation, and some of them are urgently in need of laboratory proof. They are given because they apparently are in accord not only with the underlying principles of gonococcic infections but also with scientific knowledge of infections in general so far as these may be applied to this disease.

Because of limitation of space, the discussion largely will be confined to the urogenital aspects of gonorrhea. No effort will be made to cover the highly controversial serologic features of this disease aside from venturing

the opinion that they largely are overflow phenomena and not essentially curative ones. In other words, so far as urogenital infection is concerned, I am of the opinion that cure is a local response and not dependent on the development of humoral antibodies. My reason for this belief will develop as the discussion proceeds.

As the matter of tissue susceptibility is one of the most important things in the understanding of this infection, it would be well to lay down some brief near-rules regarding it. In a consideration of these it constantly should be borne in mind that gonorrhea is a disease due to tissue penetration by gonococci; no bacterial penetration, no gonorrhea.

1. Squamous covered surfaces are immune to gonococcic penetration. They may be irritated by gonococcic pus, but when this purulent irritation ceases they regain their former condition.

2. Columnar surfaces are extremely susceptible, are slow with their immunity responses, and are the surfaces wherein chronicity of infection takes place.

3. Transitional-cell surfaces, so far as susceptibility to infection is concerned, must be divided into two classes: (a) those firmly attached to the subjacent structures and (b) those loosely attached. The former are quite susceptible to gonococcic penetration but show rather a ready immunity response as compared with columnar surfaces. The latter are practically immune to gonococcic penetration unless their surfaces are changed by trauma or irritation. Even then they promptly recover if the precipitating nonbacterial factors are removed.

Thus one is almost solely concerned with columnar-cell surfaces and those transitional surfaces that are firmly attached to their subjacent structures. The former comprise the anterior urethra and all the mucous channels and glands emptying into any portion of the canal. In the female one must consider not only the accessory glandular structures but the uterine cervix and the fallopian tubes. Under the transitional-cell surfaces of this class one is concerned with the posterior urethra and trigon in the male and only the trigon in the female. Before puberty in her the vulvovaginal surfaces as well must be included.

Turning from tissue susceptibility to the question of the establishment of immunity response in infected surfaces, one finds a number of things at play. These appropriately might be classed for purposes of description under the headings of physiologic influences and the influences of anatomic structure. The former has to do with those things influencing immunity response by the action of ingested or inhaled substances and by those bringing about an increase of local physiologic activity.

The anatomic classification has to do largely with structural conformation as a deterrent to free drainage.

Physiologic factors center largely around the action of ingested alcohol in checking immunity response (the same action occurs as the result of prolonged inhalation of alcohol or ether fumes) and the influences of the hyperphysiologic states of sexual excitement and menstruation, all of which retard immunity effort to the point of precipitating chronicity of infection. A like influence occurs in some individuals as the result of great physical activity. With the exception of the latter occasional interfering element, removal of the immediately foregoing may be considered as essential if cure is to ensue. Fortunately the only one that cannot be deleted easily from the disease picture is menstruation, which bears much the same relation to gonorrhea in the female as would a monthly alcoholic debauch of several days' duration in the male.

In considering the influences of anatomic conformation on the development of curative responses, one would do well to restrict oneself, for purposes of clarity, to the well behaved male, for he is not subjected to these so-called physiologic insults. Thus the field is narrowed to gonococcic infection as influenced by the drainage possibilities of the structure involved. Before proceeding, however, it is well to bear the following things in mind:

1. Gonorrhea is a purulent infection.
2. The outpouring of pus is due to the irritation of liberated gonococcic endotoxins.
3. The free mucous membranes retain their toxin sensitiveness for great periods of time.
4. When gonotoxin is poured on a free mucous membrane, there is a purulent response within twelve hours.
5. This toxin response, in an individual whose free mucosa has not been actively discharging pus, usually subsides within forty-eight hours.
6. Repeated toxin responses of this sort engender prolonged purulent discharges from even freely draining membranes.

It thus will be seen that, after the acute stage of the disease, the behavior of the free, broad expanses of mucous membrane is largely a mirror of the feeding foci in more poorly draining areas, structures wherein pus remains sufficiently long for bacterial lysis and toxin liberation. This brings me to the possibility of laying down some rather fixed rules regarding the influences of drainage on the possibilities of cure:

1. Good drainage makes for good curative response.
2. Intermittent drainage makes for chronicity of infection.
3. No drainage makes for sterilization of the non-draining structures or, possibly, for abscess formation.

The last may be stated otherwise as follows: If abscess formation does not take place, as usually occurs in compound racemose glands (Cowper's and Bartholin's), a mucous membrane constantly in contact with the same gonorrheal pus for any great period of time undergoes a lytic gonococcic sterilization of both its contents and its wall (epididymides, urethral follicles, seminal vesicles and, in the female, the fallopian tubes).

Just what are the true, underlying biochemical processes that have to do with the destruction of deep tissue gonococci no one knows. That phagocytosis is not the important factor is shown by the fact that it is almost

missing in the deeper mucosal reaches, being confined almost entirely to the interepithelial spaces and the free mucosal surface. That there may be two or more methods is suggested by the fact that tissue sterilization is favored by two seemingly opposite factors, good drainage and no drainage. To go more deeply into these phases of the question, in the present state of knowledge, is to lose oneself in a sea of dreams and conjecture. It is here that research finds its greatest challenge and promises, perhaps, its greatest reward.

Regarding the immunity against gonorrhea, its fixity and its duration, I have gathered throughout the years sufficient data to warrant me in making some rather valuable near-rules that help greatly in understanding many of the seeming vagaries of clinical experiences:

1. There apparently is no fixed immunity to this disease exhibited by the susceptible portions of the urogenital tract.
2. In the presence of the disease a transient immunity is developed against the particular type of gonococci involved.
3. This immunity lasts for from a few months to a year or more.
4. It is not active against gonococci from any other source. In fact, the patient may be infected by these even though he has gonorrhea.
5. If the patient transmits the disease to another, her mucous membranes may change the biologic characteristics of his gonococci so that they may superinfect him.
6. Such a superinfection bears an incubation period equal to a new infection. In this it differs greatly from a toxin response from his own infection, which always appears within twenty-four hours.
7. Repeated infections by the same type of gonococci, as by the repeated transferences between husband and wife, eventually induces a carrier stage wherein the germs live in symbiosis with the host, producing no apparent symptoms.
8. Gonorrhea acquired from a carrier differs in no way from that acquired from one with active evidences of infection.
9. Despite rather general belief to the contrary, it is probable that gonococcic infections, except in carriers, do not lie dormant in sexually active, alcohol consuming males. In other words, they produce symptoms of their presence. They do not sleep for years and suddenly awaken.
10. Virulence of infection is a matter of the soil and not the gonococcus. Patients acquiring the disease from the same individual show all types of gonorrhea from mild to hyperactive.

COMMENT

The question that naturally arises is How can these facts be interpreted into terms of treatment? Well, one makes no mistake by realizing that cure belongs to the patient and helping with the cure belongs to the physician. And, as the patient's own acts easily can nullify the physician's best efforts, it is obvious that the thing of first importance is to gain the former's strict cooperation, to the end that he does not inject into the disease picture those things that check his immunity responses.

Having gained this, one would do well to realize that one must depend for cure on the tissues infected. Thus

one should apply no treatment that could embarrass their curative responses. It is abundantly in evidence that mild mucosal stimulation not too often applied has the power of helping in the process of cure.

As so much of cure depends on the drainage possibilities of the infected areas, one would do well to avoid all types of trauma that possibly could bring about intermittent drainage in the small mucous channels. One also might do well to abandon, under present conditions, the idea of speed, for immunity development is a variable thing in different patients. It seldom is possible to speed it up greatly, and overzealousness commonly eradicates it. To such efforts are to be attributed many of the otherwise avoidable complications.

No mistake would be made in viewing the immunity balance of far too delicate a nature to be played with by the administration of present gonococcus vaccines in large doses. Few things are more easy to demonstrate than that infection may be kept up for long periods of time in this way. My experiences with vaccines in the treatment of infections due to bacteria producing solely endotoxins has been in no sense encouraging. In this disease they apparently overwhelm the patient and prevent him from building up the immunity that otherwise could be expected of him.

Finally, one would do well to study more closely the clinical course of gonorrhea to the end that a more general realization be held of what parts of it are really due to the disease and what parts are due to other factors. For physicians have grown to include in the composite picture of this disease many things that are not really in accord with the immunologic factors at play. Most of these have to do with influences injected by the patient or by some injudicious plan of treatment. Not only has the faulty composite picture engendered an unwarranted skepticism regarding the value of treatment but it has fostered a warranted suspicion of many clinical reports. Far too often are glowing pronouncements made of the value of a certain type of treatment because in the author's mind it improved on his composite picture, when in reality it produced only those results that many gentle plans of treatment give. It is much more scientific to base the value of a type of treatment solely on the improvement it shows in the clinical picture of the disease in gently treated, well behaved patients. To include the roughly treated, poorly behaved patients in the judgment standard is to obtain false values, to mislead oneself and others and to retard scientific progress.

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Valgus Feet.—A fairly common factor in the production of valgus feet is a contraction of the posterior muscles of the calf, generally referred to as "short tendo Achillis." The condition is characterized by the inability fully to dorsiflex the foot at the ankle-joint. Normal movement allows the foot to dorsiflex to form an angle of about 75 to 80 degrees with the leg and is essential for normal gait. Short tendo Achillis is not infrequently seen as a "congenital" condition and is quite distinct from spastic paraplegia, in which relaxation can always be obtained with trouble. If the degree of contraction is considerable, the child is forced to walk on his toes. However, with a lesser degree he is able to get the heels to the ground by assuming the valgus position. In adults the contraction is usually acquired; and since it is seen far more frequently in women than in men it is likely to be associated with wearing high heels. . . . When such women wear low-heeled shoes for tennis, etc., their feet are forced into valgus—a common cause of foot-strain and painful calves.—Wiles, Philip: Flat-Foot, *Lancet* 2:1089 (Nov. 17) 1934.

THE TREATMENT OF GONORRHEA

BASED ON LABORATORY OBSERVATIONS DURING THE COURSE OF THE DISEASE

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Gonorrhea is the one common disease of long known specific etiology in which there is a general lack of uniformity of treatment. This status is partially due to the absence of any outstanding and accepted specific biologic or chemical therapy. It is apparent that those interested in gonococcic infections should compare their experiences and revise their standards according to the consensus obtained from this type of symposium. My series of observations demonstrate again the limitations of local treatment directed to the site of infection. The clinical observations have been made in correlation with repeated stained smears of the urinary shreds, which I have found by routine examination to be an efficient, practical laboratory procedure.

Apparently there are many who have not yet learned that overtreatment is distinctly worse than no treatment. Also, this study emphasizes again that statistical results on the value of new methods of treatment may be misleading if analyzed without due consideration to an efficient criterion of cure. Interpretation of the value of newer methods would seem more accurate if distinction were made between mild and severe types of infection, since these two groups are definitely separated by marked difference of individual response. The mild type, however, may be converted into severe infection by misguided treatment or lack of cooperation by the patient. Therefore, this analysis is given for the purpose of emphasizing some general principles rather than for the advocacy of any specific method of treatment.

One part of this study embraces a series of 100 consecutive male patients with gonorrhea in all stages of the disease. Fifteen patients were not followed, for various reasons, for a sufficient period of time to establish cure by laboratory and clinical tests and therefore were omitted from the statistical summary. This group is considered specifically in relation to local treatment, but the discussion of the adjuvant treatment measures is based on a large number of additional observations that were made previously.

The infection was limited to the anterior urethra in sixty-five patients when first seen, while thirty-five had infection of the posterior urethra and its adnexa at the time of the first examination. Forty-eight patients were cured without extension of the infection into the posterior urethra. It was found that the average time for cure was twenty-seven days, with the shortest period four and the longest seventy days. Twenty-three, or almost half of the patients who were cured without posterior complications, yielded permanent negative shreds between the fifteenth and twenty-fifth days inclusive. Forty-two of these patients had shreds that were consistently negative for gonococci after the original negative was obtained. Six had intermittent positive and negative shreds, but there were no two negatives in succession before they remained consistently negative. An average of ten shred examinations were made from one to four day intervals during the course of infection. Frequently the smears would yield a few

faintly staining diplococci, either intracellular or extracellular, before shreds consistently negative for gonococci appeared. This suggests lysis of the gonococcus as one phase of the immunity response. It has been said that such appearance is likely to follow when cure is effected by adjuvant vaccine therapy. However, since this group of forty-eight patients were not given any specific vaccination, it would seem to indicate that the mechanism of cure is similar and is probably aided by biochemical reaction in either instance. Bacteriologic cure during the anterior infection was confirmed by an average follow-up period of seven and one-half months, varying from one to eighteen months, during which time there was no clinical or laboratory evidence of infection.

PRINCIPLES OF TREATMENT

The routine treatment consisted of a daily anterior "in and out" injection of 1:4,000 dilution of acriflavine hydrochloride similar to the technic described by Boyd,¹ except that two successive applications were made. The treatment was given with the patient on a table. The urethral content is released slowly, and the cotton is applied over the meatus in the upright position. Between five and ten drops of the antiseptic will drain from the urethra when the cotton is removed at the end of the treatment. The use of 2 to 4 cc. with but momentary retention makes it unlikely that any antiseptic is forced into the posterior urethra. Twenty-five of this group received daily injections only at the office during the first two weeks. While a few patients were permitted to give self injections on the days that no office treatment was administered, others were given only office treatment from three to four times a week. An English preparation of acriflavine hydrochloride was used which seems to produce less irritation and compares favorably with the use of other preparations of acriflavine hydrochloride that were made less irritant by incorporation in a gelatin base. It was unusual to notice any evidence of irritation from the use of acriflavine hydrochloride in the described dilution without forced retention once daily for a period of two to three weeks, but after this period its application was made in from 1:6,000 to 1:8,000 dilution alternating with one of the mild silver salts. It was noticed that one injection daily of acriflavine hydrochloride controlled the generalized infection for a period of twenty-four to thirty-six hours where the course of disease was progressively favorable. Evidence of local activity of infection, however, could be noticed after this period. While it is possible that equivalent results might have been obtained without the use of oral medication, the patients in this series were given oil of santal in a dosage of 5 minims (0.3 cc.), from three to four times a day.

Provocative tests consisted of an anterior "in and out" injection of silver nitrate in 1:1,600 dilution followed by a 1:800 dilution and occasionally one as low as 1:400. When sounds or bulbous bougies were used they were inserted only in the anterior urethra after smears proved negative. In a few patients without clinical symptoms and with the inclusion of gonococci in the shred as the only evidence of continued infection, an "in and out" injection of 1:1,600 silver nitrate was frequently tolerated without exacerbation of symptoms and seemed to reduce the period of infectivity. As a whole, the group that were cured during

the anterior stage of infection responded quickly to local medication, and the first urine, if hazy or cloudy on initial examination, changed within a few days to the classification of clear with various degrees of shreds. A previous smaller series of patients compared favorably when silver iodide was used instead of acriflavine hydrochloride. However, two injections daily frequently were required to control the discharge as well as with one daily injection of acriflavine hydrochloride. It may be significant that the silver iodide is precipitated from a concentrated solution of sodium or potassium iodide, and therefore dilutions as used contained about 1 per cent of soluble iodide in association with the suspension of silver iodide. A prostatic examination was made in all patients before they were discharged from observation.

RESULTS OF TREATMENT

The infection in seventeen patients of the first group limited to the anterior urethra on initial examination reacted unfavorably to the treatment described. Six of this group received no local treatment because of hyperacute infection, and the remainder gave poor response to local treatment, which seems to indicate that there is a definite percentage of patients in whom local treatment does not produce benefit, and the oral administration of such sedatives as oil of santal is only of moderate value. This observation seems to indicate clearly a varying degree of individual resistance in the urethra to the gonococcus which may be purely local, or a local manifestation of a generalized antibody response. I noted that ten patients who responded to cure within the shorter period of time had similar mild infections when treated for gonorrhea from three to seven years previously.

Analysis of a total of fifty-two patients with posterior gonorrhea, including thirty-five with deep involvement before the initial examination, was made in correlation with laboratory tests. Here, as in anterior infections, shred smears have proved quite reliable in the determination of infectivity as well as in the evaluation of various therapeutic measures, although there were more intermittent negative and positive smears. There was a greater variety of medication in this group.

In almost every instance in which there was a history that antiseptics had been applied during the subacute stage to the posterior urethra by instrumental instillation, such as the Guyon catheter, shreds seemed to remain positive longer than by other treatment, such as application by anteroposterior injections. At such time when clinical symptoms and urinary examination indicated that posterior applications were advisable, acriflavine hydrochloride from 1:8,000 to 1:10,000 was used first. Later, acriflavine hydrochloride was used alternately with potassium permanganate or mild silver protein preparations.

During the acute posterior infection, with both glasses cloudy or hazy, and with or without acute disturbance of urination, there is general agreement that prostatic manipulation or local medication through the urethra is contraindicated. Sedatives in sufficient dosage to control pain and tenesmus together with heat and rest comprise the principal measures of safety. Oil of santal, which is sedative and mildly gonococidal, was used with some benefit in such infections but is not ideal. In the subacute posterior infection without acute urinary disturbance, and with both glasses cloudy, oral administration would seem to have its greatest useful-

1. Boyd, M. L.: Acute Anterior Gonorrheal Urethritis Cured with Acriflavine, *J. Urol.* 19: 89 (Jan.) 1928.

ness. Also, oral medication may serve as a preliminary test of tolerance before application of medication through the urethra, or to prostatic massage.

Some patients with chronic infection will often show very few shreds in the voided urine after prostatic massage. In this type the prostate is normal in size and has a borderline normal consistency. The first urine is semiclear with shreds from one to four plus, and the second is clear. This seems to indicate that much of the infection is in the posterior urethra and its adjacent pockets and ducts. In this group shred smears proved almost as efficient as in anterior infections. Posterior application of medication preceded prostatic massage. The other group with definite areas of induration in the prostate often associated with periprostatic or perivesicular infiltration seemed to be more safely treated by massage and heat preliminary to posterior medication. Here, three negative shreds were occasionally followed by a positive smear or even clinical exacerbation. As a rule, in this group more pus and purulent shreds could be obtained in expressed secretion, and more recently I have fished the shreds for staining separately from the whole secretion. The microscopic results have been more consistent.

The average period of time until cure after the onset of posterior infection, or after the patient came under observation, was sixty-one days, with the shortest twenty-one days and the longest seven months. The highest percentage of patients were cured between the sixth and the ninth week after the onset of posterior symptoms. The two patients whose duration of infectivity was seven months had arthritic complications. *Gonococcus* antigen seemed to influence favorably the progression to cure of arthritis in each instance. The termination of infectivity, however, was preceded by three months of complete absence of subjective urinary symptoms with prostatitis and a single positive shred as the only clinical evidence of active gonococcal infection. During this time prostatic massage was given alternately with increasing doses of the gonococcus antigen to avoid the possibility of activation of arthritis from too great stimulation. Similarly, many of the other posterior infections showed clinically inactive infections from one to three months associated with positive shreds. I believe that many patients are dismissed or voluntarily discontinue treatment at such a time and proceed to spontaneous cure later. This observation is important from epidemiologic control of the disease, since the patient is certainly infectious and much more likely to expose others than when symptoms are clinically active.

ORAL, INTRAVENOUS AND INTRAMUSCULAR TREATMENT

Many drugs by oral administration have been compared in this study, and in general the results confirm oil of santal as more useful than many others. I have not been greatly impressed by any of the dyes of the selective excretion type as determined by clinical and laboratory evaluation. While a small percentage of patients received some benefit, routine use did not seem justified. Such antiseptics seemed more efficacious in the stage of subacute posterior infection. The influence of the reaction of urine has been considered in relation to the course of infection. In a small series of patients, induced acidification seemed unfavorable during the acute infection. On the other hand, preliminary observations by Ewert and myself have indicated that in

many instances there is more prompt clearing of the urines in subacute and chronic infections when the reaction is in the high alkaline range (above p_H 8.2 or 8.4) than with many of the so-called urinary antiseptics. There is a prompt decrease in the number of shreds as well as an apparent favorable change in their characteristics. We are making a study of the influence of such bacteriostatic urines on the period of infectivity, since the final evaluation must be determined on this basis. At least further observations seem worth while, but confined to subacute and chronic infections until more is known about the tissue reactions to alkalinization which we hope will replace oil of santal.

Many intravenous chemicals have been tried and only calcium gluconate has proved of outstanding value in cases in which its optimum results were obtained during the acute stage of such complications as epididymitis. Afterward, when there are subacute and chronic infiltrations, sodium iodide intravenously may be substituted to advantage. The reports of intravenous therapy for uncomplicated gonorrhea almost universally contain a qualifying statement that results by intravenous methods are more favorable when combined with local medication and treatment of the prostate.

There is no doubt that good but not consistent results have followed the intramuscular injection of foreign proteins. Here, autohemotherapy proved as efficient as other foreign proteins and had the advantage of producing very little or no local reaction. The results have been more consistently favorable in the systemic complications, such as gonococcal arthritis and mild iritis, than in complications adjacent to the urethra. In some instances, however, autohemotherapy seemed to have a favorable preparatory influence on the prostate, so that afterward there was an increased toleration of the prostate to massage.

VARIOUS ANTIGENS

There is still a general disagreement as to the value of vaccines in gonorrhea. There are undoubted favorable results in many instances following the administration of vaccines, but results must be analyzed with due consideration to the type of adjuvant treatment as well as to a marked individual variation to the spontaneous course of infection. I believe there is a majority opinion that, whatever antigen is used, initial injections should be so small that very little local and no general reactions are induced. Increase of dosage should be gradual to avoid the production of complications or decreased resistance at the local areas of infection. Antigens vary largely according to the amount of toxic protein as obtained during their preparation, and hence differences are more quantitative than qualitative. It is not necessary to consider foreign preparations until licensed by the Hygienic Laboratory.

A very potent extract may be obtained by making a heavy suspension of gonococci in physiologic solution of sodium chloride. A preparation known as ecto-antigen has been described by Horder and Ferry and has been recommended because it is said to have a low toxicity associated with a high antigenic content. Pelouze² has reported rather unfavorable results with a bacteriophage preparation in cases in which the local and general reactions undoubtedly were due to its content of toxic gonococcus protein. Several years ago I

2. Pelouze, P. D., and Schofield, F. S.: A Laboratory and Clinical Study of the Bacteriophagic Principle Elaborated by the Gonococci, *J. Urol.* 17: 407 (April) 1927.

did a large amount of work on the products of broth cultures that were highly toxic, but I did not feel that the clinical results were good enough to justify me in recommending this preparation for general use. I have had very little experience with a similar product known as the Corbus-Ferry³ filtrate, but the description of the laboratory and clinical work seems to indicate that the two products are closely allied. My preparation when given in doses leading to moderate to large local reactions sometimes produced certain deleterious focal reactions. These consisted of the precipitation of epididymitis and occasionally arthritis, with apparent activation of the infection in the urethra and its adnexa that seemed partially to paralyze the anti-infective forces. In other individuals there was almost instant and permanent clinical benefit, but unfortunately some of this class persisted in their infectivity as in a carrier state for a long period of time. The illustrations and descriptions of the local reactions by Corbus indicate that his recommendation of initial dosage from 0.5 to 0.75 cc. in chronic infections might produce deleterious reactions similar to those from the broth preparation I have described. He also quotes the work of Clark, Ferry and Steele⁴ in which titrations demonstrated positive skin reactions in dilutions of from 1:1,000 to 1:1,500, which is approximately the same potency as the products on which I⁵ made my investigations after 1926. An earlier product that I⁶ described in 1925 was of less potency, which may have been due to the enrichment of the broth with a high percentage of ascites fluid.

More recently another product has been described which is made by the induction of artificial lysis of young cultures through the agent of bacteriophage, although the end product contains little if any bacteriophage. Skin tests indicate that it is distinctly less toxic than the filtrates of five to seven day broth cultures that I have previously investigated. Recently, Gernon⁷ has reported favorable results in a series of 174 adult male patients. There were strikingly few untoward reactions in his series. It may be of some significance that more than 90 per cent of Gernon's patients did not receive any local treatment. Gernon in comparative tests did not note any advantage of the intracutaneous as compared to the subcutaneous route of administration of the antigen, which conforms also to my experience. It must be remembered that the outstanding examples of the most perfect immunizations that have withstood the test of time, notably in diphtheria and typhoid, have been accomplished by subcutaneous injections of the respective antigen, and in both instances the mucous membranes are the usual atria of infection. Consequently, I believe that conservatism should rule at this time in preference statements for the route of inoculation until a large number of well controlled observations have been made under like conditions. Blatt⁸ and his co-workers have reported favorably also with the same gonococcus lysate in a small series of children with cervicovaginitis.

Investigators of biologic therapy tend to limit adjuvant treatment so that it is sometimes difficult to tell when the benefit of less local treatment ends and vaccine value begins. I believe there are some patients who will react unfavorably to any of the gonococcus antigens described. A second group respond well to vaccines, while a third group with mild infections progress favorably to prompt cures with conservative treatment in the absence of biologic therapy. It is certain that there are many correlative observations needed before vaccine therapy can be recommended in all cases without certain qualifications. While biologic products seem at present to be the most hopeful method for future standardization, the results should be analyzed conservatively with particular consideration to the indications and contraindications in the various stages of gonorrhea, and controlled by careful follow-up periods to define more accurately the termination of infectivity rather than the alleviation of clinical symptoms.

OTHER BACTERIA

Gonococci in smears of shreds are less likely to be associated with other confusing bacteria, and the distinct morphology and arrangement in the pus cells are less apt to lead to errors because of pseudo-intracellular bacteria that result from bacteria being superimposed on leukocytes. Likewise, similar smears from nonspecific prostatitis frequently reveal the infecting organism unmixed with the nonpathogenic flora of urethral smears. The association of colon bacilluria in gonorrhea was suggested by the bacilli in shred smears, which was confirmed by urine cultures in 10 per cent of this series. In several instances more than 90 per cent of the haziness in both glasses proved to be due to the contained growth of colon bacilli. The smears are prepared by fishing the largest shred from the first voided specimen by means of an ordinary platinum or nichrome loop as used in bacteriologic work. A thin smear is made of the shred, which dries promptly and is fixed and stained by the same routine as urethral smears.

Staphylococci are the most common of all other bacteria that must be differentiated from typical gonococci in smears and may be confusing even with a gram stain, since it is well known that gram-negative forms of staphylococci are not unusual. *Micrococcus catarrhalis* does not occur in more than 1 per cent of male patients.

There have been several reports on the dissociation of the gonococcus into atypical forms. Recently, Raven⁹ has reported the accomplishment of changes in vitro from normal to gram-positive types as well as other cultural and microscopic changes with variable staining characteristics, and the polyphasic forms varied from globoid to gram-negative granular bacilli. It is noteworthy that Raven could produce modifications through the action of immune serum. This phenomenon raises the question whether vaccines or the absorption of gonococcus toxin during complications may produce dissociation in vivo, and if so whether it would be a favorable or unfavorable influence on the period of infectivity. I have seen variants develop readily on whole human blood agar and have suspected but not proved the presence of atypical forms in smears, particularly from patients with chronic gonorrhea. Cultures may be advisable as a supplement to smears in the determination of cure in selected instances in which there has been clinical evidence of deep involvement of

3. Corbus, B. D.: Intradermal Immunization in Gonorrhea, *J. A. M. A.* 98: 532 (Feb. 13) 1932.

4. Clark, L. T.; Ferry, N. S., and Steele, A. H.: Studies of the Properties of a Bouillon Filtrate of the Gonococcus, *J. Immunol.* 21: 233 (Sept.) 1931.

5. Herrold, R. D., and Traut, E. F.: Skin Reactions with Pneumococcal and Other Bacterial Filtrates and Extracts, *J. Infec. Dis.* 40: 619 (May) 1927.

6. Herrold, R. D.: Skin Reactions with Gonococcus Filtrates, *J. A. M. A.* 84: 361 (Jan. 31) 1925.

7. Gernon, J. T.: A New Antigen in the Treatment of Gonorrhea, read before the Chicago Urological Society, Feb. 21, 1934.

8. Blatt, M. L.: Lysed Gonococci in the Treatment of Gonococcus Cervicovaginitis, personal communication to the author.

9. Raven, Clara: Dissociation of the Gonococcus, *Proc. Soc. Exper. Biol. & Med.* 31: 899 (May) 1934.

the prostate and seminal vesicles. At any rate, caution should be used in making statements of cure when latent periods alternate with activity. Therefore, in the future other and more complicated factors may be introduced into the investigation of gonococcic infection.

SUMMARY AND CONCLUSIONS

One application of an antiseptic daily is sufficient to control mild infections and is more safe than frequent injections.

Severe infections are not suitable for local application of antiseptics, and borderline severe infections should have local treatment discontinued if clinical improvement is not prompt.

Intravenous and intramuscular therapy does not produce a dominating influence on the urethral infection, and such benefit as follows its use is due to a favorable influence on the infected adnexa.

The more recent gonococcus antigens should be applied conservatively until more general agreement permits a recognized standardization.

7 West Madison Street.

THE TREATMENT OF GONORRHEA IN THE FEMALE

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The successful treatment of gonorrhea depends largely on a thorough understanding of the underlying pathologic condition and on making a careful diagnosis before any type of treatment is instituted. The diagnosis should be established by a positive finding of the gonococcus by spread, culture or complement fixation test.

Gonorrhea in the female can be likened in many ways to a typhoid infection. Taken as an acute infection in a woman or girl who has previously had normal pelvic organs, one may expect a fairly definite clinical course in an ascending infection, which passes up above the internal os. Thus it will run its course for a period of six to seven weeks, reach its clinical peak and then begin to subside, so that at the end of twelve to fourteen weeks one may look for a cessation of the clinical symptoms and the organs may return to approximately their original conditions and be free from the gonococci. This is barring complications. But gonorrhea similar to typhoid is prone to complications.

Another factor to be considered is whether the gonococcus is the only offending organism or whether other pyogenic organisms are present which give rise to a so-called mixed infection. It is this admixture of other organisms which is usually found in the complications and especially the prolongation of the complications. Still another factor to be considered is the resistance of the patient, and it is the careful understanding and evaluation of all these various considerations that underlie intelligent treatment of gonorrhea in the female.

Gonorrhoeal cases clinically fall into three groups, acute, subacute and chronic, and the treatment will vary with these different stages.

Thus in the acute stage the main indications are for absolute rest, lack of trauma and treatment directed toward preventing the spread of the infection. Ill advised douching and medication of the cervix in very

acute cases may result in just the outcome one is trying to prevent. It is debatable whether, in these very acute cases, rest in bed, with carefully ordered general medical supervision, and only local cleansing of the external genitalia do not lead to recovery as satisfactorily without local treatment.

However, it is my routine procedure in acute cases in which it is obvious that the infection is ascending to give the patient, in addition to absolute rest and lack of trauma, mild heat in the form of medicated douches under low pressure and the administration of a solution of mild silver protein by gentle application to the cervix and urethra. The greater degree of heat, 130 F. as given by the Elliott machine, seems unwise during the acute stage because of the softening and relaxation of the cervix, thereby opening up one of the natural barriers to the spread of infection.

In the subacute stage the complications are usually found as possible gonorrhoeal infection of the rectum; thus it is not uncommon to have Bartholin or Skene's glands and ducts involved. These in turn will often subside spontaneously in the course of the routine treatment of the infected urethra, and it is better in my judgment not to attempt any local treatment of these glands until expectant treatment has failed. It is in this stage that greater degrees of heat may help, and this may be given by the medicated douche up to 116 to 118 degrees or with the Elliott machine, whereby the heat may be pushed up to 130 degrees.

With the chronic stage it is important to try to estimate what organisms are responsible for the continued symptoms. Occasionally symptoms continue because of a persistent virulent infection by the gonococcus. It is much more likely, however, that the gonococcus has passed out of the picture and that the symptoms are resulting from infection with the streptococcus or actinomyces. If the chronic symptoms are due to the gonococcus, especially perimetritis, continued heat therapy, as prolonged hot douching, Elliott machine treatment, or diathermy, will undoubtedly be effective. If the streptococcus or actinomyces is the offender, probably little will be accomplished.

It is in this stage that one is confronted with complications that have not yielded to expectant treatment and it becomes necessary to consider radical measures.

Thus, intractable Skene's glands should be irrigated with an antiseptic solution through a small malleable tipped needle made for this purpose. If this is not efficacious, the gland should be obliterated by the passage of an electric cautery needle down through the duct.

Periurethral abscess should be treated expectantly by careful massage, the abscess being emptied into the urethra and the sac filled with an irritant antiseptic solution. These should be opened surgically only when this expectant method has failed.

If Bartholin glands do not subside with expectant treatment, careful resection should be done, preferably by the intravaginal route, as described elsewhere.¹

Persistent lesions of the cervix may call for radical treatment. If there are chronic sluggish erosions, it is important to know by culture what organisms are responsible. If, as is often the case, actinomyces is responsible, iodine therapy should be given by mouth and locally.

Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Barringer, Emily D.; Williams Anna W., and Wilson, M. A.: Resection of Bartholin's Glands, *New York State J. Med.* 22: 145 (April) 1922.

Careful coagulation or cauterization by the electric needle is often indicated, and in selected cases the conization of the cervix is valuable. But it is always practical to stress again the importance of selecting these cases with greatest care, for an ill advised operation on the cervix of a recent gonococcus patient may stir up a fulminating salpingitis.

Operative intervention on tubes and ovaries infected by the gonococcus should be done only for urgent or definite reasons and should be avoided whenever possible. Spreading gonococcic peritonitis is rare but may be fulminating in character, especially in young girls, in whom it may simulate a ruptured appendix and calls for prompt operation. The perimetritic exudate of the acute and subacute stages may become completely absorbed. The sealed off gonorrheal pyosalpinx soon becomes sterile pus and may subside, and the possible functional return for these damaged organs is not yet fully appreciated.

Can the curative process be hastened and impending complications aborted? Will increase of the antibody formation, as administration of vaccine, accomplish this? There is considerable division of opinion in regard to the efficacy of vaccine therapy. A number of authors, as Bruck, Rohrbach, Schultz, Oppenheim and Verboff, find little value in this form of therapy, while Monzer, Merkurien and Silber approve its use. Demonchy advocates enormous doses of stock or autogenous vaccine and reports satisfactory results. He states that quite a number of cases are cured by a few injections without local treatment. However, the stage of the infection seems to make a difference, for in twenty-five cases of acute gonorrhea in the male treated by the Demonchy vaccine, as reported by Wishengrad, the results were not impressive, as the number of cases cured were small, the time required for cure was longer than the average and there was a tendency to stir up an arthritis, which is a fairly rare symptom.

This possible value of massive dosage was brought to the attention of Dr. William H. Park by reports of

routine spreads, cultures and complement fixation tests were made in correlation with the clinical observations.

TECHNIC OF GIVING VACCINE

The vaccine was given intramuscularly in the deltoid region of the arm. The number of doses given varied from five to twenty-one, with an average number of approximately fifteen. The initial dose was in most cases 3 billion organisms, and each consecutive dose was increased by half the preceding one, if reactions on the part of the patient were not unduly severe. The maximum dose given to any patient was 56 billion organisms. Most patients did not receive higher than 40 billion organisms, as they reacted severely before that point was reached. When reactions were very severe the dosage was reduced and again increased care-

TABLE 2.—Average Time in the Hospital

Vaccine 3 billion upward....	Acute	13 weeks	(2 cases, 8 and 18 weeks)
	Subacute	14 weeks	
	Chronic	14 weeks	
Vaccine 3 billion maximum....	Acute	15 weeks	
	Subacute	16 weeks	
	Chronic	16 weeks	
Routine.....	Acute	18 weeks	(2 cases, 15 and 22 weeks)
	Subacute	17 weeks	
	Chronic	17 weeks	

fully, or in some cases the vaccine was continued at that particular dose. The interval between each dose was seven days.

Reactions, local and general, occurred in nearly all cases, the severity of which was in general in proportion to the dose, but they varied considerably in discomfort after an 8 billion dose, while others did not complain after 20 billion. As a rule reactions were not severe until the 8 billion mark was passed. General reactions consisted of nausea, vomiting, chills, headache, malaise, elevation of temperature to from 99 to 103 F., and rapid pulse. A few patients complained of pain in the pelvic region. The patient returned to normal as a rule in from twenty-four to forty-eight hours.

Local reactions caused much discomfort and again, allowing for the individual susceptibility of the patient, were in proportion to the dose. They consisted of an area round the site of injection of marked swelling, redness and induration, acutely tender and painful; in other words, a local cellulitis. In some cases, after the larger doses, this area was from 4 to 6 inches in diameter and did not as a rule subside for four or five days.

The gonococcus vaccine was prepared by the New York City Bureau of Laboratories as follows:

The vaccine is prepared of seven of the Torrey strains (5, 8, 15, 32, 34, 41, 42), which represent the known serologic types of gonococci. The stock cultures are kept at body temperature in duplicate sets and are transplanted at regular intervals.

Before the vaccine is prepared, the cultures are plated and examined for purity and for characteristic growth. Special attention is paid to the smoothness of the growth. If there is any tendency to roughness, the cultures are transplanted several times at short intervals, which usually results in a smooth growth.

The cultures are then grown on the surface of North medium in quart Blake bottles for from thirty-six to thirty-eight hours and the growth is washed off with sterile physiologic solution of sodium chloride. The growth of each bottle is examined by smear for purity and then collected by means of sterile pipets into a sterile bottle. A small amount of the vaccine is removed for standardization and the vaccine is heated in a water bath at 55 C. for one hour, in order to kill the bacteria. After heating, the vaccine is tested for sterility

TABLE 1.—Distribution of Cases with Reference to Treatment

	Acute	Subacute	Chronic
Vaccine 3 billion upward.....	2	14	14
Vaccine 3 billion maximum.....	0	2	3
Routine.....	2	9	19

work by Richards, who claimed exceptional results from very large doses of vaccine. Dr. Park suggested that I undertake a study of cases in which large doses of vaccine were given, in contrast with another group of cases on routine treatment to act as a check. After the work was well under way Dr. Park made the suggestion that I put some of my cases on small doses (maximum 3 billion) to see whether the larger doses were more efficacious than the small doses. Unfortunately, owing to various exigencies, I could not have an equal number of cases in each group. I took the cases in sequence and no effort was made to pick cases for either type of treatment.

In this way I had on vaccine therapy thirty cases (3 billion upward) and five cases on small doses (3 billion maximum), and on routine treatment thirty cases.

The cases were further rated as acute, subacute and chronic.

All the cases were hospitalized in the gonorrheal wards of the Kingston Avenue Hospital, and weekly

as follows: A representative amount of the vaccine is inoculated into dextrose broth and on North medium. If any of the organisms survived the heating they will grow on this medium.

After testing for sterility, 0.5 per cent phenol is added to the vaccine as a preservative. The number of organisms in a cubic centimeter of the vaccine is determined by Wright's method. Each lot of vaccine is given a preparation number and the vaccine is labeled with the date of preparation, the concentration of bacteria per cubic centimeter and the preparation number, and the vaccine is placed in the icebox at from 4 to 8 C. This constitutes the concentrated stock vaccine.

The tests for sterility are incubated at body temperature for seven days and if at the end of that time there is no growth the vaccine is considered safe to use. From the stock vaccine further dilutions are made, as required, in sterile physiologic solution of sodium chloride containing 0.25 per cent phenol, and the diluted vaccine is bottled into small vials. After bottling, the finished product is again tested for sterility in the manner described before, and it is only after the final test shows that the vaccine is sterile that it is ready for distribution. Each vial is labeled with the kind of vaccine, the concentration of cocci per cubic centimeter, the preparation number, the lot number of the bottling, the date of preparation, and the date of expiration. The period of potency is eighteen months if the vaccine is kept in the icebox.

In preparing the vaccine every effort is made to use antigenic cultures, to keep the vaccine uncontaminated, and to insure safety in using it by carefully testing it for sterility.

COMPARISON OF THE ACUTE CASES

The number of acute cases is much too small to draw conclusions from. However, the stay of the two acute cases on vaccine therapy in the hospital was actually shorter than the routine cases, vaccine cases averaging thirteen weeks and the routine cases eighteen weeks. To offset this the two routine cases were probably more serious in type. While all four cases were "mixed" infection, one routine case presented actinomyces as well.

IMPROVEMENT IN CASES UNDER VACCINE THERAPY
AS CONTRASTED WITH THOSE UNDER
ROUTINE TREATMENT

Possibly the most noteworthy result observed was the rapid drying up of cervical discharge in the acute and subacute cases primarily due to the gonococcus. This was noted in fourteen cases (two acute, ten subacute and two chronic). This was noted to a lesser degree also in the urethral discharges.

The erosions of the acute and subacute stages, which were due primarily to the gonococcus, responded well. In the chronic stage with erosions due to "mixed" infection the vaccine did not give good results.

The improvement and rapid disappearance of old chronic pyosalpinges reported by some was not generally verified in this series, though in one case there was a dramatic disappearance of a pyosalpinx. But even in this case the outcome was not different from that often noted in the subsidence of pyosalpinges under routine treatment.

Table 3 shows the percentage loss of mobility of the uterus at the beginning and the end of treatment.

GROUP ON SMALL DOSES

The group of five cases on small doses of vaccine (up to 3 billions) has responded extremely well to vaccine therapy. However, there were one subacute and four chronic cases.

In the subacute case there was a severe clinical course but the patient made an excellent recovery. None of these patients had erosions or a very profuse discharge and hence the treatment was not put to a severe test.

One patient had a Bartholin abscess, which in spite of the vaccine had to be incised.

The perimetritic improvement in this series was good.

INFECTION OF URETHRA AND SKENE'S GLANDS

There was nothing especially striking in the results of vaccine therapy in infections of the urethra and Skene's glands.

In chronic cases in which there was a persistent urethritis or skenitis, the vaccine had little or no effect, undoubtedly because the continued infection was due

TABLE 3.—Comparison of the Improvement of Perimetritis as Evidenced by the Percentage Loss of Mobility of the Uterus

	Vaccine Treatment		Routine		
	Beginning	End	Beginning	End	
Acute cases	100% 25%	50% 25%	100% 75%	50% 50%	2 cases
Subacute	75% 75% 50% 25% 25% 75% 25% 75% 0 50% 50% 100% 50% 25%	0 25% 25% 25% 25% 50% 25% 0 25% 25% 25% 25% 0	25% 25% 25% 50% 25% 75% 0 25% 0 25% 25% 25% 25%	0 0 0 0 0 0 0 0 0 0 0 0 0	9 cases
Chronic	100% 0 100% 25% 25% 25% 75% 25% 50% 0 25% 25% 75% 100%	50% 25% 50% 25% 25% 50% 25% 25% 25% 25% 50% 50% 50% 50%	50% 25% 25% 100% 25% 0 50% 25% 0 75% 25% 50% 25% 25%	25% 25% 50% 50% 50% 50% 50% 50% 50% 50% 50% 50% 50% 50%	14 cases
					9 cases

0 loss of mobility = normal mobility of uterus; 100% loss of mobility = "frozen pelvis"—complete loss of mobility; 25%, 50%, 75% = ¼, ½, ¾ loss of normal mobility of uterus.

to an organism other than the gonococcus. The more persistent chronic foci had to be treated by other routine procedures.

It is questionable whether the extremely high dosage is justifiable; for instance, one patient who had a dosage up to 48 billion and had a marked reaction seemed to have no signs of improvement. On the other hand, in the case of the pyosalpinx that dramatically disappeared a dosage up to 50 billion had been administered.

The behavior of the complement fixation test is a matter that must receive consideration, for these patients subjected to vaccine therapy show a high complement. Dr. McNeil studied especially interesting cases and followed the readings up to 40 plus and 50 plus. Probably these high complement readings persist longer than in

the cases not treated by vaccine and it therefore becomes necessary to discharge these cases with a fairly high complement reading. Dr. McNeil states that the complement subsides satisfactorily in these cases and in the cured cases returns to normal in from sixty to eighty days. More work is needed in this follow-up serologic survey.

CONCLUSIONS

1. Vaccine therapy is not a specific for the cure of gonorrhea. It is, however, probably a very valuable form of treatment in the acute and subacute stages of the disease. This is probably true also in chronic cases in which the main offending organism is the gonococcus. It is probably not of value in cases due to "mixed" infection.

2. In the acute and subacute stages, vaccine therapy will probably shorten the period of hospitalization. However, the great drawback of severe reaction from this treatment, especially with large doses, is to be considered.

3. It is questionable whether very large doses are justifiable, because of these reactions.

4. Probably vaccine therapy in smaller doses combined with indicated routine treatment would be a more desirable type of treatment.

5. Vaccine therapy is of sufficient importance to warrant further careful study into dosage, complement fixation reaction, and tests for proof of cure.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PELOUZE, HERROLD AND BARRINGER

DR. HENRY W. E. WALTHER, New Orleans: Advances in the therapy of gonorrhea have not been made proportionate to the progress noted in handling surgical lesions of urogenital origin. A frank interchange of opinion by those with extensive clinical experience will clear up many hazy conceptions now current. The newer vaccines, the filtrates and the bacteriophages open an interesting field in the treatment of gonorrheal infection and one worthy of serious consideration. I cannot feel that the indifference and the lack of cooperation on the part of many individuals fully explain the failures in handling the most intelligent patients; yet they go through a siege of complications sufficient to discourage the best of clinicians. I feel downhearted when a married man comes into my office, for I know, before starting treatment, that he is going to have a long, hard time of it. Among patients from the very best families, complication after complication comes along; yet let the newsboy or the iceman be treated and the condition promptly clears up in two or three weeks. The treatment is the same all the way through but the results are not uniform. The matter of actinomycosis brought out by Dr. Barringer is of great interest. In my clinic I have found that practically 100 per cent of all females coming in for gonorrhea have gonorrhea. The time has not yet arrived when the high frequency current can be dispensed with in the treatment of localized and accessible gonorrheal pockets of infections. The skenoscope will expose Skene's glands so they can be destroyed with the high frequency needle. The Hyams technic of a cautery loop for coning the cervix in gonorrheal cervicitis is a method superior to any other so far advocated.

DR. HERBERT T. HAYS, Houston, Texas: Dr. Pelouze, Dr. Herrold and Dr. Barringer make no mention of the treatment of rectal gonorrhea. Any one treating a great deal of urogenital gonorrhea is certain to see rectal gonorrhea occasionally in the male and frequently in the female. In my own series I would estimate the occurrence of rectal infection following urogenital gonorrhea in the female to be from 35 to 50 per cent. Patients with a normal rectum contracting the infection frequently immunize themselves and get well without any treatment. I think this is why it is often overlooked. If there is much rectal disorder, such as fistulas, hemorrhoids, infected crypts, fissures, prolapse and stricture, they usually

have a hard time. The infection will drag out over a long period. Dr. Pelouze mentions that good drainage makes for good curative response. This is true of gonorrhea of the rectum, and I think it is because of the pocketing and retention of pus in the various pathologic structures that are present, which creates the chronicity of the disease in this region. The local treatment of this condition is the same general routine as followed in urogenital gonorrhea; that is, the usual instructions in the care of the general health and instillations into the rectum of some of the very mildest antiseptics. I use mild silver protein (5 per cent Argyrol, 3 per cent Solargentum) or some of the other very mild silver salts. I inject these solutions into the rectum with a blunt-tipped syringe by placing the tip of the syringe against the anus and forcing the fluid in by pressure on the bulb. Insertion of instruments into the acutely inflamed rectum is liable to cause trouble the same as it would if a catheter or sound should be put into an acutely inflamed urethra. In the very persistent type of infections in which hemorrhoids, fistula and cryptitis are the factors causing the chronicity, it is best to operate on these complications and eradicate them when possible, and the patient will then usually get well. Stricture of the rectum, however, is an exception. With urethral strictures the infection usually clears up, but not so in strictures of the rectum. These often drag on for years.

DR. ROY W. MOHLER, Philadelphia: Acute gonorrhea in the female is a self-limited disease and needs no special treatment. The discomfort of the infection may be allayed by a simple sedative. The vagina may be cleansed by simple low pressure douches. All antiseptics except in very low dilution should be avoided, because they lower the inherent resistance of the epithelium against the infection. Topical applications to the cervix and physical influences, such as coitus, swimming, bathing or diving, which increase intravaginal pressure, should be avoided, since these factors definitely influence the extension of the infection. I have not been able to note any association between pelvic inflammatory disease and menstruation, except as it has been associated with the foregoing physical influences. The acute stage of generalized infection subsides in from two to six weeks and localizes in Skene's tubules, the urethral glands, the cervix and, less frequently, in Bartholin's glands. Dr. Pelouze has pointed out in his studies the importance of good drainage in the eradication of gonorrhea, and these are the local points where free drainage is often not possible. To eradicate these poorly draining focal areas of infection, the urethra is anesthetized by the application of 10 per cent cocaine solution. The urethral glands and Skene's tubules are isolated by probe and are electrocoagulated. This may be repeated at intervals of three weeks until all the tubules have been destroyed and resolution is completed. The persistent infection of the cervix is eradicated by destruction of the infected mucosa in the lower two thirds of the cervical canal. This may be accomplished by a number of methods; the method most easily adapted as an office procedure is electrocoagulation. The cervical mucosa must be sufficiently treated so that the racemose glands and the columnar epithelium of the canal will be replaced by squamous epithelium. If the coagulation is too extensive, the cervical musculature will be destroyed and stenosis of the type that has interested Curtis will occur. After resolution of the urethra and cervix is complete, the secretion from these areas is examined for pus cells. If pus cells are absent, one can be sure that gonococci are absent and that cure is complete.

DR. AUGUSTUS HARRIS, Brooklyn: Dr. Pelouze has stressed the importance of the local tissue defense mechanism and the prime significance of maintaining this immunity response at all times by gentle treatment. The fullest cooperation of the patient in the care of himself is imperative. Until more is known of a specific biochemical nature, rapid cures cannot be expected. Much, however, can be accomplished by meticulously careful and gentle handling of the patient. Strenuous or intensive efforts to effect a rapid cure are likely to result in a protracted and complicated course. I have obtained the best results with the use of silver potassium cyanide-potassium oleate (under the trade name of Silvogon) and also with dilute solutions of acriflavine base. One cannot emphasize too strongly the individualizing of every patient and changing and altering

treatment in a given case as indicated. Another phase of the problem involves a serious responsibility on the part of urologists. I refer to the urgent need of the proper clinical training of those practitioners who treat gonorrhea without adequate experience. Until something tangible is done to provide training for inexperienced practitioners who treat these cases, or until physicians generally are coerced into referring them to the urologist or to urologic clinics, a wide and uncovered group of uncured patients will prevail. I congratulate Dr. Herrold on his results in mentioning forty-eight out of a hundred cured patients with anterior urethritis without a posterior involvement. I should like to ask him how he proved the absence of posterior involvement in these cases. The average time for cure he states in this group was twenty-seven days. He also reports six to nine weeks cures in most of the posterior urethritis cases. These results are definitely superior to any that I have been able to obtain in a given series. Dr. Herrold states that he has found negative shreds for gonococci over a period of fifteen to twenty-five days after beginning treatment in half of the anterior urethritis cases. I should like to ask Dr. Herrold how much confidence he places in the silver provocative test; also what constitutes a clean bill of health for the patient? Antigens, foreign proteins and mixed vaccines have been of definite service to me as an aid in the treatment of the complications of epididymitis, prostatitis and rheumatism. In the not distant future a paper will appear on the subject of uroscopy, and a reprint will be sent to all members of the American Urological Association. I hope with the cooperation of urologists that the ideal may ultimately be approximated of having all practitioners adopt uroscopy, or the gross examination of the urine, as a routine measure and learn to follow the progress under treatment not only of cases of gonorrhea but also of any infections of the urogenital tract.

DR. A. L. WOLBARST, New York: Several points in Dr. Herrold's paper impressed me. His conclusion that the application of an antiseptic once daily is sufficient and often safer than more frequent applications impressed me particularly. I have been advocating this principle for thirty years, but this is the first time I have seen it corroborated by others. Not only is it better and safer to give one injection a day, but the solution used must be as mild as possible, not as strong as the patient can bear. I use mild silver protein in 3 per cent strength, gradually increased to 5 per cent, and only once a day, rarely twice. I have had the most satisfactory results in thousands of cases treated that way, with almost no complications of any kind. Everything put into the urethra is a foreign body; the inflamed urethra is red, hot and tender, and yet physicians have been putting chemicals in it that only add to the irritation; and in that I include acriflavine. I don't understand why the risk of producing a silent stricture is taken when silver preparations are available that are equally effective, probably more so, without the element of danger.

Dr. Herrold has brought out an interesting point in connection with his use of acriflavine. He said he used "an English preparation," presumably made by Boots, which is said to be less damaging than the American preparations. Also in his paper he said he alternated his acriflavine with "a mild silver preparation." Which one did he use? There are some twenty-five or thirty, all different and with different therapeutic values. Why not mention the name? I am standing under the roof of the American Medical Association and it is considered rank heresy to come here and talk about these proprietary silver preparations which we all use, but hesitate to mention by name. We should know just what we are talking about. If you write an article and in it you say you used Argyrol or Silvol or some similar product, some one in the editorial office will substitute for the specific name a generic term which does not mean anything to the reader. It is fair neither to the reader nor to the author. We are afraid to talk frankly about these things because of their ethical aspects, yet we talk freely of mercurochrome and acriflavine. Why the distinction? We should get together some day and agree to the common sense view that it is perfectly proper and ethical to mention by name any product that we use or don't use. Then we may get somewhere in our treatment of gonorrhea. Dr. Walther has referred to members of the best families having gonorrhea and developing complications because of the domestic affairs of

the individual. I beg to differ with my friend. I think those cases go bad because the doctor becomes nervous and worried over the fact that he is treating a member of a best family; he tries to do too much, he tries to cure the case too quickly and there is where the damage occurs. He gets nervous and loses control of the case. It's like a man getting an attack of nerves while driving an automobile or an airplane. Complications result. It must be remembered that the less local treatment is given these patients and the milder the products used, the better they will respond and the fewer complications will result. But one must not go out for a time record in curing gonorrhea. This eagerness to cut down the time is dangerous. It isn't done in typhoid, in pneumonia or in other infections. The same must be done in gonorrhea. Nature must not be obstructed through overzealous treatment. That is the key to the cure of gonorrhea and the prevention of complications.

DR. A. G. FLEISCHMAN, Des Moines, Iowa: I was rather surprised that Dr. Barringer omitted the important part played by the various physical agents now available. I refer particularly to surgical diathermy. Years ago I became interested in this physical agent because of the many failures I had in the treatment of gonorrhea in the female with other methods. I carried out quite an extensive clinical investigation. A few years ago I recorded a hundred cases of specific gonorrheal endocervicitis that were treated by surgical diathermy. Out of these hundred cases I had the privilege of watching quite carefully 70 per cent, and in these cases I was able to obtain clinical and bacteriologic cures. I want to call attention to a method of electrocoagulation that is not original with me. I refer to the biterminal method of producing electrocoagulation by the procedure that was devised by Dr. Endy of New York. Dr. Endy found that in most cases in which he carried out electrocoagulation of the cervix, in which a large dispersing electrode is used on the abdomen and a small active electrode in the cervix, he had difficulty in determining the proper depth of the coagulation and also that, frequently at the time of the separation of the slough, many bad secondary hemorrhages occurred. Dr. Endy conceived of an electrode that utilized what is known as two electrodes embodied in one instrument, the two of the same dimension, and by this method he determined that he could know with a certain setting of the current and with a certain duration of applications that he could predetermine the depth of coagulation before the actual procedure was carried out. By this method it is possible to coagulate to a depth of from 2 to 4 mm. and to eliminate the tendency toward secondary hemorrhages. I want to reiterate that electrocoagulation, particularly in the subacute and chronic cases of specific endocervicitis, is an excellent method of treatment.

DR. P. S. PELOUZE, Philadelphia: I endorse what Dr. Harris said about the need of better training for those who treat gonorrhea. In a recent survey of 283 consecutive office cases of gonorrhea, this need was brought out strongly. Of 100 patients presenting themselves for treatment before the fifth day of the disease, fourteen had a posterior urethral infection when first seen. A number of these followed intravesical irrigation by other physicians. The average duration of cases in which posterior infection did not take place was 5.6 weeks. During the same period, 183 patients presented themselves after the fifth day of the disease. All but twelve had a posterior infection when first seen and only two eventually escaped it. In their histories, seventy-eight of these patients had eighty-nine complications other than posterior involvement. Almost all of these patients had been under a physician's care and many of the complications were due to the type of treatment given. The average time required for cure was sixteen weeks. It is thus obvious that, if posterior involvement is to be prevented, gentle local treatment must be started before the sixth day of the disease. It is equally apparent that there is great need that the public be apprised of this fact.

DR. RUSSELL D. HERROLD, Chicago: In regard to the remark of Dr. Hayes, rectal gonorrhea does not apply particularly to my paper but I agree with him that it is undoubtedly common in females. In answering Dr. Harris, I would define my period of cure as rather the period of infectivity of the gonococcus in distinction to postgonorrheal conditions. It is more of a statistical report of the actual time after which I was not

able to find the gonococcus. In posterior infections, the six to nine weeks cure was determined from the period that they became posterior, or from the period that the patients came to me, which in the latter instance was from four to six weeks after the onset. The cure would therefore be between three and four months from the time of the initial infection. In regard to the seemingly good results in the anterior infections, I should like to stress here what I was not able to stress in the paper, that six to one of the group of patients who had previously had gonorrhea were cured in the anterior stage, while only slightly more than half of the patients with first infections were cured without posterior complications. I have found that the shred examinations are quite reliable as a means of determining when the gonococcus has disappeared, but those patients are kept under observation and treated for their post-gonorrheal conditions for a much longer period. With regard to Dr. Wolbarst's questions, I stated that acriflavine was not considered to be the only drug that would produce good results. Acriflavine was not mentioned by trade name because this study was based on clinical experience. I have had similar experience with other preparations of acriflavine when the toxicity was decreased by incorporation in gelatin, but the aqueous solution is more practical for general use and, until such time as laboratory tests prove exactly the difference in toxicity, I do not feel like condemning one product or eulogizing another. I want to say one thing about vaccine therapy. I should like to stress that cases should be divided into mild and severe infections, and that mild infections be considered as applicable for local treatment, and that in my experience mild infections proved to be cured in a shorter period than any vaccine series that I know of. Therefore I believe that local treatment should be considered first for mild infections. The group of severe infections can be subdivided into two groups: one that will respond favorably to vaccines and one that will respond unfavorably. The latter group may be investigated for improved biologic therapy, after which its use would seem more justified in the mild anterior infections. The host is one thing; an antigen is another. There is more variation in the host than there is in any antigens that have been described. Therefore the future work should deal with other factors more than the antigen itself, particularly the size of the dosage, the interval between injections, and the route of injection.

DR. EMILY DUNNING BARRINGER, New York: The cases of rectal infection that I recorded were observed in a large venereal service at Kingston Avenue Hospital, where there are upward of 100 beds devoted to gonorrhea or syphilis. I was much impressed with the fact that rectal gonorrhea as such was rather rare in the service. I cannot give a reason. At one time an investigation was made, cultures being taken in suggestive cases, but it was felt that unless there was a definite indication calling for that special examination it would not be done as a routine, and it has not been done as a routine since the time the survey was made. In regard to the routine treatment, evidently I did not make myself clear. I left that whole section out in reading. In the paper, the details of the routine treatment are given, covering the treatment for the acute stage, the subacute and the chronic. In the acute stage, first of all, as nearly absolute rest in bed as can be given is stressed, with lack of trauma and a minimum of treatment. In the very acute cases of vulvitis only irrigation over the vulva is advised and later if the invasion is passing up toward the cervix very low pressure douches of mild, nonirritating antiseptic washes are given. An effort is made to give as little treatment as possible in the acute stage, in the hope that it will not become an infection of the upper tract. In the subacute, with the various complications, a variety of treatment is given according to the indication. Each case is individualized as much as possible. However, in the unexceptional case a certain standard routine treatment is employed. In the chronic group, all the surgical complications have to be considered. There are so many very important surgical indications in the subacute and chronic stages that time would not permit my going into them. I wish to make it clear that I sacrificed routine treatment in order to discuss the vaccine therapy. The results have been excellent with electric cauterization and coagulation, and with the Elliott treatment in selected cases. I wish to state again that the supreme thing is first of all the diagnosis and then the individualization of treatment.

THE FREI TEST FOR LYMPHOGRANULOMA INGUINALE

RECOVERY OF THE ANTIGEN FROM A PUSTULAR REACTION

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AND

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In discussing a paper on lymphogranuloma inguinale presented by DeWolf and Van Cleve¹ before the Section on Dermatology and Syphilology at the meeting of the American Medical Association in 1932, Weidman called attention to the fact that practically nothing was known of the nature of the antigen. In addition to this, nothing is known of the exact nature of the reaction itself. Because of its similarity to the tuberculin test and the trichophyton test the assumption is made that it is due to a reaction between the specific antigen obtained from infected tissues or pus from the abscesses, and antibodies.

We report the results of a short series of experiments that may shed some light on the nature of the Frei reaction. These experiments are few because of the small amount of material and therefore it is hoped that they will be confirmed by future work. The cases used in these experiments included case 1 (E. R.), a clinically typical case, strongly positive to a known Frei antigen, which furnished some of the experimental antigen used; case 2 (H. B.), an atypical case in which a large abscess and little periadenitis were present; case 3 (L. M.), a typical case presenting, in addition, a large abscess; case 4 (V. N.), a rectal case in which there were fistulas exuding pus; case 5 (A. B.), a rectal case in which there were no fistulas but a typical stricture; case 6 (J. L.), a clinically typical case, and case 7 (A. A.), a severe case in which there was one particularly large abscess from which further experimental antigen was obtained.

EXPERIMENTAL PROCEDURE

In case 1 the Frei test produced a central pustule from which approximately one-twentieth cubic centimeter of thick pus was aspirated under aseptic conditions. This was diluted ten times with physiologic solution of sodium chloride and inactivated at 60 C. for two hours on one day and one hour the next day. This material was used in exactly the same manner as Frei antigen in five of the cases and one control. In addition to this material, intradermal injections were made at the same time with the following antigens: a known positive antigen received through the courtesy of Dr. M. B. Sulzberger; a Frei antigen made from pus from the glands in case 1 (used only in cases 1 and 2); an antigen made from the filtrate of pus from case 2; an antigen made from gland tissue in case 1 and the filtrate of the latter. The results are shown in table 1, in which + + + denotes large red areola with a central papule capped by a vesicle; + + smaller red areola with a central papule, + definite papule with very slight red areola; ± red papule but no areola, 0 negative, and — not done.

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Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. DeWolf, H. F., and Van Cleve, J. V.: Lymphogranuloma Inguinale. J. A. M. A. 99:1065 (Sept. 24) 1932.

The complete failure to obtain positive reactions with antigens 4, 5 and 6 is evidently due to some technical error in preparation of the antigen because, although some workers have been unsuccessful in using filtrates as antigens, the antigens made from excised glands have been uniformly positive.

There was only enough of antigen 2 to test two cases, but in both it gave a less marked reaction than antigen 1, a result quite in accord with the general view that different antigens vary in potency.

Regarded as a group, the reactions to antigen 3, the experimental antigen, were much weaker than to anti-

TABLE 1.—Results of First Experiment

Case	1. Known Positive Antigen	2. Antigen from Case 1	3. Antigen from Frei Test	4. Filtrate from Pus Tissue from Case 2	5. Gland Case 1	6. Filtrate from Antigen 5
1. E. R.	+++	++	0	0	0	0
2. H. D.	+	+	+	0	0	0
3. L. M.	++	—	0	0	0	0
4. V. N.	+++	—	+	0	0	0
5. A. B.	++	—	+	0	0	0
Control	0	—	0	—	—	—

gen 1, the known positive antigen. The explanation of this is quite obvious when one recalls that the pus had to be diluted.

The results of these experiments raise two questions. First, would any purulent material from a patient with lymphogranuloma inguinale cause this reaction? In other words, is this reaction caused by a substance in the body of such patients which would appear in any reaction severe enough to cause a vesicle or a pustule? Second, would any purulent material cause this reaction in any patient with lymphogranuloma inguinale; that is, is the reaction a nonspecific one? It was felt that these two questions could be answered at the same time if nonspecific material could be obtained from a patient with lymphogranuloma inguinale. Accordingly, when at a later date case 7 showed a pustular reaction, the pus was aspirated and treated the same way as in the previous experiment except that it was diluted only five times. One one-hundredth milligram of old tuberculin

TABLE 2.—Results of Second Experiment

Case	1. Known Positive Antigen	2. Antigen from Frei Test	3. Antigen from Frei Test Diluted 1:20	4. Antigen from Tuberculin Test	5. Known Positive Antigen
7. A. A.	+++	+	0	0	+++
8. L. M.	++	+	0	0	++
9. J. L.	+	+	0	0	+
Control	0	0	0	0	0

was injected intradermally into the same patient. This gave a papular reaction but no vesicle. One-tenth milligram and one milligram were then injected. The latter caused the formation of a pea-sized vesicle, with purulent contents. This was aspirated and treated in the same manner as the material from the Frei test. Intradermal tests were made on the same patient and two other patients with lymphogranuloma inguinale, one of whom had been used in the previous experiment, and on one control. The results are given in table 2.

These results confirm those of the first experiment and it is worthy of note that in case 6 there was already a diminution of the sensitivity to the test, as the reaction to the known antigen was less marked than it had been previously. In addition, it should be noted that the material from a tuberculin test in one of these patients gave no reaction in any of the patients tested.

COMMENT

These few experiments suggest that the contents of the pustule resulting from the Frei test contained an antigen identical with that of Frei. If this is true, three possibilities suggest themselves: (1) The active principle of the antigen is present in the blood and is found in the pus as a result of this. (2) new antigen was formed just as it is in active lesions, or (3) some of the antigen injected into the skin was still present and was recovered in the pus.

The first possibility does not seem very probable, as the injection of Frei antigen would simply be adding a substance already present. Also, if this were true the antigen should be present in the material from the tuberculin test and the second experiment shows this to be absent. To accept the second theory would be to assume that the Frei test is an inoculation with the disease in this case. That this was not true is quite evident. The patient developed no satellite adenitis nor did any other patients with lymphogranuloma inguinale or controls in whom this antigen was used. There remains, therefore, the third possibility, which seems quite tenable. We assume that a reaction to an intradermal injection is due to the coming together of two substances, antigen and antibody. The fact that



Fig. 1.—Pustular reaction to Frei antigen. It was from this that the experimental antigen in experiment 1 was obtained.

this particular reaction was markedly different from the usual reaction suggests the possibility of a quantitative difference; that is, either too much antigen or too many antibodies. The fact that an increase in the amount of antigen gives a more marked reaction is a well known fact as in the graduated tuberculin test the less diluted the tuberculin the stronger the reaction. In this case we had a particularly potent antigen, as it gave a stronger reaction in this patient than the homogeneous antigen, so it seems fair to assume that the excess of concentration occurs on the antigen side. This suggests that the antibodies responsible for the Frei reaction are fixed antibodies rather than circulating antibodies; for if they were circulating antibodies no excess of concentration of antigen could occur, as there would be an indefinitely large supply of antibodies available, while if one is dealing with fixed antibodies the supply of these would be limited to that already present in the circumscribed portion of epidermis affected by the antigen.

In 1922 Thomas and Arnold² noted a blister-like reaction to a Piquet test. They raised the question what the contents of such a blister would do if injected into children with tuberculosis. In order to cause a

² Thomas, E., and Arnold, V. *Experimentelle Blasenreaktion. Mischchen und Welschsch. 62:11, (Feb. part 1) 1922.*

blister they employed a 1:1,000 solution of cantharides in collodion. This was painted on the site of a positive Pirquet reaction thirty-six hours after the onset. After twenty-four hours a definite vesicle appeared and the contents were aspirated and diluted with five parts of physiologic solution of sodium chloride. Intradermal tests were made with the following substances: (1) tuberculin 1:100,000; (2) tuberculin 1:100,000 with vesicle contents diluted as before mentioned; (3) a mixture of the diluted vesicle contents and saline solution alone. In twenty-nine cases out of forty-three tested the reaction to the mixture of tuberculin and vesicle contents was stronger than that to tuberculin alone or to vesicle contents alone. In nine the reactions were alike and in five the reaction to tuberculin plus vesicle contents was weaker. As a control they used the contents of blisters raised over nonspecific inflammations. These were completely negative in seventeen cases. In discussing this reaction they raise the question as to whether remnants of tuberculin were present but rule this out by stating that after thirty-six hours no tuberculin could be left and also because of the fact that the increase in the reaction was too great to be explained by an insignificant amount recovered. However, when they state that the reaction to the mixture of tuberculin and vesicle contents was stronger than to vesicle contents alone they imply that there was a definite reaction to vesicle contents alone. If the substance recovered was only, as Thomas and Arnold deduce, an activator of tuberculin, one would expect the reaction to vesicle contents alone to be negative. It is difficult to conceive of a substance giving a reaction regularly in tuberculous children unless it is tuberculin. Thomas and Arnold offer no explanation at all for this reaction.

In 1923 Karl Gottlieb³ carried out a similar experiment using only the contents of spontaneous vesicles after Pirquet tests. This substance gave positive tests in tuberculous individuals. He excluded nonspecific

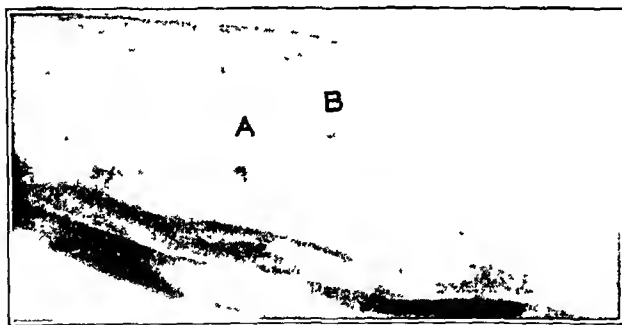


Fig. 2—Experiment 1, case 3, showing at *A* positive Frei test and at *B* similar but less marked reaction to the experimental antigen.

reactions because nonspecific substances gave much weaker reactions in the same subjects. He allowed the vesicles to refill and aspirated the contents again. This substance gave a weaker reaction than the one used before. This procedure was repeated the next day and the reaction was still weaker. Gottlieb also considered the possibility of the presence in the vesicles of rests of tuberculin but discarded this in favor of the theory that the reaction was due to some specific substance in the serum. It seems to us that this theory could offer no explanation of the progressive weakening of the

reaction. On the other hand, rests of tuberculin could be expected to be in less concentration each day.

These two experiments seem to parallel ours and although the writers do not come to the same conclusion that we do it does not seem to us that their experiments exclude our theory. On the contrary, several of their results seem to strengthen it.

It will be noted that in our first experiment the reaction to the experimental antigen was negative in the subject from whom it was obtained. We can offer no explanation of this phenomenon but wish to note

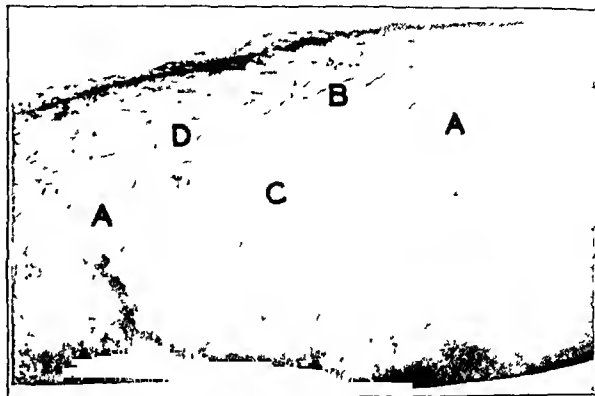


Fig. 3—Experiment 2, case 3, showing at *A* positive reactions to Frei antigen, and at *B* similar but less marked reaction to the experimental antigen; at *C* experimental antigen diluted 1:20 was injected, at *D* antigen from the tuberculin test. There was no papule here, the dark area being due to ecchymosis.

that Thomas and Arnold found that the occurrence of weaker reactions (as compared to reactions from tuberculin only) occurred in the patient from whom the material was taken.

CONCLUSIONS

Realizing that the series of experiments is small, we do not feel justified in drawing definite conclusions but would say rather that our results suggested that:

1. If a Frei reaction is strong enough to cause vesicle formation, the contents of this vesicle are capable of producing a reaction similar to the Frei reaction in patients with lymphogranuloma inguinale.

2. The substance causing this reaction is probably a reminder of the Frei antigen originally injected and not combined with antibodies.

3. These antibodies are not circulating antibodies but fixed antibodies.

It is realized that this brief experiment is not conclusive but we feel that it is expedient to publish the results so that they may be repeated by others who have more material at their disposal and that further experiments which ours suggest may be undertaken.

41 Trumbull Street.

ABSTRACT OF DISCUSSION

DR. MAX S. WIEN, Chicago: Drs. Strauss and Howard have demonstrated that purulent material occurring in the course of a positive Frei reaction is capable, when diluted and prepared as Frei antigen, of giving weakly positive reactions in lymphogranuloma inguinale. They raise the question as to whether this reaction is a result of the formation of new antigenic substances as a result of the Frei reaction or whether it is due to a remainder of Frei antigen that was originally injected at this site and did not combine with the antibodies at the injected site. I have repeated their experiments with material obtained from two patients. The first case was a white man with lymphogranuloma inguinale of the classic inguinal variety of three weeks' duration. A strong antigen gave a pustular Frei reac-

3. Gottlieb, Karl. Untersuchungen mit dem inhaltblasiger Tuberkulinhautreaktionen, *Ztschr. f. d. ges. Exper. Med.* 36:1, 1923.

tion, and 0.05 cc of this pus was then removed, diluted ten times, treated in the usual manner, and injected in four known cases of lymphogranuloma inguinale, and in one control. All the reactions were negative. The second patient was a Negress with the genito-anorectal syndrome, in whom a pustular Frei reaction was obtained, and in addition she developed a focal flare-up of the esthioniene. I obtained 0.05 cc of pus from this Frei pustule, prepared it in the usual manner, and tested four controls. All the reactions were negative. Also histologic studies were made of Frei papules in these patients. It revealed a nonspecific infiltrate such as is seen following the intradermal injection of any type of foreign protein. There was nothing in the section that in any way simulated the picture of lymphogranuloma inguinale. Also Frei antigen was prepared from the straw-colored serous exudate that sometimes occurs in the glands a few days after primary puncture of the fluctuant gland to secure Frei antigen. The clear, straw-colored fluid obtained which I felt was akin to blood serum, was treated in the usual manner for preparing Frei antigen, injected in a series of known cases of lymphogranuloma inguinale and controls, and gave negative Frei reactions. These results suggest an absence of any circulating antibodies as indicated by the work of Calata and (Actas de mayo 25:443 [April] 1933). On the basis of these observations I feel that the Frei test is specific and that this specificity is most probably dependent on certain fixed substances that reside in the skin of these allergic individuals. I agree with the conclusions suggested by Drs. Strauss and Howard that any positive reactions obtained with purulent material resulting from a positive Frei test is most probably due to the fact that some of the originally injected antigen was still uncombined in their tests and was capable of giving a reaction when subsequently tested.

DR WALTER S. GRANT, Chicago. I have had the privilege of observing forty cases at the Provident Hospital in Chicago. Ten of these were of the anorectal syndrome type. It has been my experience to observe pustular reactions in some cases of long standing and due either to hypersensitiveness or to a very potent antigen, but I have never made any attempt to recover the antigen from these pustules. I wish to ask the authors what their experience has been in obtaining positive Frei tests in children or in cases of lymphogranulomatosis in children.

DR JOHN ERIC DALTON, Indianapolis. I have had an opportunity to study two children born of mothers who suffered from acute lymphogranulomatosis inguinale. The acute glandular process in one of the mothers occurred just preceding the conception, while in the other it appeared during the pregnancy. In each case the child has been watched with periodic Frei tests, over a period of a year, with completely negative results. A report dealing with lymphogranulomatosis inguinale in children appeared in the *Klinische Wochenschrift*, Aug. 13, 1932. Infection in two girls, aged 6 and 7, who slept in the bed with a known infected female cousin, are reported there. These were believed to be accidental contaminations.

DR ELMORF B. TAUBER, Cincinnati. By using a special medium I think I have succeeded in cultivating this virus. The work came out with vaccinia virus first in the *British Journal of Experimental Pathology* by Matland and Leith, who used Tyrode's solution with rabbit tissue. I used the Tyrode solution in the dilution of 1:5 with guinea-pig tissue. The suspected pus which was checked by a control by Frei antigen uncontaminated was placed in this solution diluted with 1:10 saline solution. Dr. Joseph Tamuro in the bacteriology department who conducted most of the experiments, found that on the third to the fourth day a slight cloudiness appeared in the tubes. This persisted until the twelfth day, but after that it always became clear or tissue destruction (disintegration) took place. He was able to carry this for as much as twenty-five or thirty transfers. We have also begun an experiment in a series of cases to use this as a therapeutic measure. The results so far seem to be about the same as those obtained with Frei antigen treatment, irradiation and excision. I believe that possibly the disease is self-limited, since the cases that were left alone seemingly did quite as well as those treated.

DR MAURICE J. STRAUSS, New Haven, Conn. It would have been very gratifying if Dr. Wien could have confirmed our results entirely. I agree with him that his histologic exami-

nations rule out the possibility of this being an inoculation with the disease and hence the formation of new antigen. Also that his work with the serum appearing in the glands and the work on blood serum which he quoted rules out the possibility that the antigen appears in the serum. In answer to Dr. Grant's question I have never seen lymphogranuloma inguinale in young children. However, I can say that when we began our work with lymphogranuloma inguinale we tested children with a known antigen as controls, and they were all negative. Dr. Tauber's cultivation of the virus is extremely interesting and most important. It seems that this might be the answer to the question that Dr. Weidman raised yesterday about whether antigen can be made commercially. If virus can be found, antigen can probably be produced quite readily.

INTRACAPSULAR FRACTURE OF THE HIP

REPORT OF ONE HUNDRED CONSECUTIVE CASES

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AND

KENNETH CHRISTOPHE, M.D.

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One hundred consecutive intracapsular fractures of the neck of the femur treated at the Massachusetts Memorial Hospitals by nonsurgical methods have been reviewed. The purpose of the study was an endeavor to compare the end results of treatment by the abduction double plaster spica of Whitman¹ with the end results obtained by traction and internal rotation of Peckham² or Ruth³. Also it was planned to determine, if possible, the type of femoral neck fractures that consistently gave poor results under either kind of treatment. The study soon showed that accurate comparisons of the two methods would be impossible, because in general the more difficult cases were treated in plaster. However, the investigation showed several types of fractures in which each method gave many deaths or nonunions. Therefore the survey appears to be of some value in

TABLE 1—Treatment and Results

Treatment	Died	Survived	Totals
Untreated	1	0	1
Whitman	19	56	75
Traction and internal rotation	3	25	28

*11 per cent of the Whitman patients died
10.7 per cent of the traction patients died

determining roughly a group of cases in which surgery should be considered.

The series of 100 patients included eight males and ninety-two females, with an average age of 67 years. The age extremes were 12 and 89 years. The average period of immobilization was from ten to twelve weeks and that of hospitalization about fourteen and one-half weeks for either method of treatment. There are no extracapsular cases in this series.

Nineteen hospital deaths occurred. These were due largely to bronchopneumonia (six), pulmonary embolus (five) and cardiac disease (three). Other causes of

From the Orthopedic Service of the Massachusetts Memorial Hospitals. Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Whitman, Royal. A Treatise on Orthopaedic Surgery, Philadelphia, Lea & Febiger, 1927, pp. 956-958.

² Peckham, F. E. The Treatment of Fractures of the Femur, J. A. M. A. 68:456 (Feb. 10) 1917.

³ Ruth, C. E., and Ruth, V. A. Fractures of the Hip, J. A. M. A. 94:169 (Jan. 18) 1930.

death were diabetes (two), carcinoma (one), cerebral hemorrhage (one) and cerebral thrombosis (one). Seventy-one were treated by the Whitman method with fifteen deaths, and twenty-eight by traction with three deaths. One untreated case resulted fatally.

Of the 100 patients, nineteen died and twenty-one are reported as "unknown." The "unknown" are

Orthopedic Study			Reports of Other Physicians and Institutions		Report of Patients Accepted		Unknown After One Year
Died	Bone Union	Non-union	Bone Union	Non-union	Bone Union	Non-union	
15	26	10	2	2	3	0	13

Died, 15; bone union, 31; nonunion, 12; unknown, 13.

TABLE 3.—Report of Twenty-Eight Cases Treated by Traction and Internal Rotation

Orthopedic Study			Reports of Other Physicians and Institutions		Report of Patients Accepted		Unknown After One Year
Died	Bone Union	Non-union	Bone Union	Non-union	Bone Union	Non-union	
3	11	2	2	2	0	0	8

Died, 3; bone union, 13; nonunion, 4; unknown, 8.

patients who were not followed up one year or more after treatment. Sixty cases were carefully examined and followed one year or more after discharge. Of these, forty-nine were examined by members of the orthopedic department. Eight others were reported in detail by other physicians and institutions and three more were reported by patients or relatives of patients



Fig. 1.—Good result showing bony union and normal relation of fragments. Most fractures at a right angle to the femoral neck will unite without much absorption if properly reduced.

with sufficient accuracy and detail to permit them to be included in this series. Seventy-one patients were treated by the Whitman method and twenty-eight by the traction and internal rotation method. The end result study, as regards bone union or nonunion and the sources of information, is shown in tables 2 and 3.

RELATION OF LOCATION AND TYPE OF FRACTURE TO END RESULT

The location and type of fracture determined the end result to a large extent, regardless of the selection of treatment.

Subcapital fractures of the neck gave good results. Out of fifteen of these there were fourteen with bone union and one death. In three cases of comminuted subcapital fracture there was one death, one bone union and one nonunion.

The central fracture gave poor results. In thirty-one of these there were four deaths, nineteen bone union and eight nonunion. In eighteen comminuted central fractures there were five deaths, eight bone union and five nonunion.

The roentgenograms were destroyed in twelve cases and these were recorded simply as intracapsular. Study



Fig. 2.—Because of arthritis and long immobilization during treatment, the head united to the acetabulum. The neck refractured when adduction was permitted after removal of the Whitman abduction plaster.

of this group showed eight deaths, two bone union and two nonunion. Undoubtedly most were "central" or "central and comminuted."

Table 4 illustrates the relation of location and type of fracture and treatment to the end result. Study of the table is somewhat deceiving as regards end result and treatment, because the more simple cases were treated by traction. However, the table definitely shows that the greatest number of nonunions and deaths occurred in fractures of the central portion of the femoral neck, and that nonunion and mortality increased rapidly when the fracture was comminuted.

TABLE 4.—Relation of Location and Type of Fracture to End-Result by Treatment as Regards Bone Union, Nonunion and Death

Location and Type of Fracture	Whitman			Traction		
	Bone Union	Non-union	Died	Bone Union	Non-union	Died
Subcapital 15	10	0	0	4	0	1
Subcapital and comminuted 3	1	1	0	0	0	1
Central 31 (1 died untreated)	12	8	3	7	0	0
Central and comminuted 18..	6	2	5	2	3	0
Recorded simply as Intracapsular 12	2	1	7	0	1	1
Totals 79.....	31	12	15	13	4	3

This table includes the nineteen hospital deaths and the sixty cases followed through for final end result report.

Careful roentgen study showed several other facts. A transverse simple fracture in a plane at right angles to the column of the neck generally united whether the location was subcapital or in the central portion of the neck. The percentage of nonunions and the degree of shortening of the femoral neck rapidly increased with the obliquity of the fracture and the degree of comminution. Slight separation of a small fragment frequently tended toward absorption and nonunion even though the major fragments were accurately apposed.

The reasons for nonunion are not known in all cases. In some it was caused by imperfect apposition of frag-

ments, largely due to insufficient internal rotation, and failure to check the position with lateral or vertical roentgenograms. In some cases too much dependence was placed on stereoscopic anteroposterior roentgenograms, which, although of great help, failed to give as accurate information about position as could have been obtained with lateral views taken with the Leonard curved cassette.⁴ An inadequate period of immobilization resulted in a few nonunions. In general these were weak, senile patients who were irritated by the treatment and failed to cooperate. In at least three and possibly in four cases, nonunion resulted from poor selection of Whitman treatment when roentgenograms showed marked arthritic change. In these the joint ankylosed after long immobilization, and the femoral neck, possibly with bone union, refractured when adduction was permitted after removal of the abduction plaster. Metabolism and blood chemistry studies in a few nonunion cases failed to show any cause for poor results.

"UNKNOWN CASES"

Twenty-one cases are reported as unknown because they were not followed a year after treatment. Thirteen were treated by the Whitman method. Of these,



Fig 3—Oblique fracture treated without sufficient internal rotation. Bony union resulted, but whole of femoral neck absorbed.

three undoubtedly developed nonunion. Eight patients were discharged with the expectation of bone union and two others were followed for six to eight months and when last seen appeared definitely to have bone union.

Eight of the unknown cases were treated by the traction and internal rotation method. Of these, three patients undoubtedly developed nonunion. Three were discharged with the expectation of bone union, and two others when last seen six or seven months later appeared to have bone union.

None of the foregoing twenty-one cases are classed in this report as other than "unknown."

The large number of twenty-one "unknown" is so great that it has seemed unwise to give percentages except for deaths.

SUMMARY OF END RESULT STUDY

Nineteen patients died in the hospital. Twenty-one were not followed long enough to be included and are classed as unknown. Sixty were followed one year or more. Of these, forty-four developed bone union, thirty-one by the Whitman treatment, and thirteen by

traction and internal rotation. Sixteen developed nonunion, twelve by the Whitman method and four by traction and internal rotation.

99 Bay State Road.

ABSTRACT OF DISCUSSION

DR. ARCHIBALD F. O'DONOGHUE, Sioux City, Iowa: The authors show a mortality of one out of five, principally in old persons. I don't believe that is going to be improved very much. They show a percentage of unions in patients who live of approximately 60, which isn't so bad and which possibly may



Fig 4—Oblique fracture with marked absorption of neck of femur resulting in bony union

be improved later. With some of the newer traction methods, especially the one devised by Roger Anderson, I think I have obtained better results than before, although the series has been too short to justify that as a definite assertion. There is one factor about a hip fracture which I have not heard discussed very much. Many papers are read on the treatment of hip fractures in the first three or four months but not many after that time. Advice is given to get patients up after the bone seems as solid as it is going to be. That is not easy to do. They don't handle a splint very well. A patient who has



Fig 5—Central oblique comminuted fracture resulting in bony union. Nonunion is common in this type of fracture.

a fracture of the hip and obtains a bony union and doesn't walk is as badly crippled as if the union hadn't taken place. Better results can be obtained if more attention is given after the plaster comes off. These patients are scared; their muscles are stiff and weak and flabby after a period of immobilization of three months. If these patients, when the casts are taken off, are placed daily in a water bath on a stretcher and allowed to exercise themselves, the period of hydrotherapy being gradually increased from five minutes to twenty-five or thirty minutes twice a day, they not only get their muscles in better shape but regain confidence in themselves and feel that they are going to be able to use the leg again. When the union is

⁴ Leonard, R. D. and George, A. W. A Cassette with a Convex Curve, *Am. J. Roentgenol* 28: 261 (Aug) 1932

strong enough to let them bear weight on the leg, they are afraid of crutches, afraid of hurting themselves over again. If they become dependent on crutches, it is difficult to get the crutches away from them. However, if they start walking in a runway where they can get hold of a rail with their hands, they gain confidence much better and are more likely to return to normal walking without using a crutch or cane than they would if they started with a cast or splint or crutches and were allowed to start themselves without any supervision. The Jones or Anderson tractor is going to help, but after-treatment carefully carried out along the lines I have mentioned is going to help more.

DR J. LAURENCE JONES, Kansas City, Mo. I am in almost complete agreement with the authors. One is frequently confronted with what is either a borderline or an actual pathologic fracture. The mechanism of injury seems to prove this. For example, the old lady standing in front of her mirror, combing her hair, suddenly turns and fractures her hip, in other cases the fracture occurs from minor injuries such as stubbing the toe. Case after case of this kind could not happen unless the condition was a borderline or actual pathologic fracture. Therefore I would like to add a bit of constructive criticism. In the treatment of all other fractures an orthopedic surgeon would not be satisfied unless both anteroposterior and lateral roentgenograms were made. The authors have spoken of the fact that they have taken such roentgenograms in many of these cases with the semicircular curved cassette described some years ago by Drs Leonard and George. For three years I have been attempting to perfect a technic for developing satisfactory lateral pictures. There will shortly be reported what I believe is an improved procedure. Lateral roentgenograms of the neck of the femur, up to this time, have been vaguely reminiscent of the lateral spine plates taken in the era before the use of the Bucky diaphragm. In these old pictures one could see that there were bones present but one didn't know just how many or where they were. The same condition has been true of lateral roentgenograms of the hip. They have been very hazy and, in addition, frequently the head has been thrown entirely off the plate. I shall consider only the method described by Drs Leonard and George, although there is another. In this procedure the tube was placed at the side with the film between the legs, and a semicircular curved cassette is used. In the method to be presented the head and neck can be placed regularly in the center of the film. The position used is with the legs abducted, and the tube is placed at the corresponding shoulder of the hip about to be filmed. The patient's thorax is then thrown out of the way by rotation and side bending. In other words, the picture is taken in the exact vertical position. I am now able to secure lateral roentgenograms of the hip that are about 70 per cent as clear as if a Bucky diaphragm had been used.

DR G. A. HENDON, Louisville, Ky. I wish to submit a plan of treatment that has served me excellently in a series of sixty-five cases, and that is by the introduction of what I call a key, which is made out of beef bone and which can be introduced in ten or fifteen minutes by an open operation. Nothing is exposed except the trochanter and there is no shock and no postoperative depression. I have never had a patient remain in bed more than four weeks. I do not use any kind of restraint. I do not use any kind of external immobilization. These patients are placed in bed and are permitted to assume whatever position seems to be the most compatible with their comfort. Patients have ranged from 62 to 87 years of age and I have had in that series of cases seven deaths, which could in no way be considered as the proximate result of either the operation or the injury.

DR LOUIS G. HOWARD, Boston. Dr. O'Donoghue was too generous in the percentages he gave. We purposely omitted percentages because we felt it was improper when there were so many unknown cases. We don't know how many instances of nonunion there were in that group. Dr. Jones mentioned that we used the Leonard cassette. We have not used it in the series reported in as many cases as he believes, because the series extends back over several years and stopped one year ago, and the Leonard cassette is a fairly recent contribution.

IIIP JOINT TUBERCULOSIS TREATED BY FUSION OPERATION

AN END RESULT STUDY OF ONE HUNDRED AND SEVENTY UNSELECTED CASES

HALFORD HALLOCK, M.D.

AND

JAMES W. TOUMEY JR., M.D.

NEW YORK

One hundred and seventy unselected cases of hip joint tuberculosis underwent operation at the New York Orthopaedic Dispensary and Hospital from April 1923 to July 1931 by the hip fusion method of Dr Russell A. Hibbs.¹ In this operation the anterior three-fourths of the greater trochanter, with its muscle and periosteal attachments intact, is transposed so as to make contact with the ilium above and the femur below and to secure at the same time periosteal continuity. It was hoped that, as in vertebral tuberculosis fusion

TABLE 1.—Deaths

Name	Age at Operation	Time of Death After Operation	Cause of Death
E. M.	21 years	9 months	Miliary tuberculosis
E. J.	12 years	8 months	Tuberculous meningitis
W. N.	19 years	2½ months	Tuberculous meningitis
G. K.	23 years	10 months	Miliary tuberculosis
F. B.	6 years	2 months	Pyelitis and nephritis, and probably disseminated tuberculosis
W. N.	3 years	4 hours	Shock
A. K.	23 years	At some unde- termined time after 8 months	Miliary tuberculosis and suppuration
J. O'B.	22 years	4 years	Pulmonary tuberculosis (?)
E. H.	6 years	3 years	Amyloidosis and broncho- pneumonia
E. K.	15 years	3 years	Unknown
T. P.	24 years	15 months	Amyloidosis
F. N.	10 years	2 years after fusion operation, 2 days after re- fusion operation	Undetermined
F. B.	9 years	4 years	Amyloidosis

Seven deaths occurred less than one year after operation, six deaths occurred more than one year after operation.

of the diseased bodies follows on that obtained by operation in the posterior elements, primary fusion would be of the transposed trochanter, ilium and femur, and ultimately of the diseased head and acetabulum. This hope has been realized, and an end result study of these cases is now reported.

RESULTS

Of the 170 patients, seven died within one year after operation. This leaves 163 who were available for examination one year or more after operation. All except one patient were roentgenographed at the hospital and were personally examined by experienced members of the staff. The excepted patient was examined and roentgenographed by a former member of the staff, now in Boston. The time of follow-up examination varied from one to eleven years inclusive and comprised a total of 888 and an average of 5.4 case years.

Fusion.—Of the 163 patients, 112, or 68.7 per cent, obtained a fusion by the first or primary operation. In

From the New York Orthopaedic Dispensary and Hospital.
Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

¹ Hibbs, R. A. *J. Bone & Joint Surg.* 8: 522 (July) 1926.

fifty-one cases, or 31.3 per cent, the operation failed. A second operation was performed in forty-one of the failures. Twenty-six of these (66⅔ per cent) were successful, thirteen were failures, one terminated fatally two days after operation, and in one the operation has been done too recently to show the result. Six cases required a third operation. Of these, four succeeded and two failed.

TABLE 2.—Failures According to Age Groups

Age of Patient	Number of Cases	Percentage of Failure
1 to 5 years inclusive.....	16	50
6 to 10 years inclusive.....	49	32.7
11 to 21 years inclusive.....	67	20.9
Over 21 years.....	31	38.7

If the successes of the reoperative cases are added to the 112 in which a fusion was obtained by primary operation, there are 142 hips, or 87.2 per cent, that are fused, and twenty-one, or 12.8 per cent, that are not. Fusion through the transposed trochanter was followed by fusion through the diseased area and gave an extremity that was stable and free from pain, and one that could be relied on for unrestricted weight bearing.

Sinuses.—Twenty-six (16.7 per cent) of 155 cases in which a note was made showed sinuses when last examined. In twenty-two of these fusion was present. Fourteen belonged to the group seen five years or more after operation.

Deaths.—Thirteen patients have died. Seven of the deaths occurred within one year after operation and six afterward. Two were operative deaths (table 1).

DETAILED STUDY

A detailed study of the relationship of fusion, as obtained by primary operation, to a number of various factors was made.

TABLE 3.—Distribution in Series and Failure Group of Factors Showing Significant Differences from the Mean Percentage Failure (31.3)

Factor	Number in Series	Number of Failures	Percentage of Failure	Percentage of Occurrence in Series	Percentage of Occurrence in Failure Group
1 to 5 years of age..	16	8	50	9.8	15.7
1 to 12 months' duration of symptoms	23	12	52.2	14.3	23.5
Faulty technic.....	92	38	41.3	60.1	77.5
Late fracture of mass.....	12	9	75	7.3	17.6
Early change of plaster.....	51	7	13.7	32.5	14.3

Factors occurring in significantly greater or less proportion in the failure group than in the whole series:

1. Faulty technic
2. Early plaster change (probably representing adequate immobilization)

Age Groups.—The cases were divided and the results studied in four groups (table 2). There was a relatively high percentage of failure (50) in the 1 to 5 year group, but this group included only sixteen cases and did not occur in much higher proportion in the failure group (16 per cent) than in the whole series (9.8 per cent) (table 3).

Duration of Symptoms.—The cases were classified in four groups based on duration of symptoms before operation (table 4). In the 1 to 12 months group there was a relatively high percentage of failure (52.2). The

group included, however, only twenty-three cases and did not occur in significantly higher proportion in the failures than in the whole series (24 and 14.3 per cent respectively, table 3). The standard for comparative analysis is given later.

Activity of Lesion.—An estimate of the degree of activity of the lesion was made in each case and was graded from 0 to 4 plus by a study of the preoperative roentgenograms and the conditions found at operation. If pus was found, a grading of 4 plus was arbitrarily given.

The cases were studied in two groups, one of lesser (0 to 2 plus) and one of greater (2½ to 4 plus) activity. There was practically an equal number in the two divisions and the percentage failures were 30 and 33.8 respectively. Of forty-seven cases with pus, fusion failed to occur in 29.8 per cent. Greater activity occurred as frequently in the whole series as in the failure group.

It appears therefore that statistically the degree of activity or the presence of pus has no appreciable effect



Fig. 1 (A. S., aged 6 years).—Proved case, before operation.

on the outcome as regards fusion or failure of fusion. It is felt, however, that in extremely active cases which can be kept under close observation operation might profitably be deferred for a short time and a preliminary attempt made by conservative means to secure some degree of subsidence of the activity.

TABLE 4.—Failure According to Duration of Symptoms Before Operation

Duration of Symptoms	Number of Cases	Percentage of Failure
1 to 12 months inclusive.....	23	52.2
1 to 5 years inclusive.....	57	23.9
5 to 10 years inclusive.....	47	23.8
Over 10 years.....	39	28.2

Preoperative Sinuses.—Twelve cases presented sinuses at operation and 41.6 per cent failed to fuse. This did not differ materially from the percentage failures of those which had never presented sinuses or from those which had previously presented sinuses that were closed at the time of operation. Sinuses cannot therefore be considered a contraindication to fusion.

Operative Technic.—A number of factors concerned in the transposition of the trochanteric mass were considered in relation to the success or failure of fusion.

Penetration and Fusion at the Ilium: By penetration is meant the depth to which the transposed mass of bone has entered sound bone in the ilium. It is measured



Fig. 2 (A. S.).—Result ten years after operation.

on the postoperative film by the distance of the end of the transplant from the nearest point of evident disease. Depending on the amount of penetration, the cases were divided into three groups, and the effect of this factor was studied from the standpoint of fusion of the mass to the ilium alone. In the 0 to one-fourth inch group there were eighty-seven cases, with a percentage failure of 28.7; in the one-fourth to one-half inch group, thirty-two, with a percentage failure of 9.4, and in the group with over one-half inch of penetration, thirty-

four, with a percentage failure of 5.9. No measurements could be made in ten cases.

The high incidence of failure in the group presenting poor penetration (0 to one-fourth inch) in comparison with the relatively low incidence in the other groups is of significance.

Femoral Contact and Fusion at the Femur: In a similar way the relationship of fusion at the femur to the extent of femoral contact of the transposed mass was studied, and it was found that the group of cases which had one-eighth inch or less of contact showed a much higher percentage of failure than those which had more (20 against 7.7 per cent).

Type of Transposed Mass: The cases were also studied in regard to the type of transposed mass. Forty-seven had a mass that consisted chiefly of trochanteric or cancellous bone, and 34 per cent failed; 103 cases had a mass in which the proportion of shaft or cortical bone was equal to or greater than the amount of trochanteric, and 31.3 per cent failed. No data were available in thirteen cases.

Fracture of the Transposed Mass at Operation: In six cases the transposed mass was inadvertently fractured at operation. Three fused and three (50 per cent) failed, two through the fracture site and one at the ilium.

Faulty Technic and Fusion: Combining three of the aforementioned factors, a study of the relationship of success or failure of fusion at any point to proper and faulty technic was made. Technic was considered to have been faulty in all cases that presented only from 0 to one-fourth inch of penetration, from 0 to one-eighth inch of femoral contact, or a fracture of the mass at operation. In this group 94.5 per cent of the cases showed poor penetration. The technic in ninety-two cases (60.1 per cent) was faulty and in 41.3 per cent it failed, chiefly at the ilium (28.7 per cent). In sixty-

one cases (39.9 per cent) the proper technic was used and in 18 per cent it failed. No data were available in ten cases. The marked difference in percentage failure between the two groups, which were both large, and the higher rate of failure of the faulty group in relation to the mean (31.3 per cent) are significant. Moreover, faulty technic occurred more frequently in the failure group (77.6 per cent) than in the whole series (60.1 per cent) (table 3).

Proof of Lesion.—In all but six cases microscopic study of tissue removed at operation was made, and in most cases a guinea-pig inoculation as well. One hundred and twenty-seven cases, or 77.9 per cent, were proved, by positive section, by positive guinea-pig test or by both to have been tuberculous. Proof was lacking in others, probably because extensive scarring in association with long-standing disease made it difficult to find diseased tissue, or because the active process was confined chiefly to the innermost recesses of the joint, which were not opened at the operation for fusion.

Postoperative Sinuses.—In fifty-six cases, or 34.2 per cent of the whole series, except for two in which no note was made, sinuses developed at some time after operation. This does not include the twelve patients who had sinuses at the time of operation. In twenty-two, or 39.3 per cent, the operation failed. Ninety-three cases remained without drainage and 25.8 per cent were failures. As noted previously, only 16.7 per cent of the series presented persisting sinuses at the follow-up examination.

First Plaster Change.—Fifty-one patients had their first plaster change within two weeks of operation, and



Fig. 3 (F. M., aged 6 years) —Proved case, before operation.

13.7 per cent of the operations were failures. One hundred and six had their first change more than two weeks after operation, usually at three months, and 39.6 per cent failed. This suggests that the low percentage of failure in the group changed early might have been due to a more adequate splinting of the hip by a better fitting plaster spica, put on leisurely and with care, after postoperative swelling had subsided and

before consolidation of newly formed callus had occurred.

Late Fracture of Transposed Mass.—Twelve cases showed roentgenologic evidence of a fracture through the transposed mass from three to fifteen months after operation. In only one was there any history of trauma. Of these twelve fractures, three ultimately united and fusion was secured; nine (75 per cent) failed to unite, and failure of fusion resulted. All twelve cases presented a portion of shaft bone in the transposed mass and in nine of them this was equal to or greater than the trochanteric portion. Ten of the fractures occurred through the cortical part and in two at the junction of the trochanteric and shaft portions. It is evident, therefore, that a late absorption fracture through the transposed mass is a possible and a serious complication, especially in cases presenting a shaft type of transposed mass.

Fusion at One Year After Operation and End Results.—At a twelve months period after operation



Fig. 4 (F. M.).—Result nine years after operation.

there were sixty-three cases in which clinical and roentgen examinations indicated the presence of fusion. Of these, one was later found not to be fused. Fifty-three were definitely not fused, and of these seventeen went on to fusion and thirty-six failed. In thirty-seven it was impossible to determine whether fusion was present or not. Thirty-three of these later showed unmistakable evidence of fusion and four of failure.

The Failure Group.—Fifty-one cases, or 31.3 per cent, failed to fuse by primary operation. The sites of nonunion are given in table 5.

Several cases failed in more than one place. For instance, of those failing at the ilium, five also failed at the center of the mass through late absorption fracture lines, and four at the femur. Of the thirty-one

TABLE 5.—Sites of Nonunion

Site	Number of Cases
Ilium	31
Femur	6
Center of mass	12
Epiphyseal line of mass.	2
Total.....	51

cases failing at the ilium, twenty-five, or 80.6 per cent, presented poor penetration.

The distribution in this group and in the whole series of the various factors that were found in the preceding study to be of definite significance in the matter of fusion are given in table 3.

Refusion Operations.—Forty-one patients had a refusion operation and in six of these a third procedure was necessary. The results have been given previously. At operation the defect was usually cleared of fibrous tissue and the space filled with bone chips. At times, large free grafts were used to bridge the space between the femur and the ilium. In twenty-five cases, or 62.5 per cent, active disease was found at the site of failure.

COMPARATIVE ANALYSIS OF FACTORS

In order to analyze comparatively the various factors in relation to fusion it was necessary to determine what should constitute significant differences of percentage in relation to numbers of cases. The following arbitrary standard was adopted:

1. If the group of cases under consideration comprised less than one tenth of the whole series, 20 per cent was taken to be the least amount of difference to which significance could be attached.

2. If the group comprised from one tenth to one half of the whole series, 15 per cent difference was required as a necessary minimum.

3. If the group comprised one half or more of the whole series, only a 10 per cent difference was considered requisite.

On this basis a definite difference in percentage failures in relation to the mean (31.3 per cent) was found in the following factors:

From 1 to 5 years of age.

From one to twelve months' duration of symptoms.

Faulty technic.

Late fracture of mass.

Early change of plaster.

But to be of statistical significance these factors must appear in definitely greater or less proportion in the failure group than in the whole series. This was determined, and it was found that in only the following two was this requirement satisfied:

1. Faulty technic.

2. Early change of plaster (which probably means adequate immobilization).



Fig. 5 (S. R., aged 28 years).—Proved case. Failure of fusion at the ilium five months after operation.



Fig. 6 (S. R.).—Result two years after refusion operation.

SUMMARY

1. The end results of 170 unselected cases of hip joint tuberculosis treated at the New York Orthopaedic Dispensary and Hospital from April 1923 to July 1931 by the hip fusion method of Dr. Russell A. Hibbs are reported. Seven patients died within one year after operation, leaving 163 who had follow-up examinations



Fig 7 (R. M., aged 4 years)—Proved case. Failure of fusion at the femur seven months after operation

of from one to eleven years inclusive, with an average of 5.4 case years. Seventy-seven and nine-tenths per cent were proved by microscopic examination or guinea-pig inoculation or by both to have been tuberculous.

2. By primary operation 112 cases, or 68.7 per cent, were fused; with secondary and in some instances tertiary procedures in forty-one cases, 142, or 87.2 per cent, were fused. Fusion through the transposed trochanter was followed by fusion through the diseased area and gave an extremity that was stable and free from pain, and that could be relied on for unrestricted weight bearing.

3. Thirteen deaths occurred, seven within a period of one year after operation and six afterward.

4. As determined by statistical analysis, the chief factors influencing fusion were found to be:

- (a) Faulty operative technic.
- (b) Adequate immobilization by replacing a probably fitting plaster by a snugly fitting one within two weeks after operation, after swelling had subsided and before consolidation of newly formed callus had occurred.

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ABSTRACT OF DISCUSSION

DR. HENRY W. MEYERDING, Rochester, Minn.: I wish to congratulate the authors on presenting the large series of fusion operations for tuberculosis of the hip. I am impressed by the careful follow-up system as well as by the fact that 78 per cent of the cases were proved microscopically to be tuberculous. The results from surgical fusion, as shown in this series, are gratifying. I believe the pendulum will swing farther away from the conservative treatment, with the exception, possibly, of young children under 9 years of age. At the clinic the fusion operation is seldom used for young children. The duration of the disease is much longer and the average age much higher in the cases that I see. It should be accentuated

here that tuberculosis of the hip is a manifestation of a general disease, that the surgical treatment of a local manifestation is only a part of the treatment, and that general measures, such as usually are employed with tuberculosis, must be carried out carefully. In a series of forty-three cases reported at the International Orthopaedic Society meeting in London by Dr. Henderson, the results are practically the same, successful fusion having been obtained in about 90 per cent of cases. In that paper the different types of operation employed at the clinic to secure fusion were discussed, and it was pointed out that the combined operation, intra-articular and extra-articular, was found to be preferable. This may be due to the fact that experience at the clinic has been more with adults and with cases in which tuberculosis of the hip was of long standing.

DR. FRANK R. OBER, Boston: It is very interesting that these cases should be reported at this time, because Dr. Hibbs was probably the first to advocate the fusion of the hip in tuberculosis. The authors present many interesting facts. It seems to me, however, that the proportion of failures is quite high; namely, 31 per cent. The mortality rate also seems to me to be a little high. What is the reason for so many failures? It must be that the graft is not of sufficient size to support the femur against the body weight or that the disease is too acute, so that the graft melts away from the tuberculous process or the graft fractures. I think a better technic is one in which the ilium is exposed through the Smith-Petersen incision and a large mass of bone is turned down in strips, being previously split off the trochanter and the femur being bared anteriorly and posteriorly at the upper extremities. These strips connect the femur with the ilium and there is a veritable forest of bone in this neighborhood. Hips should not be fused when there is disease of the articular cartilage either in the head or in the acetabulum. Any hip with a few degrees of motion is always a liability. No patient with an active pulmonary lesion should have a fusion. Patients should not have fusions in the presence of pus. No fusion should ever be done until the patient is brought up to as nearly a perfect general physical condition as possible. The bony skeleton is then much better, the patient's resistance is better and the mortality rate will be lower.

DR. C. H. HEYMAN, Cleveland: It is not often that such a large number of end results is reported. The authors apparently believe in obtaining a bony ankylosis in order to obtain a cure and with that I am in agreement. The question arises as to the best method of obtaining this ankylosis. It is my experience that it is much easier to bring it about by resection of the joint cartilage. That, however, is not always done easily. I was under the impression that the operation, as originally proposed by Hibbs, was an extra-articular fusion. It is



Fig. 8 (R. M.).—Result six years after refusion operation and two months after subtrochanteric osteotomy for excessive flexion and abduction.

of no particular importance if one does get into the joint. It is necessary to get a good bony contact along the neck of the femur and penetration into the ilium, as the authors stated. I should like to ask the authors whether they perform the operation in the presence of a sinus. When there is a sinus there is a secondary infection. The principle of the operation is a bone graft, and graft operations are not done in the presence of an infection. I should also like to ask just what the lowest age limit is when they would operate. I have not done

many of these operations. In doing them I have been struck by the marked degree of bone atrophy involving the neck of the femur and the trochanter. This atrophy has sometimes been so extensive that one could cut the bone with a heavy pair of scissors. Does that make any practical difference? I have also encountered a technical difficulty in leaving the muscle attachments intact at the time of mobilizing the graft and turning it round. Sometimes I have been unable to drive this graft into the ilium, getting it flush with the neck of the femur, and at the same time leaving the muscle attachments intact. Is that of great importance? The authors emphasized the great importance of the early change of cast. That is something I cannot understand. It would seem, theoretically at least, that an early change of cast would entail manipulation and motion. It seems to me that the percentage of union would be higher by not changing the cast than if one did change it.

DR. JOSEPH S. BARR, Boston: I feel that all large orthopedic centers in the United States ought to lay their cards on the table regarding the percentage of failures and successes in fusion of tuberculosis of the hip. I reviewed 175 cases in the Massachusetts General Hospital in the ten year period from 1920 to 1930. I haven't the exact statistics here but the percentages were almost identical with those presented by Drs. Hallock and Toumey. The type of fusion varied with the operator—some intra-articular, some Hibbs and some a combination of the two or with the use of a graft from the ilium. We were presented a few years ago with the problem in the New England Peabody Home, in a group of children. After a review of the various methods of operation, we finally decided on a combination of technics and I want to report the first twenty cases in which that method was used. In brief, the results were as follows: There were nineteen successes by the first operation and one failure, since fused by a second operation. There were no deaths, no sepsis, no draining sinuses. The exposure for the operation was through the Smith-Petersen incision. The head and neck of the femur were denuded of cartilage and cortical bone. The trochanter was partially osteotomized and flaps were levered out anteriorly, laterally and posteriorly without being completely detached. Long grafts were then cut from the outer table of the ilium, each graft about 3 inches long and half an inch wide. They were then laid parallel to the neck of the femur, the upper end of the graft in contact with cancellous bone of the ilium. The lower end of each graft was attached firmly in the trochanteric slots. The chief advantage of this method is that it gives one a very flexible graft, which cannot be displaced by moderate changes in position of the hip, and which tends to unite in a solid bony fusion in an extraordinarily short time, some of the cases being solidly fused within three months after the operation.

DR. HALFORO HALLOCK, New York: Dr. Toumey and I believe that general care is of importance. After operation, or in instances in which surgery is to be postponed, cases are sent to the country branch for general treatment. The fusion operation is extra-articular in the sense that the innermost recesses of the joint are not entered. The capsule is opened superiorly over the femoral neck, but that is all. No attempt is made to excise large amounts of diseased tissue, because it may increase the danger of possible spread and generalization and because it is not necessary. We have found that, if bony fusion is obtained, nature will take care of the disease. Sixty-nine per cent of successes is a good average for a large series of a major surgical condition. Thirty-one per cent failure, by primary operation, however, has given us concern; and it was for the purpose of finding out the reasons for failure that this study was begun five years ago. Statistically, the only significant factors were faulty technic and failure to change the first plaster early after operation. The death rate in this series, 8.6 per cent, is slightly higher than that in 150 cases reported from the Hospital for Ruptured and Crippled by Dr. Gibney in 1898 but lower than that in 150 cases treated by traction splint and heliotherapy at the Country Branch of the New York Orthopedic Hospital, reported by Smith and Watters in 1928. These rates were respectively 7.3 and 16 per cent. Joint cartilage is not resected, as to do so would further open up diseased areas and prolong the time of opera-

tion. We do operate in the presence of sinuses, for apparently they do not make any difference in the outcome. The youngest patient was a child of 1 year, and he obtained a fusion. Atrophy of the trochanter has not had any demonstrable effect. No difference of percentage failure was found in cases that presented marked degrees of decalcification of hip and trochanter. The muscle attachment is left intact if possible; but lately we have tried several free trochanteric masses, and fusions were obtained without difficulty. Plaster support is maintained from six to twelve months, with an average of about nine months.

INTESTINAL TUBERCULOSIS

PATHOLOGIC AND ROENTGENOLOGIC OBSERVATIONS

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AND

JACOB GERSHON-COHEN, M.D.

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It is our purpose in this paper to present certain observations on intestinal tuberculosis based on 1,000 consecutive autopsies performed at the Philadelphia General Hospital during the last six months of 1933, and to describe an x-ray procedure which we hope may be helpful in the clinical diagnosis of the disease.

TABLE 1.—Analysis of 1,000 Consecutive Autopsies

Pulmonary Tuberculosis, Healed and Active	Intestinal Tuberculosis	
	Ulcerative	Hyperplastic
Present 226, or 22%	63, or 28%	0
Absent 774, or 77%	0	0

TABLE 2.—Analysis of Pulmonary Tuberculosis Group

Tuberculosis of the lungs.....	226 cases
Fibro-ulcerative cavernous.....	105 cases, or 46%
Fibroid.....	83 cases, or 38%
Exudative.....	22 cases, or 10%
Miliary.....	12 cases, or 5%
Tuberculous pneumonia.....	2 cases, or 1%

It is generally conceded that tuberculous ulceration of the intestine is a frequent complication of pulmonary tuberculosis. From an analysis of the literature it is easy to deduce that there are no symptoms or physical signs that point conclusively toward intestinal involvement, whether it is early or far advanced. In many instances it would appear that symptoms and physical signs may be indefinite even in the presence of advanced intestinal disease. Clinically, therefore, the diagnosis is seldom made with any degree of certainty, although it is presumed to exist in many cases.

Numerous pathologic studies show a consistently high incidence of intestinal tuberculosis associated with pulmonary tuberculosis, the incidence varying from 50 to 90 per cent.

Few of the pathologic reports in the literature show any correlation between the types of pulmonary disease and the intestinal process, and still fewer show any correlation between the pulmonary and the intestinal types of disease with associated tuberculosis of other abdominal organs.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

From the Medical and Pathological Departments of the Philadelphia General Hospital and the X-Ray Department of the Eagleville Sanatorium, Eagleville, Pa.

The following analysis of the autopsies studied was undertaken in order to determine (1) if tuberculosis of the intestine, whether hyperplastic or ulcerative, occurred more frequently than is suspected in the absence of pulmonary tuberculosis; (2) its incidence and relation to the type of pulmonary tuberculosis, and (3) the incidence of associated tuberculous disease of

A study of the relation of the type of pulmonary disease to sex and race clearly indicates that fibroid pulmonary lesions predominate in white males, that fibro-ulcerative cavernous lesions are about equally distributed, and that both exudative and miliary pulmonary lesions predominate in Negro males. While the age incidence of this group was not studied, the low incidence of fibroid lesions in the Negro race would suggest that Negroes succumb to it sooner than white people.

A study of the relation of the type of pulmonary lesion to intestinal ulceration shows conclusively that intestinal ulceration does not occur in the healed fibroid cases, eighty-five of the latter being encountered without

TABLE 3.—Relation of Pulmonary Tuberculosis to Sex and Race (226 Cases)*

	Fibrous (85)	Fib. Ulc. Cav. (105)	Exuda- tive (22)	Miliary (12)	Pneu- monia (2)
Male.....	54	55	12	7	1
Female.....	31	50	10	5	1
White (132 cases)	64-50%	56-42%	7-5%	4-3%	1
Negro (93 cases)	20-22%	49-53%	14-15%	8-9%	1
Chinese (1 case).....	1		1		

* Fibroid pulmonary lesions predominate in white males. Fibro-ulcerative cavernous pulmonary lesions are almost equally distributed. Exudative pulmonary lesions predominate in Negro males. Miliary pulmonary lesions predominate in Negro males.

other abdominal viscera. For these reasons, consecutive autopsies were analyzed regardless of the cause of death.

Of the 1,000 autopsies studied, tuberculosis of the lungs was found in 226 cases, or 23 per cent. No evidence of it was found in 774 cases. This comparatively low incidence of pulmonary tuberculosis in such a large general group can probably be attributed to the fact that serial histologic sections were not made of lungs that appeared grossly normal and therefore would not include cases with evidence of healed primary lesions in the lungs or tracheobronchial nodes. Cases presenting healed apical lesions due to secondary infection will be referred to as chronic fibroid tuberculosis. In the entire 774 negative pulmonary cases no evidence of tuberculosis of the intestine, either hyperplastic or ulcer-

TABLE 5.—Relation of Fibro-Ulcerative Cavernous Tuberculosis to Sex, Age and Race

With Intestinal Ulceration, 59 Cases										
Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	
Male.....	0	5	8	4	2	4	1	2	1	
Female.....	0	4	5	12	4	1	1	1	0	
93 Negroes....	0	8	10	11	1	2	2	0	0	36%
132 White.....	0	1	6	5	5	3	0	3	1	18%

Intestinal Ulcerations Predominating in (1) Females (2) 20-40 Yrs. (3) Negroes										
Without Intestinal Ulceration, 56 Cases*										
Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	
Male..	0	2	4	7	4	8	3	3	1	
Female..	1	0	1	3	3	2	3	5	0	
93 Negroes..	1	1	1	3	3	0	1	1	0	15%
132 White....	0	1	4	3	4	4	5	7	1	22%

* Without intestinal involvement, patients live longer regardless of sex or race.

a single instance of such a complication. The highest incidence of intestinal ulceration was observed in the fibro-ulcerative cavernous type of pulmonary disease; i e., in fifty-nine of 105 cases, or 56 per cent. The incidence was next highest in the exudative pulmonary lesion; namely, in four, or 18 per cent. In twelve miliary cases of pulmonary tuberculosis, intestinal ulceration was not seen in a single case, although, as will

TABLE 4.—Relation of Pulmonary Tuberculosis to Ulcerative Intestinal Tuberculosis

Type Pulmonary Tuberculosis	Ulcerative Intestinal Tuberculosis	
Fibroid	85 cases	0 cases 0
Fibro ulcerative cavernous	105 cases	59 cases 56%
Exudative	22 cases	4 cases 18%
Miliary.....	12 cases	0 cases 0
Pneumonia..	2 cases	0 cases 0
	226 cases	63 cases 28%

ative, was found. In the 226 cases of healed and active pulmonary tuberculosis, an ulcerative type of intestinal lesion occurred in sixty-three cases, or 28 per cent. Primary hyperplastic tuberculosis or tuberculoma of the large bowel was not observed in the 1,000 autopsies, and it must be regarded, therefore, as a most infrequent variety of intestinal tuberculosis in adults. It may be more common in children, very few of whom were included in this study.

Of the 226 cases of pulmonary tuberculosis, the type and incidence of lung lesions were as follows: fibro-ulcerative cavernous, 105 cases, or 46 per cent; chronic fibroid, eighty-five cases, or 38 per cent; exudative, twenty-two cases, or 10 per cent; miliary, twelve cases, or 5 per cent, and only two, or 1 per cent, were classified as tuberculous pneumonia. The latter figure is of interest, considering the frequency with which such a clinical diagnosis is made.

TABLE 6.—Relation of the Type of Pulmonary Tuberculosis to the Site of Intestinal Ulceration*

Pulmonary Tuberculosis	Ileum	Cecum	Ascending Colon	Transverse Colon	Descending Colon	Rectum
Fibroid	85	0	0	0	0	0
Fibro ulcerative cavernous	105	51	47	18	9	2
Exudative	22	3	1	1	1	1
Miliary	12	0	0	0	0	0
Tuberculous pneumonia ..	2	0	0	0	0	0

* Intestinal ulceration predominates in fibro ulcerative cavernous pulmonary disease. Incidence of ulceration is highest in ileum and becomes decreasingly frequent from the ileum toward the rectum. Intestinal ulceration is conspicuously absent in the fibroid and miliary types of pulmonary lesions.

be shown later, a miliary lesion of the serosa of the intestine was not infrequently noted. Neither of the two cases of tuberculous pneumonia showed any intestinal ulceration. While the sputum was not examined in all cases for various reasons, it is of interest that it was found positive in forty-four of sixty-three cases of intestinal ulceration, or 60 per cent. It is plainly evident that the open ulcerative pulmonary lesions, most if not all of which at one time or another present positive sputum, are the ones most apt to be accompanied

by intestinal ulceration, so much so that one could almost feel safe in saying "No intestinal ulceration without pulmonary ulceration." It is of further significance in this connection that the miliary cases of pulmonary tuberculosis which are not open and do not present positive sputum likewise do not show intestinal ulceration. This would appear to support the contention in some circles that intestinal mucosal lesions are caused by swallowed tubercle bacilli or enterogenous infection and that intestinal serosal lesions, as observed in the miliary type of pulmonary lesion, are probably due to blood-borne tubercle bacilli or hematogenous infection. The more frequent association of generalized visceral tuberculosis in the miliary cases than in the ulcerative cases, as will be shown, also supports this view. However, whether intestinal tuberculosis is due to infection being carried by the sputum, blood stream or lymphatics is a question that must still be determined.

Since it was only in the fibro-ulcerative cavernous type of pulmonary disease that intestinal ulceration was observed, it is of interest to study this group further. It will be noted that ulceration of the intestine developed most frequently in women between 20 and 40 years of age, and especially in the Negro race. The patients without intestinal ulceration definitely exhibited a tendency to live longer, regardless of sex or race.

It was previously mentioned that comparatively little data are available on the relation of the type of pulmonary lesion to intestinal ulceration, especially as regards the location of the intestinal lesion. An analysis of this relation demonstrated that while intestinal ulceration again occurred most frequently in the fibro-ulcerative cavernous group of pulmonary lesions, the incidence of ulceration was highest in the ileum. Almost as frequently it was found in the cecum, and then a very marked decline in the frequency of ulceration was observed in each successive distal segment of the bowel. The latter part of this observation confirms what has been previously recognized. No attempt is made to explain the high incidence of ileocecal ulceration. It has been suggested that it is due to a combination of such factors as stasis, a rich supply of blood vessels and lymphatic tissue, and a high degree of absorption in this area.

It is frequently stated that healing of tuberculous ulceration in the intestine may take place regardless

were not made in our cases, but gross evidence of a healed ulcer was seen in only one case. Absence of healing has been attributed to the fact that intestinal ulceration is a terminal complication and consequently the patients do not live long enough for healing to take place. That it may be a complication of early pulmonary tuberculosis is attested by finding tuberculous ulceration of the ileum in four of the twenty-two cases in the exudative group; two of the patients had died from tuberculous meningitis, one from tuberculous pericarditis, and one from myocarditis and lead poisoning. Such evidence would seem to indicate that intestinal ulceration is not necessarily a terminal complication but is simply not recognized, as a rule, until the patient is in an advanced stage of pulmonary and intestinal disease.

A study of the incidence of tuberculosis of the abdominal viscera in cases with and without intestinal ulceration and its relation to the type of pulmonary lesion demonstrates that there is a strong probability of the viscera being involved in cases of ulcerative pulmonary tuberculosis as well as in miliary tuberculosis.



Fig. 1.—A, single contrast enema; B, double contrast enema of an excised colon. The patient had moderate pulmonary ulcerative tuberculosis and minimal tuberculous ulceration of the terminal ileum and cecum. The irregularity of the cecal margin is slight in the single contrast enema film, whereas in the double contrast enema film marked mottling of the mucosa of the cecum is seen, as a result of the uneven distribution of the coating of barium on the ulcerated mucosa. Roentgen appearances of ulcerated intestinal mucosa were studied by this method on excised colons obtained by autopsies.

The viscera most frequently involved were the spleen, the liver and the kidneys. The probability of visceral tuberculosis is shown to be greatly increased in the presence of intestinal ulceration. Healed miliary tubercles of various abdominal viscera were occasionally seen in cases showing a healed pulmonary lesion.

A number of practical considerations may be evolved from this study of 1,000 autopsies. In view of the multiple pathologic lesions present in patients who die from tuberculosis, it is not difficult to understand why the symptomatology of the disease is so obscure. This is especially the case with intestinal tuberculosis, in which one must consider that not only are several segments of the intestinal tract often affected, but in addition there is a substantial probability that other abdominal viscera, especially the spleen, liver, kidneys, peritoneum and suprarenals, are likewise involved.

When one considers the widespread distribution of the disease it becomes at once apparent that such a surgical measure as resection of a tuberculous ulcerated area of the bowel is highly impractical.

TABLE 7.—*Tuberculosis of Abdominal Viscera**

	With Intestinal Ulceration (63 Cases)	Without Intestinal Ulceration (163 Cases)
Spleen.....	19, or 30%	27, or 16%
Liver.....	18, or 28%	25, or 15%
Kidneys.....	17, or 27%	19, or 11%
Peritoneum.....	9, or 14%	4, or 2%
Mesenteric nodes.....	9, or 14%	9, or 5%
Appendix.....	7, or 11%	3, or 1%
Suprarenals.....	1, or 1%	7, or 4%

* The probability of associated tuberculosis in other abdominal organs is greatly increased in the presence of intestinal ulceration. The spleen, liver and kidneys are the organs most frequently involved.

of the activity of the pulmonary lesion and in the presence of progressive ulceration elsewhere in the bowel. Detailed examinations for evidence of healing

As regards primary hyperplastic tuberculosis or tuberculoma of the bowel, one must consider in the differential clinical diagnosis that it rarely occurs, whereas carcinoma, which it may simulate, is not unusual in the tuberculous subject.

The various complications and associated diseases revealed in this analysis cannot be presented at this time. From a practical standpoint it is of interest to note that perforated tuberculous ulcers were rarely found, while peptic ulcer, nontuberculous appendicitis and diverticulitis, all with and without perforation, were not infrequently noted as complications of pulmonary tuberculosis. Among the more commonly noted associated diseases were those of the cardiovascular-renal systems, chronic cholecystitis and cholelithiasis, and cirrhosis of the liver, all of which must be kept in mind in the clinical appraisal of the cases under discussion.

ROENTGEN DIAGNOSIS

As an important aid in the diagnosis of ileocecal tuberculosis, we would recommend the double contrast enema. The barium meal method is more generally used



Fig. 2.—A, single contrast enema; B, double contrast enema showing minimal cecal tuberculosis. The mottling of the barium coating on the ulcerated mucosa of the cecum is clearly seen in the double contrast films.

at present following Sampson and Brown's work, but its reliability depends on such indirect signs as segmental irritability and hypermotility. The double contrast enema, in addition to retaining these signs, provides an accurate demonstration of the actual morbid anatomic changes of the diseased segments of the bowel.

It has been exceedingly difficult to obtain verification, by either operation or autopsy, of early lesions, diagnosed roentgenographically. An opportunity for checking the diagnosis, however, was afforded by the postmortem examination of patients who had died in the terminal stages of tuberculosis, many of whom had early lesions in one or another segment of the colon, usually distal to the advanced lesions in the ileocecal areas. From a comparison of the roentgen and post-mortem observations in these distal segments in which early lesions were present, some fairly reliable impression was gained of the value of the double contrast studies.

The following technic is based on an experience of more than five years of routine use at Eagleville Sanatorium, during which we have had no untoward effects:

An ordinary enema of barium sulphate and warm water is first given and the usual roentgen studies are made, the quantity

of injecta being noted. The second roentgen study, which is made after evacuation of the injecta, includes notation of the approximate amount of residue and its distribution. The third phase of the study is carried out by inflating the colon with air. A ball valve Politzer bag of known air capacity is used. No special rectal nozzle is used, since the ordinary adult size hard rubber nozzle is satisfactory except in the presence of a fistula or an otherwise damaged rectal sphincter. The colon is filled with air under fluoroscopic control. Overdistention is avoided by controlling the actual amount of air injected, which should never exceed the amount of opaque injecta. When these precautions are heeded, examination is no more objectionable to the patient than is the simple barium enema.

The roentgen diagnosis of early lesions is primarily based on abnormal outlines and marginal irregularities of the colon. In the affected areas a mosaic appearance of the mucosal surfaces is seen in the double contrast films. This mottling of the thin barium coating on the diseased mucosa may be seen in the very early stages of ulceration, sometimes before there are appreciable irregularities in the outline of the colon. The secondary signs resulting from irritability and hypermotility of the involved areas that may be observed fluoroscopically strengthen the diagnosis. The older lesions may be diagnosed more readily than the early lesions because they are larger and more widely distributed and show an exaggeration of the changes in the colonic margins and mucosa, which are strikingly discernible in the double contrast films. Finally, the double contrast enema is superior to the barium meal study because it gives fuller visualization of the degree and extent of tuberculous involvement, is less expensive, takes less time, and is not so tiring to the patient.

The barium meal is still the examination of choice to detect stenosis in the jejunum and ileum, since it is the only practical way of filling the small intestine with opaque material.

If we are correct in assuming that the double contrast enema examination will lead to a diagnosis of early minimal lesions, it is hoped that better therapeutic results will follow in that large group of cases presenting chronic ulcerative cavernous pulmonary tuberculosis in which this complication arises.

SUMMARY AND CONCLUSION

1. One thousand consecutive autopsies at the Philadelphia General Hospital were analyzed to show the incidence of intestinal tuberculosis and its relation to pulmonary tuberculosis.

2. Ulcerative intestinal tuberculosis was shown to have its highest incidence in cases of fibro-ulcerative cavernous pulmonary tuberculosis. It was so confined to this group that one might suspect that there is no intestinal ulceration without pulmonary ulceration. It was shown to occur in cases of early or exudative pulmonary tuberculosis, in which, however, it had its lowest incidence (18 per cent). It occurred more frequently in women of the Negro race between 20 and 40 years of age. It was not observed in any case of chronic fibroid or miliary tuberculosis.

3. Primary hyperplastic tuberculosis or tuberculoma of the bowel was not observed in any case.

4. Such nontuberculous intestinal lesions as carcinoma, peptic ulcer, appendicitis and diverticulitis, all with and without perforation, were associated with pulmonary tuberculosis.

5. Cardiovascular-renal disease, chronic cholecystitis, cholelithiasis, and cirrhosis of the liver were commonly noted diseases associated with pulmonary tuberculosis with and without intestinal ulceration.

6. In view of the uncertainty of the symptoms and physical signs of intestinal tuberculosis, we believe that a strong inferential diagnosis of the disease can be made when one considers it in its relation to the various types of pulmonary tuberculosis and as a result of evidence secured by the double contrast barium enema.

Rittenhouse Plaza.

ABSTRACT OF DISCUSSION

DR. IRVING GRAY, Brooklyn: The opportunity to study the incidence of tuberculosis of the gastro-intestinal tract clinically and at the autopsy table was afforded me at the Sea View Hospital, Staten Island, where there are more than 1,500 patients with pulmonary tuberculosis. The most frequent site of the

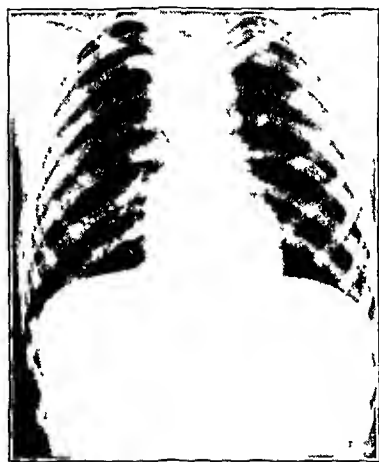


Fig. 1.—Anteroposterior view showing textile bobbin in esophagus.



Fig. 2.—The inflammatory mass surrounding the bobbin is visible in the lateral view.

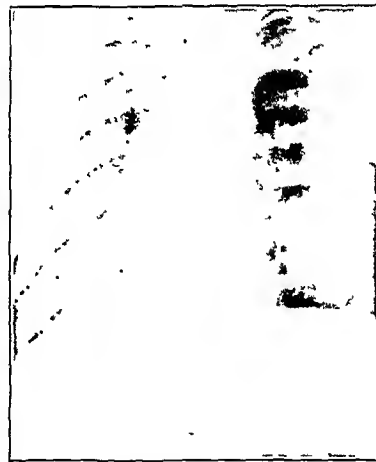


Fig. 3.—Appearance after the ingestion of opaque oil. This shows that the upper lumen of the esophagus is separated from the bobbin by 1 cm. of scar tissue.

intestinal lesion was the terminal ileum. Old and fresh mucosal ulcerations were occasionally noted within the same segment of the intestine. In the severe cases of the caseous pneumonic type, extensive ulcerations of the small bowel have been noted sometimes involving the entire bowel as high as the upper coils of the jejunum. Tuberculosis in the colon is not common. The ileocecal junction is the most frequent site of tuberculosis of the gastro-intestinal tract. The presence of tuberculosis of the colon is distinctly diminished as one proceeds from the cecum to the sigmoid. The double contrast barium enema, as suggested by Dr. Boles and Dr. Gershon-Cohen, is of value in the type of case in which disease of the colon is suspected. As a diagnostic method, it offers more aid than the ordinary contrast enema. The authors have called attention to the fact that there is no parallel between clinical symptoms and the extensive pathologic change in the bowel. Gastro-intestinal tuberculosis is a common complication of pulmonary tuberculosis and I agree that it is due to the swallowing of tubercle bacilli and not to a blood stream infection. The authors are probably correct when they state that the involvement of the serosa is due to a blood stream infection. In my experience, intestinal tuberculosis occurs somewhat more frequently in the female than in the male. This may be explained in part by studies showing the gastric acidity to be lower in the female than in the male. As Van Sandt and others have shown, there is a tendency in all the groups for gastric acidity to be lower in the female than in the male.

Clinical Notes, Suggestions and New Instruments

SHARP DISSECTION THROUGH AN ESOPHAGOSCOPE: REMOVAL UNDER BIPLANE FLUOROSCOPE OF BOBBIN IN ESOPHAGUS

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The prompt removal of a metallic object caught in the esophagus rarely presents difficulties to a surgeon with modern training in this specialty. When such an object has been impacted over a long period, however, the resultant scarring complicates the issue.

REPORT OF CASE

A girl, aged 7 years, was referred to me from another state, Jan. 10, 1933, with the following history: In the summer of 1930 she had swallowed a textile machine bobbin. Although she duly reported this fact to her parents, no particular attention was paid to her story until after many months they noticed that she was having difficulty in swallowing and that she had lost weight and strength. Two years after the accident the presence of the bobbin in the upper part of the esophagus was proved by a roentgenogram. Dr. N. E. Sellers of Anniston, Ala.,

performed a gastrostomy to prevent starvation and dehydration. Her general condition growing steadily worse, in spite of the operation, six months later she was brought to Atlanta.

At the first endoscopic examination it was found that the esophagus, markedly dilated for 5 cm., was then completely obstructed with dense scar tissue, which showed no sign of the lumen. The condition of the esophagus was checked by a roentgenogram taken after she had swallowed some opaque oil. The plate revealed that the scar tissue separating the upper lumen of the esophagus from the bobbin was 1 cm. thick. Since it was impossible to find any opening through this, it was out of the question to attempt to dilate the esophagus by ordinary measures. To restore a lumen and to remove the bobbin therefore required, in spite of the risk, actual cutting through the scar tissue. Laryngoscopic knives were too short to be used through the esophagoscope, so a small Bard-Parker handle was cut down and fused on a metal rod; a suitable blade completed a satisfactory knife.

Under the guidance of Dr. W. F. Lake by means of a biplane fluoroscope, I cut through scar tissue until the bobbin was reached. It was then grasped with bronchoscopic forceps, but it was so firmly embedded that additional dissection was necessary to dislodge it. Moderate hemorrhage was controlled by the application of epinephrine sponges with pressure. On account of the resistance of the proximal scar tissue, I finally decided that it was safer to push the bobbin through the rela-

tively normal distal esophagus. After working it into the stomach, Dr. G. W. Fuller grasped it with forceps inserted through the gastrostomy wound and succeeded in removing it in spite of the disproportion between the size of the bobbin and the size of the opening. Dr. Fuller then passed a string of heavy silk to the forceps, which had extruded the bobbin through the cardia, and this string was drawn back up through the esophagus. The string was left in place to keep the esophagus open by retrograde dilation.

Convalescence was slow but uneventful, and the patient was allowed to leave the hospital, May 8. At the time of dismissal she was able to drink freely, although she was still experiencing a little trouble with a soft diet. Her parents were instructed to bring her back for further dilations in the hope of restoring the normal function of the esophagus, but so far they have not done so.

COMMENT

This case serves to illustrate again the importance of prompt investigation when a child says that he has swallowed or aspirated some unusual object. If this child had been examined even within a few weeks of the time she swallowed the bobbin, its removal would have been a simple procedure devoid of danger. The case further serves to illustrate the necessity for fluoroscopic guidance in two planes when an object that cannot be seen by direct vision must be removed endoscopically. It would have been impossible to locate the bobbin, to cut around it or to push it into the stomach without fluoroscopic guidance.

The case has been of the greatest interest to me in demonstrating how great an insult the esophagus can stand.

Medical Arts Building.

PERITONEAL REACTION TO LIQUID PETROLATUM

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For many years surgeons have hoped for a method of procedure, or a remedy, that would prevent the occurrence of adhesions in the peritoneal cavity. In the past some of the



Fig. 1 (case 1).—General chronic inflammatory reaction occurring in omentum. Note vacuolated spaces surrounded by elongated giant cells; also note groups of giant cells. Elsewhere are the lymphocytes, fibroblasts and other cells.

substances that have been used are petrolatum, iodine and petrolatum, and liquid petrolatum. This paper does not deal with the efficiency of those remedies, but it presents a report

of interesting changes of an inflammatory nature that have occurred in the peritoneal cavities of two patients.

In August 1934 Mrs. G. W., aged 53, was undergoing an abdominal operation at Grady Hospital. The surgeon (T. C. D.) observed a quantity of peculiar chylus-like fluid in the peritoneal cavity. Likewise there was considerable fatty necrosis of the omentum. On several areas of the jejunum there were

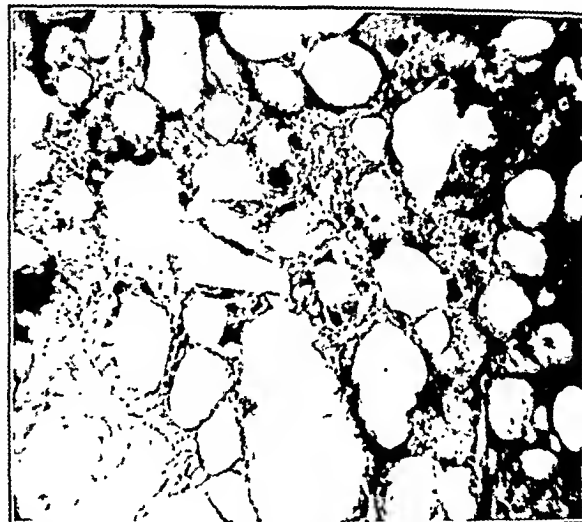


Fig. 2 (case 2).—Vacuoles of varying size with the giant cells about them and the specific inflammatory reaction as described in the paper. The giant cells are of a foreign body type and in some places are found to be completely encircling the oil globules just as though the reaction was one of an inclusion body type.

small, elevated, irregular in size, grayish white granular nodules, which tended to spread. When these nodulations were removed, they left a bleeding serosal surface. Similar nodulations were present in the omentum and were removed. Frozen sections of the tissue, examined by the pathologist (J. C. N.), revealed the lesions to be of a chronic inflammatory type.

Further examination of the gross specimens by the pathologist showed the nodulations to be grayish white, irregular in size and very firm, with some elasticity. On pressure, small transparent globules were expressed from them, yet these globules were not at that time recognized. The paraffin sections showed a generalized chronic inflammatory reaction characterized by fibrotic overgrowth, areas of round cell collection, small new formed vessels, few polymorphonuclears, small necrotic areas and large vacuolated spaces, which were surrounded by elongated foreign body giant cells. In some parts of the section the giant cells seemed to aggregate; in others they elongated themselves and had become crescent shaped as they circled fat vacuoles. The microscopic appearance was considered one of foreign body reaction. It was later ascertained by the surgeon (T. C. D.) that the patient had previously been operated on in April 1934 for intestinal adhesions, at which time 4 ounces (120 cc.) or more of liquid petrolatum had been placed in the abdominal cavity in the hope that future adhesions would be prevented. This information was important and these facts, with pathologic consultations as supporting evidence, convinced us that the nodules in the peritoneal cavity of the patient were caused by liquid petrolatum. As a matter of general information and record the history is herewith briefly presented:

CASE 1.—Mrs. G. W., age 53, admitted, Aug. 13, 1934, for pain in the abdomen, had undergone two operations prior to admission. The first operation was performed in October 1933, when a cystic ovary was removed. In April 1934 a second operation was done and numerous adhesions were found. Before the second operation she complained of severe abdominal pains, which were augmented after meals, though the pain was continuous in character. After eating, distention and eructation were sequelae along with the increased pain. The second operation brought no relief, the symptoms becoming increasingly more severe.

The patient was malnourished and emaciated. The abdomen was somewhat distended, though not markedly. There was some doubt as to whether or not fluid was present, and if so there was only a small amount. Two scars were present as evidence of previous operations. Abdominal tenderness was elicited throughout.

Chemical examination of the blood, a blood count and urinalysis gave negative results. The Wassermann reaction was negative.

Drainage from the lesser and greater peritoneal cavity was done. General supporting measures were instituted. The results were excellent, with rapid recovery of the patient.

At a later date, while discussing the interesting peritoneal reaction, Dr. Davison recalled another case:

CASE 2.—A woman, aged 17, single, complained of pain in a previous abdominal scar. She had been operated on in 1932 for cystic oophoritis and abdominal adhesions. She had had a ruptured appendix in 1930. These operations had produced considerable scarring. Oil was poured in the abdominal cavity in 1932 following the second operation.

In 1934 she came to the hospital complaining of a localized pain in the extreme end of the previous incision. This pain was intensified by walking, riding and dancing, and was occasionally accompanied by nausea but no vomiting.

Examination led to the impression of hernia or adhesions. Blood and urine analyses were negative, including a Wassermann test and cellular study.

The diagnosis was made of recurrent abdominal adhesions involving the previous wound scars. Operation was performed (T. C. D.), and the surgeon observed a mass 1 inch in diameter attached to the peritoneal wall and lower end of the incision; elsewhere throughout the parietal and visceral wall were innumerable nodules varying in size from 1 mm. to 2 cm. Several were removed for histologic study. They resembled malignant nodules and were thought to be sarcomatous metastases. Recovery was uneventful, and at present the patient has had no return of symptoms.

In this patient the nodules were similar in color and consistency to those in the first patient yet were larger and more diffuse and resembled malignant metastases. The pathologist reported the lesion as one of sarcoma. The patient had an uneventful operative course and appeared quite well when released from observation. Four roentgen treatments were given. She continued in good health and this fact seemed inconsistent with the previous diagnosis of general sarcomatosis. Another study of the tissue sections showed an inflammatory reaction almost identical with the pathologic changes observed in case 1. The photomicrographs illustrate the tissue changes.

Since the observation of these lesions, more cases of the same type are being recognized, and it seems that many surgeons have been using liquid petrolatum to prevent adhesions.

SUMMARY AND CONCLUSIONS

1. Two patients had peculiar abdominal symptoms. Liquid petrolatum had previously been instilled in the peritoneal cavity of each patient.

2. Later operations in each case disclosed a chronic specific type of inflammation in which the histologic reaction of the two were similar.

3. We feel with the facts at hand at present that liquid petrolatum is responsible in each instance for the inflammatory reaction in the peritoneal cavities.

4. Based on the experiences and observations so far as observed and reported, we feel that liquid petrolatum should not be placed in the peritoneal cavity.

Distinction Between Science and Art.—Art looks to symptoms and occasions, science to evidence and cause. Art is therapeutic and prognostic, science is diagnostic. Art has a method whereas science has a system. Art looks in the main to function while science looks to structure. Art runs for the stomach pump while science studies the phenomena of poisoning. Art submits to be ignorant of much while science submits to be ignorant of nothing. Art acts while science speaks.—Blumer, George: Some Discursive Remarks on Bed-side Diagnosis, *Yale J. Biol. & Med.* 6:571 (July) 1934.

Special Article

ALTHOUGH A NUMBER OF BACTERIOPHAGE AND ANTIVIRUS PRODUCTS HAVE APPEARED ON THE MARKET DURING THE PAST SIX YEARS, RELATIVELY FEW HAVE BEEN SUBMITTED TO THE COUNCIL ON PHARMACY AND CHEMISTRY. NONE HAVE BEEN ACCEPTED FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES. INQUIRIES FROM PHYSICIANS, HOWEVER, AND THE ADVERTISEMENTS OF MANUFACTURERS INDICATE THAT THE EXPLOITATION OF THESE PREPARATIONS IS SUFFICIENT TO WARRANT THE PUBLICATION OF A REPORT ON THEM. AS THE SUBJECT IS RELATIVELY NEW AND OBSCURE, AND AS THE PUBLISHED ACCOUNTS OF BACTERIOPHAGE THERAPY ARE CONFLICTING, IT IS OBVIOUS THAT A REPORT LIMITED TO COMMENTS ON THE COMMERCIAL PREPARATIONS WOULD HAVE ONLY A RESTRICTED USEFULNESS. BELIEVING THAT PHYSICIANS DESIRE A MORE EXTENSIVE PRESENTATION OF INFORMATION ABOUT BACTERIOPHAGE AND THE PRINCIPLES AND POSSIBILITIES OF BACTERIOPHAGE THERAPY, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED THE PUBLICATION OF THIS REVIEW. IN ADOPTING THIS REPORT THE COUNCIL EXPRESSED APPRECIATION OF THE EXCELLENT WORK OF DRs. EATON AND BAYNE-JONES. THE FIRST PART OF THIS REVIEW APPEARED IN THE JOURNAL LAST WEEK; IT WILL BE CONCLUDED IN THE NEXT ISSUE.

PAUL NICHOLAS LEECH, Secretary.

BACTERIOPHAGE THERAPY

REVIEW OF THE PRINCIPLES AND RESULTS OF THE USE OF BACTERIOPHAGE IN THE TREATMENT OF INFECTIONS

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(Continued from page 1776)

Bacteriophage Treatment in Other Suppurative Conditions.—The various accounts of the treatment of suppurative conditions with bacteriophage include cases in which the colon bacillus or staphylococcus, separately or together, were involved. In cases of mixed infections mixed bacteriophages, polyvalent for colon bacillus and staphylococcus, were used.

There have been a number of reports of the successful use of bacteriophage in the treatment of infected wounds. McKinley⁷⁴ reported good results in the treatment of three staphylococcal wound infections but noted marked reactions even when the bacteriophage was applied in the form of a wet dressing. Rice⁷⁵ records excellent results in forty of forty-four wound infections, Dutton,⁵⁶ good results in forty cases. In these cases the bacteriophage was instilled into the wound or applied in the form of a wet dressing. Boyce, Lampert and McFetridge⁶⁵ treated forty-six wound cases with only two failures. Schultz⁵³ reports that eight of seventeen wound infections were "improved" by the use of bacteriophage. MacNeal⁷⁶ also reports favorable results in the treatment of *B. coli* and staphylococcal wound infections.

Similar good results have been reported in the treatment of abscesses and cellulitis by bacteriophage (Sauvé,⁷⁶ Rice⁵⁷ and Boyce, Lampert and McFetridge⁶⁵). Rice states that he has had the best results in abscesses that have not been opened. In these cases the bacteriophage is repeatedly injected into the abscess with a fine needle until liquefaction of the pus occurs. Incision and drainage are then followed by prompt healing. Many of the cases described are said to have been of long standing with no relief from therapeutic measures other than the bacteriophage.

74. McKinley, E. B.: *The Bacteriophage in the Treatment of Infections*, Arch. Int. Med. 32: 899-910 (Dec.) 1923.

75. (a) MacNeal, W. J.: *Uses of Bacteriophages in Wound Infections and in Bacteremias*, Am. J. M. Sc. 184: 805-810 (Dec.) 1932.

76. Sauvé, L.: *A propos du bactériophage*, Bull. et mém. Soc. nat. de chir. 56: 348-354 (March 15) 1930.

Successful treatment of a number of cases of peritonitis and appendical abscesses by instillation of bacteriophage has been reported by Rice⁶⁷ and Rixford.⁷⁷ Ruddell, Sicks and Loomis⁷⁸ report the results of treatment of twenty-seven cases of ruptured appendix with local or general peritonitis. In these cases the bacteriophage preparation was left in the peritoneal cavity after operation. Three of the twenty-seven patients so treated died. The others convalesced at various rates, depending on the severity of the infection.

Other suppurative conditions treated by bacteriophage include infections of the nasopharynx (Théobalt and Moline,⁷⁹ McKinley⁷⁴ and Rice⁵⁷), lung abscesses (McKinley⁷⁴), puerperal sepsis (Rice,⁵⁷ Ruddell, Sicks and Loomis,⁷⁸ MacNeal^{70b}), and hordeolum and other eye infections (Town and Frisbee⁸⁰ and Larkum⁸⁰).

Several other investigators besides those already cited have treated large series of cases of suppurative conditions. Dalsace, Hauduroy and Camus⁸¹ treated 154 cases of staphylococcal infection with local injection and wet dressings of bacteriophage. They observed an average of 76 per cent of permanent cures in about four to five days. Chronic infections were the least affected. Bazy⁸² treated all sorts of surgical infections with bacteriophage. He observed good results in staphylococcal infections only and believes that the action may be due to the bacterial products contained in the lytic filtrates. Sauvé⁷⁶ reported that in 200 cases of staphylococcal and *B. coli* infections treated by bacteriophage there were only eight failures, cures being obtained in from five to ten days. In many cases cures were obtained in less than three days in conditions that usually required much longer to heal. This author also believes that substances in the filtrates other than the bacteriophage may play a part in the therapeutic effect. Christ⁸³ also reports cures in cases of staphylococcal and *B. coli* infections treated by the usual methods of surgical intervention as well as by bacteriophage. In some instances striking cures occurred in cases in which previous surgical therapy had failed.

It is impossible to read these many reports of the successful bacteriophage treatment of suppurative conditions without feeling that a great many of the authors are extremely uncritical. It is difficult to believe that success in from 95 to 99 per cent of cases has been due to a therapeutic agent that has proved so disappointing in the more critically conducted laboratory experiments. A consideration of many of the detailed case reports of what are stated by the investigators to be dramatic cures reveals that the process of recovery has not run an unusually swift course. Many of the conditions treated are self limiting, and, in those which are not, the usual methods of surgical intervention have been practiced. The fact that the patient recovered has,

therefore, little significance. The speed of recovery as compared with other similar conditions not treated by bacteriophage may have some significance, but it is well known that many suppurative conditions may show prompt improvement in from twenty-four to forty-eight hours, especially after drainage has been instituted. The prevention of recurrence in such conditions as furunculosis and the healing of chronic suppurative conditions of long standing under bacteriophage therapy are perhaps the most convincing effects observed. These effects could well be due to the action of bacteriophage filtrates as vaccines.

A number of the investigators cited have tested their bacteriophages for potency against the infecting organisms from each case. When resistant forms were involved, the therapy was generally found to be without effect. Apparently some investigators have used stock or commercial preparations and reported good results when they were not certain that the bacteriophages used were active. For example, Boyce and his associates,⁸⁵ and Ruddell and his collaborators,⁷⁸ used bacteriophage preparations supplied by a commercial firm. They reported good or dramatic results in a considerable series of infections including peritonitis, furunculosis, abscesses and wounds, as already described. However, Straub and Applebaum⁸⁴ found that samples of bacteriophage preparations from the same company in the same year contained preservatives (which may destroy bacteriophage) and that the staphylococcus preparation contained a weak lytic agent, but there was no detectable lytic activity in the streptococcus or streptococcus-colon bacillus bacteriophage preparations.

Of the various suppurative conditions treated by bacteriophage, the results with furunculosis and staphylococcal abscesses seem most convincing. Acne and other pyodermias and osteomyelitis have apparently not responded very well. The reports concerning the septicemias and peritonitis are not very convincing, since there seems to have been little change in the mortality in these diseases as a result of bacteriophage therapy. Too few cases of staphylococcal meningitis treated by bacteriophage have been reported to warrant any conclusions. The use of the bacteriophage in infected wounds and other suppurative conditions appears, in our opinion, to require a more critical investigation before the therapeutic value of the agent in these cases may be claimed. Staphylococcal infections in general appear to have responded the best to bacteriophage therapy, *B. coli* infections to a less extent, and streptococcal infections very little or not at all.

Bacteriophage Therapy in Infectious of the Urinary Tract.—In general the accounts of bacteriophage therapy in urinary infections are not as enthusiastic as those of the treatment of some of the suppurative conditions already described. In the majority of cases *B. coli* was the infecting organism, sometimes mixed with staphylococcus and other bacteria.

From a consideration of the various papers it is evident that only certain cases of urinary infection are suitable for treatment with bacteriophage. Bacteriophage resistant organisms occur very frequently. Larkum⁸⁵ found that the urines of only 40 per cent

77. Rixford, E.: Bacteriophage in Surgery of Colon and Rectum, *Ann. Surg.* **94**: 640-647 (Oct.) 1931.

78. Ruddell, K. R.; Sicks, O. W., and Loomis, N. S.: Observations on Use of Bacterial Lysates in Surgical Cases, *Am. J. Surg.* **22**: 337-342 (Nov.) 1933.

79. Théobalt, E., and Moline, R.: L'association antivirus-bactériophage dans le traitement des infections du rhino-pharynx, *Presse méd.* **39**: 1417-1418 (Sept. 26) 1931.

80. Town, A. E., and Frisbee, Frances C.: Bacteriophage in Ophthalmology: Preliminary Report, *Arch. Ophth.* **8**: 683-689 (Nov.) 1932.

81. Dalsace, R.; Hauduroy, P., and Camus, P.: d'Herelle's Bacteriophage in Treatment of Staphylococcus Infections, *Presse méd.* **34**: 1195-1197 (Sept. 22) 1926.

82. Bazy, L.: Antistaphylococcus Bacteriophage in Treatment of Surgical Infections, *Compt. rend. Soc. de biol.* **92**: 485-486 (Feb. 27) 1925; *abstr. J. A. M. A.* **84**: 1389 (May 2) 1925.

83. Christ, A.: Erfahrungen mit Bacteriophag in der Behandlung eitriger Infektionen, *Schweiz. med. Wchnschr.* **61**: 1238-1241 (Dec. 19) 1931.

84. Straub, Margaret E., and Applebaum, Martha: Studies on Commercial Bacteriophage Products, *J. A. M. A.* **100**: 110-113 (Jan. 14) 1933.

85. Larkum, N. W.: Bacteriophage in urinary infection: I. The incidence of bacteriophage and of *Bacillus coli* susceptible to dissolution by the bacteriophage in urines: Presentation of cases of renal infection in which the bacteriophage was used therapeutically; II. Bacteriophages in the bladder, *Biol. Absts.* **1**: 316, 1927.

of the patients examined by him contained susceptible organisms, and 36 per cent contained bacteriophage. Caldwell⁸⁶ made a study of 112 infected urines. Of these, twelve contained gram-positive spore bearing bacilli, and seventeen contained organisms of the *B. pyocyaneus* group. Of 100 urinary cultures of non-spore forming organisms, 74 per cent were lysed with bacteriophage from sewage filtrates and 7 per cent were not lysed. Twenty-six of these 100 urines contained native bacteriophage in association with every cultural group of organisms and cultures in every state of dissociation and all degrees of sensitiveness to lysis. Apparently contact of organisms and bacteriophage in the urinary tract did not necessarily produce forms resistant to lysis by other races of bacteriophage derived from sewage.

MacNeal⁷¹ and Cowie⁸⁷ have emphasized the importance of bringing the reaction of the urine near to p_H 7.0, by administering sodium citrate, before bacteriophage therapy is attempted. The acid reaction of many urines is sufficient in itself to inhibit the lysis of bacteria by bacteriophage.

Bacteriophage therapy has generally been found useless in pyelitis or cystitis secondary to some other disease of the urinary tract. Thus in abscesses of the kidney, obstruction, renal calculus, hydronephrosis, and renal tuberculosis, other measures are more effective, as stated by Hinman⁸⁸ and Ravina.⁸⁹ MacNeal, Frisbee and Applebaum⁹⁰ have recommended the intravenous use of bacteriophage in genito-urinary infections in which the lymph spaces or renal cortex are involved. They believe that successful bacteriophage therapy in urinary infections proceeds from above downward.

The methods of treatment of urinary infections with bacteriophage are quite varied. Probably the best results have been obtained by combined subcutaneous injections and irrigations of the bladder and renal pelvis with bacteriophage, as described by MacNeal.⁷¹ Intramuscular and oral administrations have also been used.

Dalsace,⁹⁰ using the oral, intramuscular and subcutaneous routes, cured six out of nine cases of staphylococcal urinary infection and obtained cures in two and improvement in eight out of twelve cases of *B. coli* infection, in which the organisms were sensitive to lysis in vitro. In two cases of staphylococcus and five cases of *B. coli* infection the organisms were resistant, and treatment failed. Munter and Boenheim⁹¹ treated thirteen cases of cystitis in infants and children by intramuscular injection of *B. coli* bacteriophage, observed a marked reaction in three cases and obtained no influence on the course in nine out of the thirteen cases. In several cases the organisms were resistant to lysis. Zdansky⁹² treated twenty cases of cystitis by introducing bacteriophage into the washed bladders. Six cases were cured. Three of these had not been treated exclusively by bacteriophage, and these three had long

resisted other measures. Cowie⁸⁷ treated eleven cases by subcutaneous injections. Six acute cases were cured bacteriologically in from three to five days and discharged with sterile urine at six, seven, twenty-six and seventy days. Five of these had previously been given urinary antiseptics. Four chronic cases were temporarily relieved, showing sterile urines, but later presented recurrences. In one case there was no effect in the first treatment but the urine became sterile and remained so for seven days after a second course of treatment. All the chronic cases had previously received other forms of treatment.

Frisch⁹³ and Voss⁹⁴ reported good results in the bacteriophage treatment of chronic cases of urinary infection. Christiansen,⁹⁵ however, records only fair results in the treatment of chronic pyelitis with bacteriophage. He states that better results might be obtained if due regard were paid to the presence of resistant forms and the reaction of the urine.

Krueger, Faber and Schultz⁹⁶ report a series of eighty-nine carefully studied cases of urinary infection in children. The causative organism was identified in each case and tested for lysis by the bacteriophage on hand. Only cases presenting bacteriophage sensitive organisms were treated. Autogenous lytic filtrates were used in the treatment of about half of the cases. When only slight lysis occurred the activity of the bacteriophage was increased by serial passage through several cultures of the infecting organism. Tests for naturally occurring bacteriophage in the urines were made with susceptible cultures of *B. coli*, Shiga dysentery bacillus, and staphylococcus. Of twelve acute cases, only one was caused by a resistant colon bacillus, whereas among seventy-seven chronic cases forty-two were infected with resistant organisms. Treatment consisted of subcutaneous injections and instillations into the bladder. Of sixteen chronic cases treated by pooled bacteriophage, three cases showed prompt recovery, and eleven gradual recovery, and two failed to respond. Among nineteen chronic cases treated with autogenous preparations of bacteriophage there were one prompt recovery, fourteen gradual recoveries, and four failures. In twenty-five patients the gradual recovery was not clearly attributed to the bacteriophage. These authors administered alkalinizing drugs in eight cases of acute urinary infection. Five patients reacted unfavorably with no appearance of bacteriophage, three recovered rapidly and the urine of each of these three patients contained a native bacteriophage that lysed completely the causative organism originally isolated. This observation indicates that alkalization of the urine may facilitate the natural occurrence of bacteriophage. Six cases of chronic pyelocystitis were treated with purified bacteriophage containing a minimum of bacterial protein. In none of these cases was any effect observed with the purified bacteriophage preparations, but all six of these cases later responded to treatment with unpurified bacteriophage. These observations of Krueger, Faber and Schultz leave considerable doubt as to how much if any value may be attributable to the bacteriophage itself as a therapeutic agent in urinary infections.

86 Caldwell, Janet A. Bacteriologic and Bacteriophage Study of Infected Urines, *J. Infect. Dis.* 43: 353-362 (Oct.) 1928.

87 Cowie, D. M. Bacteriophage—Observations of the Bacteriophage (Urinary Infections), *Ann. Clin. Med.* 5: 57-77 (July) 1926.

88 Hinman, F. Use of Bacteriophage in Urinary Infections, *S. Clin. North America* 13: 59-62 (Feb.) 1933.

89 Ravina, A. Treatment of Urinary Infections with d'Herelle's Bacteriophage, *Presse med.* 34: 548-549 (May 1) 1926.

90 Dalsace, Robert. Le bacteriophage de d'Herelle: ses applications en thérapeutique urinaire, *Presse med.* 34: 458 (April 10) 1926.

91 Munter, H., and Boenheim, C. Therapeutic Experiments with Bacteriophage Lysin in Infants and Children, *Ztschr. f. Kinderh.* 39: 388-394, 1925.

92 Zdansky, E. Bacteriophage Treatment in Colon Bacillus Infections of Urinary Passages, *Wien. Arch. f. inn. Med.* 11: 535-548 (Nov. 1) 1925; Bacteriophage Treatment of Pyelitis, *abstr. J. A. M. A.* 86: 317 (Jan. 23) 1926.

93 Frisch, B. Treatment of Infections of Urinary Tract with Bacteriophage, *Wien. klin. Wchnschr.* 38: 839-841 (July 23) 1925.

94 Voss, J. A. Researches on Bacteriophage and Bacteriophage Therapy, *Norsk mag. f. lægevidensk.* 90: 853-877 (Aug.) 1929.

95 Christiansen, Harald. Application of Phage in Infection of Urinary Tract, *Ugeskr. f. læger* 92: 377-404 (April 17) 1930.

96 Krueger, A. P.; Faber, H. K., and Schultz, E. W. Observations on Bacteriophage in Infections of Urinary Tract, *J. Urol.* 23: 397-426 (April) 1930.

Schultz⁹⁷ presents the following summary of the clinical results reported to him by physicians to whom bacteriophage had been supplied:

Of 151 cases of chronic *B. coli* pyelitis or cystitis, seventy-two were cured or improved, seventy-nine unchanged. In seventeen of the cases reported improved there were recurrences. In forty-two cases there seemed to be no question as to the immediate response to the treatment, and all these cases with two or three exceptions seem to have been free of anatomic disturbance. On the other hand, among the seventy-nine cases which failed to respond, associated pathologic conditions were present in a considerable number. Larger quantities of bacteriophage up to 50 cc. instilled into the urinary tract seemed to produce better results. Thirty-five of the forty acute cases responded promptly, twenty-seven of these becoming clear within forty-eight hours. In cases of cystitis and pyelitis caused by organisms other than *B. coli*, two of four cases of staphylococcal infection, and two of *Streptococcus faecalis* infection responded promptly. No results were obtained in cases of hydronephrosis and pyonephrosis. In prostatitis and seminovesiculitis caused by staphylococcus, two of seven cases were improved by bacteriophage treatment. Two cases of *B. coli* prostatitis treated by instillations into the bladder responded within forty-eight hours.

Cline⁹⁸ has also reported the successful treatment of twelve cases among fourteen of pyelitis in children by subcutaneous injection of *B. coli* bacteriophage. The author points out that most cases of pyuria in children respond well to careful medical management, but he also hopes that the use of bacteriophage may reduce the number of cases which ultimately require surgical intervention.

The mechanism of the therapeutic action of bacteriophage in certain cases of urinary infection is as little understood as it is in other infections. Caldwell⁹⁹ found that bacteriophage administered by subcutaneous injection and instillation into the bladder could be detected in infected urines but disappeared when the urine became sterile. In many cases there was a simultaneous occurrence of bacteria and bacteriophage and in some cases the bacteriophage persisted for months after the treatment was discontinued. Larkum⁸⁰ found that artificial introduction of bacteriophage into the body resulted in the transitory presence of the lytic agent in the urine, but that this usually disappeared in twenty-four hours. These observations of Caldwell and Larkum indicate that bacteriophage persists in the urine only when strains of bacteria susceptible to or capable of carrying the bacteriophage without lysis are present. Under ordinary conditions the constant dilution of the bladder contents would tend to wash out the bacteriophage in a short time, as pointed out by Zdansky.⁹²

The inhibitory action of colloidal substances in the urine and the production of resistant forms of bacteria seem to present the real problems of bacteriophage therapy in uncomplicated urinary infections. Larkum is of the opinion that bacteriophagy can occur in the bladder but that the process is probably not identical with that in the test tube. Caldwell found that many of the bacteria resistant to one race of bacteriophage could be lysed by bacteriophage from another source.

The possible rôle of immunization in the therapy is also noted by Ravina,⁸⁹ who found that stock vaccines or autogenous vaccines gave good results in urinary infections.

It must also be noted that the uncomplicated chronic and acute cases which respond best to bacteriophage therapy are often very readily cured by other measures, whereas many of the cases that do not respond to this therapy may often be cured by suitable surgical or medical treatment. Recurrences of infection after bacteriophage therapy are apparently very frequent.

Pelouze and Schofield¹⁰⁰ stated that they produced a bacteriophage active against the gonococcus. They observed that water extracts of ten-day old cultures of the organisms on hydrocele fluid agar contain, after filtration through a Berkefeld filter, an agent that kills suspensions of the gonococcus in hydrocele fluid in from five to twenty-four hours. The active agent is termed "gonophage." Pelouze and Schofield state that the "gonophage" is transmissible in series by subculturing from organisms that have been subjected to the action of the filtrates for thirty minutes but have not been killed. Addition of unfiltered suspensions of these organisms to suspensions of normal gonococcus kills the latter in twenty-four hours. The "gonophage" is said to be strictly species specific and the gonococcus is not affected by *B. coli* or staphylococcus bacteriophages made in the same way as the "gonophage." The "gonophage" is active in dilutions of 1:1,000. The gonococci in the suspensions used were not actively growing, and Pelouze and Schofield were unable to demonstrate any distinct clearing of the suspensions or any plaque formation in gonococcus colonies on agar. No attempts to transmit the "gonophage" in series by filtrates of cultures acted on by it, as may be done with true bacteriophages, are reported. Forty patients with acute gonorrhea were treated by subcutaneous injection of the "gonophage." Although some results that might be considered favorable were obtained, on the whole the course of the disease was not shortened or changed. Instillation of the "gonophage" into the urethra resulted in a purulent response and edema, which Pelouze and Schofield believe to be due to a gonotoxin contained in the filtrates.

Schmidt-Labaume and Fonrobert¹⁰¹ and Balozet and Lepinay¹⁰² have also observed the occurrence of a growth inhibiting substance in filtrates of gonococcus cultures and gonorrheal discharges, but this substance was not transmissible in series. These investigators were unable to demonstrate the production of gonococcus bacteriophage either in test tube or animal experiments.

There is no convincing evidence that a bacteriophage against the gonococcus has yet been discovered.

Schultz⁹⁷ has suggested the use of bacteriophage against the secondary invaders, such as staphylococcus in gonorrhea, but so far the number of cases treated in this way has not been large enough to warrant any conclusions.

Bacteriophage in the Treatment of Enteric Diseases.—Bacteriophage has been used quite extensively in the treatment of typhoid and paratyphoid fever, the bacillary dysenteries, and cholera. In the majority of cases

97. Schultz, E. W.: Bacteriophage as Therapeutic Agent in Genito-Urinary Infections, *California & West. Med.* 36: 33 (Jan.), 91 (Feb.) 1932.

98. Cline, G. M.: Treatment of Pyelitis in Children with *B. Coli* Bacteriophage, *Illinois M. J.* 60: 493-497 (Dec.) 1931.

99. Caldwell, Janet A.: Bacteriophage in Urinary Infections Following Administration of Bacteriophage Therapeutically, *Arch. Int. Med.* 41: 189-197 (Feb.) 1928.

100. Pelouze, P. S., and Schofield, F. S.: The Gonophage: A Laboratory and Clinical Study of the Bacteriophage Principle Elaborated by the Gonococcus, *J. Urol.* 17: 407-438 (April) 1927.

101. Schmidt-La Baume, F., and Fonrobert, H.: Ueber Versuche zur Erzeugung von Bacteriophagen gegen Gonokokken, *Zentralbl. f. Bakt.* (Abt. 1) 112: 379-381 (June 19) 1929.

102. Balozet, L., and Lepinay, E.: Recherche d'un principe bactériophage contre le gonocoque, *J. d'urolog.* 25: 357-358 (April) 1928.

the lytic agent has been administered by mouth. Apparently few of the investigators using this method of treatment have taken the trouble to investigate the possible destructive action of the acid gastric juice on the bacteriophage and the inhibitory action of various secretions of the gastro-intestinal tract. Riding²⁵ reports that dysentery bacteriophage was not destroyed by hydrochloric acid at pH 3, but he found that intestinal mucus inhibited its action. Arnold and Weiss¹⁰³ showed that bacteriophage was not destroyed by trypsin, although Wollman¹⁰⁴ showed that certain races of Shiga bacteriophage were inhibited by trypsin, while other Shiga bacteriophages and the *B. coli* bacteriophages were not. As previously stated, bile is inhibitory to the lytic action of bacteriophage. From the evidence that can be found, it appears that the various substances in the gastro-intestinal tract may or may not have inhibiting actions, depending on the race of bacteriophage used and the physiologic state of the patient at the time of treatment. When the bacteriophage is given by subcutaneous or intravenous injection, its action on bacteria in the wall and lumen of the intestine might be less subject to inhibition, provided it is actually excreted into the intestine; but this point has not yet been adequately proved.

Although bacteriophage is readily recovered from the feces of man and animals, there is little evidence as to what extent lysis of bacteria occurs in the intestinal canal. d'Herelle is of the opinion that the recovery from certain diseases, such as typhoid, dysentery and cholera, is due to the development of bacteriophage, which then destroys the causative organisms. He states that he proved this contention by the frequent demonstration of bacteriophage in the stools of convalescents. It has been shown by a number of investigators, however, that bacteriophage may occur in the intestine of patients dead of enteric diseases, and that in convalescents no bacteriophage may be demonstrable. Examples of this have been furnished by Hauduroy,¹⁰⁵ Lisbonne and Boulet,¹⁰⁶ Taylor, Greval and Thant,¹⁰⁷ and Burnet, McKie and Wood.¹⁰⁸

Bacteriophage in the Treatment of Typhoid and Paratyphoid Fever.—Beckerich and Hauduroy¹⁰⁹ were among the first to use bacteriophage in the treatment of these diseases. They administered bacteriophage by mouth and subcutaneous injection in five cases of typhoid and in two of paratyphoid, with two failures and several questionable responses. Smith¹¹⁰ treated seven cases of typhoid by bacteriophage and obtained an improvement in symptoms in five cases that showed negative blood cultures. In the two cases with positive blood cultures no response was observed. Violle and Roure¹¹¹ observed marked reactions consisting of rise in temperature and chills after oral administration of bacteriophage to patients with typhoid. In some cases

bacteriophage was detected in the blood twenty-four hours after treatment. Only questionable responses were obtained. Cowie⁸⁷ treated several cases of typhoid with typhoid bacteriophage isolated from the stools of convalescent scarlet fever patients but obtained no beneficial results. He found that the bacteriophages isolated from scarlet fever patients were more active against the typhoid bacillus than those isolated from typhoid patients. Rutschko and Melnik¹¹² treated seventeen cases of typhoid by subcutaneous bacteriophage injections and fifty-two by oral administration of bacteriophage. In most cases the treatment was given in the second or third week of the disease. Reactions indicated by diarrhea, reappearance of rose spots and increased pyrexia followed the administration of the bacteriophage. This was generally followed by a fall in temperature and relief of symptoms. These effects were noted in about 50 per cent of the cases. The cases least affected were those treated by mouth. In the sixty-nine cases treated by bacteriophage there were four deaths, a mortality rate of 5.8 per cent. The mortality rate in cases not treated by bacteriophage was from 7.5 to 8.5 per cent. Gernez and Breton¹¹³ treated eight cases of typhoid and paratyphoid fever by intravenous injection of bacteriophage freed from all but traces of protein by electrophoresis. This preparation gave no reactions, but a fall in temperature and a rapid disappearance of symptoms were noted. One case was cured in five days. Dutton⁵⁰ obtained marked improvement in nine cases of typhoid and no effect in nine others. Strains from several of the improved cases were found to be resistant to the action of the bacteriophage used.

This brief summary of some of the literature on the treatment of typhoid with bacteriophage indicates that this agent has, apparently, no striking effect on the course of the disease except perhaps on the production of reactions followed by temporary relief. Especially is this the case in patients treated by injection of the lytic agent.

Bacteriophage in the Treatment of Bacillary Dysentery.—Like the accounts of the bacteriophage treatment of typhoid, the reports of the therapeutic value of bacteriophage in dysentery are conflicting and for the most part inconclusive. Spence and McKinley¹¹⁴ treated twenty proved cases of dysentery, nine due to Shiga bacillus and eleven to the Flexner type, with a bacteriophage lytic for the organisms and administered in doses of 10 cc. by mouth three times a day. At the same time twelve cases were treated by the usual methods. The average time, after onset of the disease, at which treatment was begun was 3.1 days. In the bacteriophage treated cases the average time of recovery from the beginning of treatment was 5.8 days and the mortality was 10 per cent. In the twelve patients not receiving bacteriophage the recovery time was 12.8 days and the mortality 40 per cent. Compton¹¹⁵ summarized the results reported by physicians who used a polyvalent bacteriophage in the treatment of sixty-six cases of bacillary dysentery. In thirty-five cases there was a

103. Arnold, L., and Weiss, E.: Bacterial Protein-Free Bacteriophage Prepared by Tryptic Digestion, *J. Immunol.* **12**: 393-399 (Nov.) 1926.

104. Wollman, E.: Trypsin and Bacteriophage, *Compt. rend. Soc. de biol.* **90**: 59-60 (Jan. 25) 1924.

105. Hauduroy, P.: Part of Bacteriophage in Recovery from Typhoid Fever, *Presse méd.* **33**: 525-526 (April 22) 1925; abstr. in *Compt. rend. Soc. de biol.* **93**: 100-101 (June 9) 1925.

106. Lisbonne and Boulet: Fièvre typhoïde et principe bactériophage, *Presse méd.* **33**: 504 (April 16) 1925.

107. Taylor, J.; Greval, S. D. S., and Thant, U.: Bacteriophage in Bacillary Dysentery and Cholera, *Indian J. M. Research* **18**: 117-136 (July) 1930.

108. Burnet, F. M.; McKie, M., and Wood, I. J.: Investigations on Bacillary Dysentery in Infants with Special Reference to Bacteriophage Phenomena, *M. J. Australia* **2**: 71-78 (July 19) 1930.

109. Beckerich, A., and Hauduroy, P.: Bacteriophage and Its Therapeutic Applications, *J. Bact.* **8**: 163-171 (March) 1923.

110. Smith, J.: The Bacteriophage in the Treatment of Typhoid Fever, *Brit. M. J.* **2**: 47-49 (July 12) 1924.

111. Violle, H., and Roure, M. C.: Bacteriophage Treatment of Typhoid, *Presse méd.* **33**: 1236 (Sept. 16) 1925.

112. Rutschko, I. E., and Melnik, M. L.: Versuche über die therapeutische Verwendung von Bakteriophagen bei Typhus abdominalis, *München. med. Wchnschr.* **79**: 1355-1356 (Aug. 19) 1932.

113. Gernez, C., and Breton, A.: Contribution au traitement des fièvres typhoïdes et paratyphoïdes, par le principe lytique transmissible (ou bactériophage) préparé par électrophorèse, *Presse méd.* **41**: 580-581 (Jan. 10) 1933.

114. Spence, R. C., and McKinley, E. B.: Therapeutic Value of Bacteriophage in Treatment of Bacillary Dysentery, *South. M. J.* **17**: 563-568 (Aug.) 1924.

115. Compton, A.: Antidysentery Bacteriophage in Treatment of Bacillary Dysentery; Record of 66 Cases Treated, with Inferences, *Lancet* **2**: 273-275 (Aug. 10) 1929.

reduction of the number of stools to two or three a day and marked general improvement by the second day. In sixteen cases there was some reduction in the number of stools and slight or no general improvement. In fifteen cases there was no effect by the fourth day after treatment, or death occurred. The treatment was seldom successful in children under 1 year of age. Failures varied from 22 to 46 per cent in the age group 1 to 10 years. No complete failures in patients over 10 years of age were reported. Early treatment before the third day gave only 10 per cent of failures, while in cases treated after the fourth day there were from 35 to 50 per cent of failures. Taylor, Greval and Thant¹⁰⁷ observed the effects of oral administration of bacteriophage of high activity to twenty-six cases of proved bacillary dysentery and compared the results obtained with twenty control cases, the stools being tested daily for bacteriophage. Despite the presence of bacteriophage of higher activity in the stools of treated patients, as compared with the controls, no material difference was observed in the progress of the patients in regard to either duration or mortality. A detailed examination of cases showed no relationship between the incidence of bacteriophage, either naturally developed or artificially administered, and the progress of the case. Riding²⁵ treated a series of forty proved cases of dysentery with a highly active bacteriophage supplied by d'Herelle. Eight cases served as controls. The bacteriophage was administered by mouth. No dramatic results of the treatment were demonstrated. Riding could not detect bacteriophage in the stools of normal individuals who had received 4 cc. by mouth. London¹¹⁶ reports treating orally with bacteriophage a series of 141 cases of dysentery which were not diagnosed bacteriologically. Seventy-two control cases were treated with emetine and saline. In the group receiving bacteriophage the mortality was 8.5 per cent and the average duration twenty-one days. In the group receiving emetine and saline the mortality was 12.5 per cent and the average duration eighteen days. The lack of proper bacteriologic control to differentiate amebic from bacillary dysentery in this series of cases makes the results less significant than they might have been. Kessel and Rose¹¹⁷ treated alternate cases with bacteriophage by mouth in a series of sixty-eight cases of Flexner type dysentery, mostly in infants. Cases caused by bacteriophage resistant organisms were not included in the first series of twenty-two cases in which isolation of the organism and tests for in vitro bacteriophages were done before bacteriophage was given an average of four days after admission. In the second series of forty-four cases stock bacteriophage was administered immediately after hospitalization. All patients received the same routine systemic treatment. No difference in the course of the disease or the mortality (four deaths in the treated and three in the untreated group) could be detected in the thirty-four treated cases as compared with the thirty-two untreated cases. Administration of bacteriophage by enema was also without effect. These authors also quote a report by Asheshov, Taylor and Morison,¹¹⁸ who observed fifteen deaths in fifty-seven bacteriophage treated cases and fifty deaths in ninety-two untreated cases.

These results indicate that, despite the enthusiastic predictions of d'Herelle, the oral administration of bacteriophage in cases of bacillary dysentery has little effect. Injections of bacteriophage appear to have been tried only rarely in these diseases. Some of the work indicates that bacteriophage administered by mouth in cases of dysentery may at least occasionally be excreted in the feces, but it is doubtful whether any lysis of the causative organism in the intestine actually occurs. Despite these inconclusive results Charnock¹¹⁹ has recently stated in a review that the use of bacteriophage has met with greatest success in enteric diseases and that it is used as the sole treatment for bacillary dysentery in Brazil by Da Costa Cruz. (See also d'Herelle.⁴⁸)

Bacteriophage in the Treatment of Cholera.—A short review of several papers on this subject is included here because d'Herelle's¹²⁰ reported dramatic successes in the treatment of cholera are often cited by authors seeking to establish the therapeutic value of bacteriophage. d'Herelle, as a result of the study of cases of cholera in India, reported that mortality in bacteriophage treated cases was 8 per cent and in untreated cases 62 per cent. He claims to have stopped epidemics of cholera in certain localities by adding cholera bacteriophage to the drinking water. He also believes that the cholera bacteriophage is disseminated through the excreta of treated and convalescent patients, thus "propagating recovery."

More recently Morison¹²¹ has attempted to confirm these conceptions of d'Herelle. Two areas in India were selected, one of these was used as a control, and in the other bacteriophage was dispensed for the treatment of all cholera cases. In 1930 sixty-three cases were treated with bacteriophage. During the latter half of 1930 and all of 1931 there was no epidemic of cholera in the bacteriophage treated area, whereas in the control district there were four small epidemics in the same period of time. At the time the report was published the results were not conclusive but it has been reported in an unpublished communication that since 1930 there have been numerous cases of cholera in the control area and none in the area where bacteriophage was used.

Taylor, Greval, and Thant,¹⁰⁷ using a cholera bacteriophage of maximum activity, observed a mortality of 57 per cent in fourteen treated cases of cholera compared to a mortality of 53 per cent in a group of nineteen controls. Alternate cases were treated and stools were examined for the presence of cholera vibrio and bacteriophage. In the majority of cases that recovered no bacteriophage active for the causative organism was found in the stools. The authors conclude that recovery from cholera is independent of the action of bacteriophage and the therapeutic administration of bacteriophage is without effect. Souchard¹²² has also attempted to confirm the work of d'Herelle. This author used a bacteriophage supplied by d'Herelle, prepared it in the same way and increased its activity by serial passages through cholera vibrio cultures. Oral administration of 6 cc. in unselected cases was done just as d'Herelle had described. Despite all these precautions to imitate the methods used by d'Herelle, the mortality in a group of twenty-seven treated cases was 89 per cent, only

116. London, J.: Bacteriophage in Its Clinical Aspect, Indian M. Gaz. 65: 370-371 (July) 1930.

117. Kessel, J. F., and Rose, E. J.: Bacteriophage Therapy in Bacillary Dysentery of Flexner Type, Ann. Int. Med. 6: 1193-1199 (March) 1933.

118. Asheshov, I.; Taylor, J., and Morison, J.: Recherches sur le bacteriophage dans l'Inde Britannique, Bull. de l'Office internat. d'hyg. pub. 22: 1882-1892 (Oct.) 1930.

119. Charnock, D. A.: Phenomenon of Bacteriophagy, Am. J. Surg. 19: 292-295 (Feb.) 1933.

120. The d'Herelle Bacteriophage in the Treatment of Cholera, Paris Letter, J. A. M. A. 90: 783-784 (March 10) 1928. d'Herelle.⁴⁸

121. Morison, J.: Bacteriophage in the Treatment and Prevention of Cholera, London, H. K. Lewis & Co., Ltd., 1932.

122. Souchard, L.: Essais thérapeutiques du choléra par le bacteriophage de d'Herelle, Ann. de l'Inst. Pasteur 44: 125-140 (Feb.) 1930.

three recoveries being obtained. This mortality was identical with the prevailing mortality in untreated cases at the same time in the same locality. This author did observe, however, that in some cases, when administered early in the disease, the bacteriophage appeared to cause a temporary remission in symptoms and prolonged life, although the end result was the same as in untreated cases.

(To be continued)

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—ED.

THERAPY OF CHANCROID AND BUBO DIAGNOSIS

A few days after exposure there is a soft, flabby erosion and then an ulcer, which is inflammatory, painful and tender. It may be single or multiple and has an irregular, undermined border and an uneven base covered by a dirty purulent exudate. The streptobacillus of Ducrey can be found in the exudate.

Chancroid and its bubo must be differentiated from (1) syphilitic infection, (2) fusospirochetal balanitis, (3) granuloma inguinale, (4) lymphogranulomatosis inguinale, (5) herpes progenitalis and (6) epithelioma.

1. Every ulcer on the genitalia of a sexually active person should be considered a syphilitic chancre until proved otherwise and no treatment should be addressed to it until an absolute diagnosis has been made. In untreated cases, dark field examination for *Spirochaeta pallida* is positive in more than 90 per cent of syphilitic cases even on first examination. If the ulcer has received treatment, especially with mercury preparations, this should be removed, the sore cleansed and kept clean with physiologic solution of sodium chloride frequently applied and the dark field examination repeated for three successive days. Material removed by puncture of one of the regional glands may be used for the dark field examination if the lesion itself is contaminated by applications. If it still remains negative, exudative material from the lesion may be used for a Wassermann test or microscopic precipitation test such as the Kahn. Only after this has been found negative may more active local treatment be applied. A Wassermann "follow up" with weekly tests if possible for the first six weeks or at least a test on the fourth, eighth and twelfth week and the fourth month is essential in all dark field negative sores, if the all important early diagnosis of syphilis is to be made in all cases; for mixed infection is by no means rare.

2. Fusospirochetal (gangrenous) balanitis must also be ruled out. This is due to fusospirochetosis (q. v.) and is characterized usually by a single lesion with pus of a characteristically foul odor in which the fusiform bacillus and the spirochete are easily found on micro-

scopic examination after staining with dilute carbol-fuchsin. Its characteristic appearance is a very acutely inflammatory one. There is often a history of oral contact. The importance of the prompt recognition of this, though it is rare, will become evident when it is appreciated that local treatment by oxidizing agents (e. g., continuous drop by drop irrigation with Solution of Hydrogen Dioxide or saturated solution of Sodium Perborate) after a dorsal slit, if this is required by phimosis, together with Neosarsphenamine internally, may save extensive destruction or deformity of the penis on account of the fulminating nature of the inflammation and the often rapid extension of the disease. A blood count should be made before giving Neosarsphenamine to rule out agranulocytosis (q. v.).

3. Granuloma inguinale should be excluded by searching for Donovan bodies (inclusion bodies in the leukocytes). Even if these bodies are not found, unusual indolence and chronicity of the condition justify the prompt use of Antimony and Potassium Tartrate intravenously. Antimony thioglycollamide is also effective. In refractory cases, surgery should be resorted to.

4. Lymphogranulomatosis inguinale must also be considered. It starts with a papular lesion from pinhead to pea size or as a small erosion, which heals without a scar. A couple of weeks later the regional lymph glands on one or both sides enlarge and are firm. They become inflammatory and attach themselves to the overlying skin, which becomes livid in color and breaks down to form a sluggish, indolent, painless ulcer. There is sinus formation from the underlying glands to the surface. A Frei test is helpful in making a diagnosis. This is an intracutaneous test which utilizes an antigen made from the pus of a known positive case. A positive test is indicated by the local formation of a firm papule from forty-eight to seventy-two hours after inoculation. Treatment is by surgical extirpation before the formation of fistula. Other procedures have been advocated, such as graduated doses of the Frei antigen given intracutaneously.

5. Herpes progenitalis should be thought of in multiple, grouped, essentially vesicular lesions, resulting in shallow ulcers with crusts, preceded by itching or burning and having a tendency to recurrence. Nevertheless, in spite of even a characteristic appearance, its occurrence after coitus necessitates examination for exclusion of the more serious venereal ulcerations.

6. Epithelioma generally occurs after the fourth decade. It starts as a small papule or nodule, which grows slowly. It is hard, indurated, may break down to form a sluggish ulcer, heals partially with scar formation, and has a tendency to bleed. A biopsy is helpful in making the diagnosis.

CHANCROID

Prophylaxis.—Chancroids are not likely to appear on genitalia that are kept clean. The plentiful use of soap and hot water after coitus practically always suffices to prevent the infection.

Treatment.—The first stage of the treatment of chancroid aims at the destruction of the specific infection with the streptobacillus of Ducrey. As this bacillus cannot withstand temperatures over 115 to 120 F., heat should constitute an important item of the treatment. Cauterization is no longer practiced. It is not necessary and it seems to predispose to bubo. Keeping the patient at rest lessens the liability. Once a clean granulating surface has been secured, ulcer therapy (q. v.) should be resorted to.

1. **Cleansing:** Immersion of the penis in a jar filled with a 1:5,000 solution of Potassium Permanganate (prescription 1), as hot as can be borne, should be continued for fifteen minutes every two hours. If there is phimosis, irrigation by means of a soft rubber "ear syringe" with the hot Potassium Permanganate solution should be assiduously practiced in order to avoid, if possible, surgical methods that bring with them the danger of gangrenous phagedena.

2. **Dressing:** For the choice of dressings in the intervals between the soakings and irrigations, the following indications may be drawn:

(a) A dusting powder may be used for relatively small and readily accessible lesions. Application of Iodoform or, in those who object to its odor, of Thymol Iodide is admissible.

(b) Painting on a 5 per cent solution of Iodoform in ether or a paste made with 1 per cent solution of Phenol is better than the dry powder, which is liable to form a crust under which pus may accumulate. Care that no iodoform is spilled on the clothing or on the fingers may render its use less objectionable. It is well to protect the surrounding tissue with Boric Acid Ointment, to cover the sore with a pledget of gauze thinly spread with petrolatum, and to apply a condom.

(c) Moist dressings are indicated in cases presenting much swelling. A strip of gauze soaked in the permanganate solution is slipped under the foreskin, and compresses with Solution of Aluminum Subacetate, diluted 1 to 10 with water, are used in the intervals

PREScription 1.—Potassium Permanganate

R Potassium permanganate..... 2.00 Gm.
Distilled water..... 100.00 cc.
Mix. Label: 10 cc. per liter of water, as hot as can be borne, for immersion or irrigation in chancroid. For urethral irrigation, 5 cc. per liter.

between irrigations or immersions, until the swelling has subsided.

(d) In chancroid of the urethra, hot irrigation with Potassium Permanganate (1:10,000) solution (prescription 1) followed by injection of Iodoform (3 per cent in oil) or better perhaps by iodoform bougies (prescription 2) should be done three or four times daily immediately after urination.

3. **Destruction of the Lesion:** This is indicated in the graver phagedenic types (ulcus molle serpiginosum). In such cases it is particularly important to keep the undermined border clipped flat and thoroughly cauterized. Pyrogallol may be used in 10 per cent solution, increased up to full strength if required. The actual cautery may be employed, or fulguration. Ultraviolet ray therapy has been advocated here. Radium used to the point of pronounced reaction may succeed when everything else has failed.

4. **Surgery:** If frequent irrigation with hot Potassium Permanganate solution and the compresses, as advised, do not suffice to reduce phimosis, a dorsal slit under Ethyl Chloride general anesthesia is required. Local infiltration anesthesia is not permissible, as it may cause dissemination of infection through the lymphatics. No sutures are to be used. The operation is followed by energetic treatment as described. Circumcision should not be performed until the wound is covered with clean granulations. If the frenulum is perforated, it is best to cut it through after bilateral ligation and then to apply iodoform paste.

5. **Systemic Treatment:** In cases that do not readily respond to this treatment, even though syphilis is not demonstrable, Neoarsphenamine (from 0.4 to 0.6 Gm.)

intravenously may stop the progress of the advancing lesion. If the case is particularly obstinate, suggesting the possibility of an element of granuloma inguinale in the cause, one should resort to Antimony and Potassium Tartrate, giving intravenously a 10 per cent solution, beginning with doses of 1 cc. and increasing each dose given every other day by 1 cc. until a satisfactory result is obtained or until 10 or 12 cc. is given at a dose or the patient's limit of tolerance has been reached, which may be indicated by dizziness, coughing, vomiting, diarrhea, or aching in the back and shoulders, and occasionally toxic deafness. If the patient does not tolerate the Antimony and Potassium Tartrate sufficiently well, antimony thioglycollamide should be administered.

BUBO

Prophylaxis.—Prompt resort to absolute rest in bed, when groin tenderness or slight enlargement of the

PREScription 2.—Iodoform Bougies

R Iodoform..... 10.00 Gm.
Oil of theobroma..... 20.00 Gm.
Divide into ten urethral bougies. Label: Insert one after each urination.

lymph glands appears, and energetic treatment of the chancroid (but not by caustics) would probably prevent bubo formation in nearly every case.

Treatment.—A. Prior to Fluctuation: 1. Roentgen irradiation, 140 kilovolts with 0.25 mm. of copper and 1 mm. of aluminum, 75 roentgens, favors more rapid evolution and is especially indicated in torpid cases.

2. Nonspecific proteotherapy, as by means of intramuscular injections of sterilized milk, from 3 to 4 cc., may be employed, followed in three days by 5 cc. and, if this is well tolerated, after a similar interval by 10 cc.

B. When Fluctuation Appears: 1. Hot compresses with boric acid solution may still secure resolution. If it does not, or when fluctuation is very marked, the following treatment is indicated:

2. Puncture evacuation and injection should be done. A small incision is made in the fluctuating area of the swelling, and the pus is evacuated with gentle expres-

PREScription 3.—Mancière's Solution

R Iodoform..... 10.00 Gm.
Eucalyptol.....
Guaiacol.....
Alcohol..... of each 10.00 cc.
Balsam of peru..... 30.00 Gm.
Ether..... 100.00 cc.

M. Label: Inject 1 or 2 cc. or more into the abscess cavity, enough to distend it, and permit to remain for about a minute. After permitting the excess to escape, apply a pressure bandage. (This formula could probably be much simplified without sacrifice in efficiency.)

sion, a voluminous sterile gauze compression bandage is applied, and the patient is kept in bed for twenty-four hours. The bandage having then been removed, the pus is squeezed out as completely as possible, and the cavity ballooned out with Mancière's solution (prescription 3), the nozzle of the syringe (without any needle) being forced into the cut up to the neck of the syringe, which is firmly pressed against the skin to prevent escape of the fluid, which is permitted to escape after perhaps a minute. A heavy compression bandage, the patient keeping his legs extended, is permitted to remain for forty-eight hours and another reapplied for twenty-four hours. If, after the third day, there is still pus rather than serous fluid coming from the wound, another injection of Mancière's fluid is indicated. It should not be repeated earlier.

3. Surgery by wide incision, curettement or removal of the glandular mass is probably never necessary or indicated.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
H. A. CARTER, Secretary.

BURDICK Z-12 ZOALITE LAMP ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

The heating element for this infra-red lamp, made of ceramic material, is a single bar, nonmetallic surface unit, of 600 watts capacity. The reflector is double walled. The inner reflector is of polished aluminum alloy; the diameter is 10 inches and is protected with a wire screen. The telescopic stand is adjustable from 36 to 72 inches with a flexible arc. The lamp is arranged with a swivel feature, so that it will swing around. The base is equipped with four rubber tired ball-bearing casters. The upright and reflector casing is lacquered. The base is finished in enamel. The gooseneck and inner upright are of polished nickel.

In a laboratory acceptable to the Council, it was found that when connected to a 110 volt circuit the current read 4.5 amperes. Within an area of 70 cm. in diameter, at a distance of 1 inch from the edge of the reflector, the energy distribution was surveyed. In a small area of 30 cm. diameter, directly in front of the reflector, the radiant energy was 52 per cent more than at the edges.

The Council, therefore, includes the Burdick Z-12 Zoalite Lamp in its list of accepted devices.

BURDICK RV-85 ZOALITE LAMP, PRESCRIPTION MODEL, ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

This model is designed to meet the requirements of a physician who wishes to prescribe heat therapy in the home. The heating element, made of ceramic material, is a single bar, nonmetallic surface unit, rated at 220 watts. The reflector is 9 inches in diameter and is of polished aluminum. The telescopic stand is adjustable from 41 to 61 inches. The lamp may be adjusted by means of a flexible gooseneck and swivel joint. The finish of the upright and reflector is in gray lacquer and polished nickel. Model Z-70 is essentially the same as Model RV-85, except for the finish.

In a laboratory acceptable to the Council, it was found that on a 113 volt alternating current line the current read 1.95 amperes. The energy distribution appears satisfactory for home treatments.

The Council, therefore, includes the Burdick RV-85 Zoalite Lamp, Prescription Model, in its list of accepted devices.

BURDICK Z-75 ZOALITE LAMP ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

This is a localizing lamp for specialist service. It may be supplied with a stand, model Z-76, or with a special clamp for attaching to any other floor stand. The capacity of this unit is 75 watts. On a test conducted by the Council, it was found that when connected to a 114 volt alternating current line the current drawn was 0.6 ampere. Most of the radiant energy is confined to a comparatively small cone, since it is designed for localized heat treatments.

The Council, therefore, includes the Burdick Z-75 Zoalite Lamp in its list of accepted devices.

BURDICK Z-30 ZOALITE LAMP ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

The heating element of this infra-red lamp, made of ceramic material, is a single bar, nonmetallic surface unit, rated at 1,000 watts. The reflector is double walled. The inner reflector, made of polished aluminum alloy, has a diameter of 18 inches. It is protected with a wire screen. The stand is counterbalanced, ball bearing, with 30 inch vertical adjustment, swivel cross arms, with 35 inch extension, 10 inch adjustment, and a mobile base with large rubber tired casters. It is finished

with nickel trimmings. The stand and base are of black enamel. The unit operates on both alternating and direct current.

By a test conducted in a laboratory acceptable to the Council, it was found that with a potential of 111.5 volts the current was 6.2 amperes when the heating element was cold and 5.8 amperes after burning for an hour. At a distance of 1 meter the plane in air having a diameter of 70 cm. was surveyed for energy distribution. Within a space 30 cm. diameter directly below the edge of the reflector, the energy distribution was 38 per cent more than at the edges.

The Council, therefore, includes the Burdick Z-30 Zoalite in its list of accepted devices.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. RAYMOND HERTWIG, Secretary.



VARSIITY EXTRA PALE DRY GINGER ALE

Manufacturer.—The Hibbard Laboratories, Cleveland.

Description.—Ginger ale; a carbonated beverage prepared from water, sucrose, citric acid, extracts of ginger root, grape and apple, oils of lime and orange and caramel color.

Manufacture.—Ginger root extract is prepared by steeping macerated ginger root in boiling water. An equal volume of ethyl alcohol and infusorial earth is added to precipitate out gums and resins, and the extract solution is decanted and filtered. The citrus oils and fruit extracts are added to the clear filtrate. The other ingredients in definite proportions are added to the flavoring solution. The final mixture is filtered, filled into bottles, cooled, five volumes of carbon dioxide are introduced under 70 pounds pressure and the bottles are sealed. City water treated with ultraviolet light is used.

Analysis (submitted by manufacturer).—

	per cent
Moisture	92.6
Total solids	7.4
Ash	0.02
Fat (ether extract)	0.0
Protein (N \times 6.25)	0.4
Reducing sugars before inversion as invert sugar	2.7
Sucrose	4.6
Carbohydrates (by difference)	6.9
Titratable acidity as citric acid	0.06

Calories.—0.3 per gram; 9 per ounce.

Claims of Manufacturer.—Complies with the United States Department of Agriculture definition for ginger ale.

WARFIELD PREMIER BAKING CHOCOLATE

Manufacturer.—Warfield Chocolate Company, Chicago.

Description.—"Chocolate liquor" or chocolate.

Manufacture.—Selected cacao beans are cleaned of foreign material, roasted, and broken to permit separation of the shells and germs. The shell-, germ-free nibs are finely ground, forming a "chocolate liquor," which is poured into molds to solidify. The solidified cakes are packed in cartons.

Analysis (submitted by manufacturer).—

	per cent	Moisture and fat-free basis, per cent
Moisture	1.9	
Ash	3.1	6.6
Fat (ether extract)	50.9	
Protein (non-caffeine and non-theobromine N \times 6.25)	19.9	42.2
Sucrose	0.0	
Crude fiber	1.0	2.1
Carbohydrates other than crude fiber (by difference)	23.2	49.0
Theobromine	0.77	
Caffeine	0.24	

Calories.—6.3 per gram; 179 per ounce.

Claims of Manufacturer.—Conforms to the United States Department of Agriculture definition and standard.

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SATURDAY, DECEMBER 15, 1934

OPHTHALMOLOGY AND THE DISPENSING OPTICIAN

The view that examination of the eyes by a dispensing optician or optometrist is inadequate and usually uneconomical has been often expressed. Recently Harman¹ in England has employed the statistical method in attempting to determine the truth or falsity of this opinion. A number of ophthalmic practitioners, working in different parts of England, who were accustomed to seeing patients through the National Ophthalmic Treatment Board, were asked to keep records of the patients examined by them. To enable the records to be compared, cards were issued to these physicians, outlining the classification to be followed and the manner of entering the returns.

The report is based on 10,085 such cases recorded by forty-seven ophthalmic practitioners. Sixty-four per cent of the 10,000 cases showed errors of refraction only. Twenty-nine per cent showed errors of refraction plus one or more "other eye conditions." Nearly 6 per cent showed no errors of refraction but did present one or more "other eye conditions," and 1 per cent showed no appreciable eye defects. Thus, omitting those patients with errors of refraction only and those having no appreciable eye defects, 35 per cent of the patients seen required attention in addition to or other than the provision of glasses.

A partial check on these observations is provided by a still larger group of patients. Certain factors of all the cases seen through the National Ophthalmic Treatment Board are recorded and filed. One of these factors shows how many patients are reported by the ophthalmic medical practitioners as not requiring glasses. From this source 68,044 patients who were seen by 821 physicians were analyzed. Slightly more than 6 per cent did not require glasses, as contrasted with 6.75 per cent in the other more detailed analysis.

Comparative figures on patients seen by dispensing opticians were difficult to obtain. Harman sought to

determine what proportion of cases seen by opticians were similarly reported and referred to ophthalmologists for further study. Judging from the statistical inquiry noted, adequate optician examination should result in the referring to medical men of about 35 per cent of all patients seen, as the opticians admit only the ability to prescribe glasses for difficulties of refraction. Eventually actual figures of referred cases during 1933 or 1933-1934 were supplied by certain approved societies representing several million insured persons. In these returns the percentage of cases referred by the sight-testing opticians to ophthalmic surgeons ranges from 1 to 4.6, with an average of 3. The comparison is striking. In the series of patients examined by ophthalmic surgeons, 29 per cent proved to be other than errors of refraction alone, and nearly 6 per cent had other eye conditions without errors of refraction, yet only 3 per cent of the patients seen by opticians were referred for further examination.

"The conclusion," Harman says, "is irresistible. The opticians did not recognize the defects present in the eyes of the patients seen by them, or if they did recognize them they did not report them for medical examination. The corollary is this. Patients who go to opticians to have their sight tested do not get what they ought to get. Such a finding is conclusive of the proposition that an examination by an optician is uneconomical, and conversely that approved societies or others who are responsible for advising patients to seek eye examination cannot in the interests of these persons do other than adopt the only economical method—that is, by securing examination by competent ophthalmic medical practitioners."

INFANT MORTALITY IN 1933

The statistical report¹ on infant mortality in 985 cities of the United States during 1933 contains several features of especial interest. The report includes infant mortality data for every city of 10,000 population and more, as the result of the inclusion for the first time of cities in Texas and South Dakota. Because of recent statistical research, the detailed tables in this year's report differ from the tables previously presented in that the annual rate for 1933 is given only for those cities in which there were more than 450 births. The reason for this change is that the rates for small cities have little significance, owing to the wide fluctuations in rate from year to year, which is explained by the small number of births on which they must be based.

The urban infant mortality rate for 1933 is 57.1. This figure is based on 983 cities in the continental United States and two cities in Hawaii. It is 0.3 point higher than the rate for 1932, which was based on 943 cities in the birth registration area. The slight increase,

1. Harman, N. B.: The Findings of Eye Examinations, Brit. M. J. 2: 181 (Oct. 6, supplement) 1934.

1. Brandeis, Olga, and Derryberry, M.: Statistical Report of Infant Mortality for 1933, American Child Health Association, July 1934.

in rate is due wholly to the relatively high rate in the cities of Texas. If the rate for 1933 is computed on the same 943 cities that are given in the 1932 report, the rate is 55.9, which represents the lowest urban rate ever recorded in the history of the country. It is therefore safe to conclude that there has been no real increase in the infant deaths.

Of the cities with a population of more than 250,000, Portland, Ore., had the lowest rate and Memphis, Tenn., the highest. Of those with a population between 100,000 and 250,000, Fort Wayne, Ind., had the lowest and El Paso, Texas, the highest rates. Of cities between 50,000 and 100,000, Berkeley, Calif., had the lowest rate and Charleston, W. Va., the highest. In appraising these rates, however, it must be borne in mind that they are crude and not corrected rates. They are based on the births and deaths reported as occurring in the city and not the place of residence. It is hoped that ultimately vital statistics will be corrected for residence. This has been done in fact for three states: Connecticut, New Jersey and New York. In seventy-three of the cities in these states, comparable crude and corrected rates were obtained. In only seven did the rates remain the same after correction. In forty-three cities the rate was increased and in twenty-three decreased.

The larger cities have rates somewhat lower on the average than the smaller cities. The lowest among the ten largest cities of the country was 44. This rate was reported for both St. Louis and Cleveland. Chicago, which had the lowest rate in 1932, and Philadelphia were tied with a rate of 49. Six of these large cities had a lower rate than in the preceding year, two were unchanged and in two there was a slight increase. In 1932 all rates in the ten largest cities were below 70 for the first time since publication of the reports, and in 1933 they were all below 65. The highest urban rates were found, in general, in the Southern and South-western states. These high rates were chiefly due to the high infant mortality among the large Negro population. Although there has been no general increase in the urban infant mortality rate for the country as a whole, there has been an increase in the Southern states as a group.

The report concludes that "failure to correct for residence may produce fictitiously high or low rates. But, even when this correction is made, one is not justified in using the infant mortality rate as a reliable measure solely of the quality of public health effort in a community. The infant mortality is a resultant of a number of causes, such as social and economic status, family customs characteristic of different race and nationality groups, climatic conditions, the amount of modern medical service, as well as the amount and quality of public health effort." For this reason care should be used in ascribing a change in the infant mortality rate to any one of these many possible influences.

THE EFFECT OF DIETS ON CALCIUM AND PHOSPHORUS METABOLISM IN DOGS

Much excellent research has been directed toward the elucidation of the effects of special diets and of vitamins on the calcium and phosphorus metabolism. Morgan and her collaborators¹ intended primarily to study pyorrhea, but it was felt that a comprehensive study should take account of the changes in bones, blood and excretions as well as of teeth and gingivae.

The experimental observations were made on young dogs taken at weaning at ages of from 5 to 7 weeks. The dogs were placed on artificial diets made up of isolated foodstuffs and were kept on these diets for periods varying up to ten months. They were kept indoors in small pens, with occasional brief periods of outdoor exercise. Clinical mouth examinations, blood examinations and roentgenograms were made once a month. The weights were recorded weekly. At the end of the observation periods, histologic and chemical examinations were made on some of the tissues. The diets used consisted principally of casein, agar and sucrose, with the addition of salt mixtures of varying calcium and phosphorus content made alkaline, neutral or acid by the addition of sodium carbonate or ammonium chloride. Butter fat supplied vitamin A to those animals not receiving cod liver oil. Dried brewery yeast was given as the source of vitamins B and G. Two types of salt mixture were used, each made respectively acid, neutral or basic. There were hence twelve diets supplied: 1. Normal salt diets (a) without vitamin D: acid, neutral, basic; (b) with vitamin D (in cod liver oil): acid, neutral, basic. 2. Low calcium diets (a) without vitamin D: acid, neutral, basic; (b) with vitamin D (in cod liver oil): acid, neutral, basic.

The alkali-fed dogs were usually larger at every age than comparable animals on the other diets. A definite superiority in growth rate was observed also in the animals given cod liver oil. The roentgenograms indicated nearly normal conditions of bones in the greater number of dogs given cod liver oil, and rickets of varying severity in those without vitamin D. The dogs on acid diets without vitamin D showed the most severe lesions, the alkaline dogs the next most severe; the neutral dogs were the most nearly normal of the group. Of the group given cod liver oil, those on an alkaline diet seemed to have the least normal bone development, possibly because of accelerated growth. The low calcium group showed the most severe lesions of all, except the one animal that was given cod liver oil from the beginning. The low calcium dogs without cod liver oil were found to have developed osteitis fibrosa; the other vitamin D-free dogs, osteoporosis or osteomalacia. The blood p_H and plasma carbon dioxide capacity of the alkaline and acid dogs reflected their

1. Morgan, Agnes F., with the cooperation of others: The Effect of Acid, Neutral and Basic Diets on the Calcium and Phosphorus Metabolism of Dogs, Univ. of California Publications in Physiology 8: 61 (No. 7) 1934.

alkaline and acid conditions, but less markedly than might have been expected. Hemoglobin determinations, for the most part above 14 Gm. per hundred cubic centimeters of blood, indicated little change in water content of the blood. No variations were found that could be ascribed definitely to reaction of diet, vitamin D, or stage of bone lesions. The organic phosphorus of the whole blood was lowest in the dogs on acid diets without cod liver oil and highest in the dogs on neutral diets both with and without cod liver oil. The cod liver oil caused a significant rise of inorganic phosphorus only in the acid group. Considerably lower phosphorus values were seen in the low calcium dogs than in the others, but the cod liver oil appeared more effective in raising the blood inorganic phosphorus.

Total serum calcium remained at normal levels in all the dogs on normal diet but was slightly lower in the acid dogs, both with and without vitamin D, than in any of the others. There was some lowering of these levels in most of the low calcium group. Diffusible or ultrafiltrable serum calcium showed little variation, remaining close to 50 per cent of total calcium, and had only a slight tendency toward higher values in the acid group. The product $[Ca] \times [P]$ in terms of milligrams per hundred cubic centimeters of serum or blood was lowest in the group fed acid diets without vitamin D and highest in the neutral group. On low calcium diets these values varied somewhat, but the number of dogs was too small to form a basis for drawing conclusions from the values found.

The largest storage of both calcium and phosphorus occurred on the alkaline and neutral diets both with and without vitamin D and the lowest on the acid diets without vitamin D. One litter of setter pups, which had low retentions of these elements even when given cod liver oil, is thought to have suffered from the fact that their mother was deprived of direct sunlight during the pregnancy that resulted in their birth. Another litter of the same parentage, the mother leading an outdoor life during pregnancy, exhibited considerably better storage with the exception of one animal. The cod liver oil exerted a favorable effect on storage of both calcium and phosphorus in both the acid and the alkaline diets, but this was more marked in the acid diet. No such effect was seen in the animals on the neutral diets. With normal salt diets the percentage of ash in the bones and teeth was lowered only in the dogs fed acid diets without cod liver oil but was low in all the dogs on the low calcium diets except when cod liver oil was given throughout the feeding period. The ash content of the lower jaws and lower molars was greater than that of the upper jaws and upper molars, and that of the tibias was greater than that of the femurs. The ash phosphorus of the alkaline and neutral dogs of the low calcium group was normal or high, but that of the acid dogs was low. An exception was seen in one dog, which received cod liver oil and which was apparently normal by all tests made.

Histologic study of the tissues of seventeen of the dogs indicated that the clinical picture of osteitis fibrosa was produced by a low calcium diet in the absence of vitamin D. There was an exception in one dog fed a neutral diet, which showed severe osteoporosis. All the dogs on normal diets without vitamin D showed osteoporosis, a condition that was much reduced in severity by the administration of cod liver oil. Typical clinical parodontosis was seen in the low calcium group without vitamin D and in all the alkalinized dogs on normal diets as well. Also a larger amount of damage to kidney tissue was seen in the alkaline than in the other groups.

It is concluded that parodontosis in varying degrees of severity as well as renal damage may result from the long continued use of alkaline diets either with or without vitamin D and normal calcium-phosphorus ratio and content. This work, combined with that of others, e. g., Mellanby,² provides a broad foundation for further research and attempts at clinical application.

Current Comment

PHYSICIAN BECOMES ASSISTANT CHIEF OF CHILDREN'S BUREAU

As announced elsewhere in this issue of *THE JOURNAL* (p. 1863), Dr. Martha M. Eliot has been made assistant chief of the United States Children's Bureau in charge of all matters relating to health. The appointment of a physician to this position is a recognition of the importance of having those medically trained in charge of government activities of a medical character. Dr. Eliot has been director of the Division of Maternal and Child Health in the bureau and associate clinical professor of pediatrics in the Yale University School of Medicine. Her career in clinical medicine includes work in the Peter Bent Brigham Hospital, St. Louis Children's Hospital and New Haven Hospital, as well as investigations on growth, nutrition and rickets. She is a member of the American Pediatric Society, chairman of the Committee on Child Health Relations of the American Academy of Pediatrics, and a Fellow of the American Medical Association. She brings to her work not only this medical background but also an extensive experience in medical social service and family welfare work.

AGITATION FOR IMMEDIATE ACTION ON HEALTH INSURANCE

A letter is apparently being circulated by the American Association for Labor Legislation asking those to whom it is addressed to send telegrams immediately to Secretary of Labor Frances Perkins and the President urging immediate action on the subject of health insurance. Apparently the propagandists are not content to await the report of the President's Committee on Economic Security, of its technical staff or of its

2. Mellanby, May: Medical Research Council, Special Reprint Series 153, 1930.

various advisory boards but desire, regardless of the economic situation of the country as a whole or of any other important factors that may be involved, to jam some sort of legislation through immediately. Physicians whose advice may be asked concerning this appeal on the part of the American Association for Labor Legislation may well inform their inquirers of the desirability of caution and consideration in the development of any new methods of medical practice. Haste and carelessness prompted by evangelistic methods for social legislation must inevitably lead to errors and result in harm to both the public and the medical profession. The experience of every foreign nation precipitated into a sickness insurance scheme is evidence of the unfortunate possibilities that are incurred in the precipitous adoption of revolutionary measures.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

- December 20. Social Security, Morris Fishbein, M.D.
- December 27. Budgeting for Health, W. W. Bauer, M.D.
- January 3. Housing and Health, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next broadcast will be delivered by Dr. W. W. Bauer. The title will be as follows:

- December 18. Fight Tuberculosis With Modern Weapons, W. W. Bauer, M.D.
- December 25. Holiday; no broadcast.
- January 1. Holiday; no broadcast.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in California is required by law to register annually, on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$1. Failure to pay the required fee within sixty days after January 1 works a revocation of a license and thereafter a license may be reissued only after application and the payment of a \$10 penalty.

Medical Economics Survey.—The medical economics survey approved by the house of delegates of the California Medical Association at its last annual meeting has been started. A committee of five for the study of medical care was appointed, including Drs. William R. Molony and Harry H. Wilson, Los Angeles, Alson R. Kilgore, San Francisco, Robert A. Peers, Colfax, and Rodney A. Yoell, San Francisco. The plans call for a twofold study. One, on the health and economic status of the general public, is to be conducted by field workers. About 1 per cent of the families in twenty-five counties will be reached, it is expected. The other aspect of the study involves an analysis of the medical and dental professions and of the hospital and public health facilities of California, to be made from the data obtained from questionnaires that

have been mailed to every physician, dentist, hospital and clinic in the state. The field work has already been completed in two counties. Paul A. Dodd, Ph.D., assistant professor of economics, University of California at Los Angeles, is director of the survey.

Symposium on Heart Disease.—The third annual heart symposium of the Los Angeles County Heart Association was conducted, December 6-7. The program was presented by the following physicians:

- Edward Richmond Ware, Embolism as a Manifestation of Heart Disease.
- Willard J. Stone, Subacute Bacterial Endocarditis.
- Egerton L. Crispin, Cardiac Neurosis.
- John C. Ruddock, Drug Therapy in Heart Disease.
- William H. Leake, Treatment of Auricular Fibrillation.
- Arthur M. Hoffman, Thyroidectomy in the Treatment of Congestive Heart Failure and Angina Pectoris.
- R. Manning Clarke, Syphilitic and Rheumatic Heart Disease.
- Roy E. Thomas, The Surgical Risk in Heart Disease.
- Francis M. Pottenger, Monrovia, The Heart in Tuberculosis.
- Donald J. Frick, Abnormalities of the Myocardium.
- Harold H. Smith, Treatment of Acute Coronary Occlusion.
- John L. Maroon, Santa Ana, Treatment of Syphilitic Heart Disease.

A joint meeting of the heart association with the Los Angeles County Medical Association formed the program for the evening session, Thursday; speakers were Drs. Arthur S. Granger on "Importance of Early and Accurate Diagnosis in Heart Disease" and Eugene S. Kilgore, San Francisco, "Some of Our Less Clear Conceptions of Coronary Disease." On Friday morning there was a clinical pathologic conference, with discussion of cases and demonstration of specimens by Drs. Newton G. Evans, Edward M. Butt, Verne R. Mason, Daniel D. Comstock, Burrell O. Raulston and William C. Boeck.

COLORADO

Society News.—Speakers before the Medical Society of the City and County of Denver, November 20, were Drs. Claude E. Cooper and Wilford W. Barber on "Congenital Cyst of the Right Ethmoid in a Child 3 Years of Age," and Dr. Glen E. Cheley, "Hyperinsulinism Associated with Langerhans' Adenoma Treated Surgically." Speakers before the society, October 16, were Drs. William B. Yegge on "Early Diagnosis and Prevention of Lead Poisoning"; John M. Foster, "Tumor of the Chest Wall"; Emeric I. Dobos, "Fundamental Principles Underlying Treatment of Diabetes," and Joseph F. Prinzing, "The Anatomy Concerned in Inguinal Hernia."

CONNECTICUT

Annual Registration Due During January.—Every practitioner of medicine and surgery holding a license to practice in Connecticut is required by law to register during January with the state department of health and at that time to pay a fee of \$2. Licentiatees who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is liable to a fine of not more than \$5.

Society News.—Dr. John M. Birnie, Springfield, Mass., addressed the Tolland County Medical Association, October 16, on "Surgery of Infancy and Childhood."—At the semiannual meeting of the Connecticut Public Health Association, November 7, in Hartford, Drs. Clarence I. Scamman, New York, and Charles C. Wilson, Hartford, discussed "Efficiency Lines of Public Health Work" and "Economy as It Pertains to Medical School Inspection," respectively.

FLORIDA

Personal.—The Volusia County Medical Society devoted a regular meeting in DeLand, recently, to honoring Dr. and Mrs. George A. Davis, DeLand, on their fiftieth wedding anniversary.

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Florida is required by law to register annually on or before January 1 with the secretary of the state board of health and at that time to pay a fee of \$1. A licentiate failing to register annually is liable to a fine of not more than \$50.

GEORGIA

University News.—The Woman's Auxiliary of Emory University Hospital, Atlanta, is sponsoring a series of lectures in the auditorium of the institution on Tuesday afternoons; Dr. Lewellyn H. Muse recently discussed infectious fevers peculiar to childhood.

Survey of Maternal Mortality.—The committee on the study of maternal mortality and infant deaths of the Medical Association of Georgia has begun a state wide survey. Questionnaires will be issued to physicians throughout the state to

obtain the statistical data necessary. Authorization to proceed with the survey was given at the annual meeting of the state association in May. Dr. Emmett D. Colvin, Atlanta, is chairman of the committee.

ILLINOIS

Society News.—At a meeting of the La Salle County Medical Society, November 22, Dr. Frank Smithies, Chicago, gave a paper on "Biliousness: What It Means Pathologically and Chemically; Its Differential Diagnosis and Treatment."—Dr. Oliver S. Ormsby, Chicago, discussed "Mycotic Infections" before the Peoria City Medical Society in Peoria, December 4.

Chicago

Fracture Night.—Dr. Frederic J. Cotton, Boston, will be the principal speaker at the meeting of the Chicago Medical Society, December 19, designated "fracture night." His subject will be "Fractures and Other Injuries of the Hip." Participating in the discussion will be Drs. Philip H. Kreuscher, William R. Cubbins, Kellogg Speed, Beveridge H. Moore, Paul B. Magnuson, Edwin M. Miller and Edwin W. Ryerson.

Society News.—Dr. Jack D. Kirshbaum, among others, addressed the Chicago Pathological Society, December 10, on "Sarcomas of the Diaphragm."—Speakers before the Chicago Gynecological Society, December 21, will be Drs. Philip H. Smith on "Hemorrhage in Late Pregnancy"; David S. Hillis, "Diagnosis and Treatment of Late Hemorrhages in Pregnancy," and William J. Dieckmann and Edwin F. Daily on "Rôle of Blood Transfusion in Treatment of Obstetric Hemorrhage."—Dr. Frederick J. Gaenslen, professor of orthopedic surgery, University of Wisconsin Medical School, Madison, addressed the Chicago Orthopedic Club, December 14, on "Fractures of the Neck of the Femur: Experimental and Clinical Studies."

INDIANA

Memorial Meeting.—The Indianapolis Medical Society held a memorial meeting, December 7, in honor of the late Drs. John W. Carmack and Arthur M. Mendenhall, professor of rhinology, otology and laryngology and professor of obstetrics, respectively, at the Indiana University School of Medicine. Both physicians were killed in an airplane accident, December 5. They were returning to Indianapolis from Detroit, where they had attended a meeting. Dr. Mendenhall's daughter Evelyn was also killed.

Society News.—Dr. Arthur N. Ferguson, Fort Wayne, discussed "A Study of the Relief of Symptoms Following Cholecystectomy" before the Northeastern Indiana Academy of Medicine in Kendallville, November 22.—At a meeting of the Montgomery County Medical Society in Crawfordsville, November 22, Dr. Gerald W. Gustafson, Indianapolis, discussed problems in obstetrics.—Dr. Louis H. Segar, Indianapolis, considered the modern treatment of pediatrics before the Randolph County Medical Society in Winchester, October 8. The society was addressed, November 12, by Dr. Frank C. Walker, Indianapolis, on "Aphorisms of Gynecology."—The Madison County Medical Society heard Dr. James F. Balch, Indianapolis, discuss urologic problems at its meeting in Anderson, November 19.—Speakers before the Knox County Medical Society in Vincennes, October 18, were Drs. August F. Knoefel and Frank E. Sayers, Terre Haute, on osteomyelitis and vitamin and calcium therapy, respectively.—The Greene County Medical Society was addressed in Linton, October 18, by Drs. Everett E. Padgett on surgical conditions of the gallbladder, and Paul K. Cullen, biliary disease; both are from Indianapolis.—Dr. Frederick A. Collier, Ann Arbor, discussed "Mortality Factors in Acute Appendicitis" before the Fort Wayne Medical Society, November 6.—Dr. Theodore C. Hempelmann, St. Louis, discussed encephalitis before the Muncie Academy of Medicine, October 30.

IOWA

Society News.—At a meeting of the Washington County Medical Society, Dr. Thomas F. Suchomel, Cedar Rapids, discussed "The Treatment of Hernia."—The Woodbury County Medical Society was addressed in Sioux City, October 23, by Dr. William F. Mengert, Iowa City, on "Uterine Malignancies."—Dr. Morris Fishbein, Chicago, addressed the Des Moines Academy of Medicine and Polk County Medical Society, November 28, on "Our Changing Times." Speakers at the meeting, December 11, were Drs. Lawrence E. Kelley on "Management of the Toxemias of Pregnancy"; Raymond Cohen and Joseph B. Priestley, "Undescended Testicles, with Special Reference to Medical and Surgical Treatment."—Dr. Ray Lyman Wilbur, Stanford University, Calif., will speak before

the Linn County Medical Society, Cedar Rapids, December 18, on "The Relation of the Doctor to Society." Dr. Jesse T. Grayston, Marion, will present a paper on pilonidal cyst.

LOUISIANA

Dr. Mason Gives Chaille Memorial Oration.—Dr. James M. Mason, Birmingham, gave the ninth Stanford E. Chaille Memorial Oration at the meeting of the Orleans Parish Medical Society, December 5, in New Orleans. The title of the address was "Stanford Emerson Chaille as a Student Viewed Him."

Annual Renewal Due January 1.—Every practitioner of medicine and surgery holding a certificate to practice in Louisiana is required by law to have his certificate renewed annually, on or before January 1, by the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of \$2. The board may by unanimous vote revoke any certificate not renewed.

MAINE

Society News.—A symposium on dementia praecox was presented before the Kennebec County Medical Association in Augusta, October 25, by Drs. Joseph C. Rheingold, Israel Newman, Harry Elkins, Frederick R. Carter, Matthias Marquardt and Forrest C. Tyson.—The principal speaker before a joint meeting of the Penobscot-Hancock County medical societies recently was Dr. Forrest B. Ames, Bangor; his subject was "X-Ray and Its Relation to Medicine."—Speakers before the Washington County Medical Society, October 24, in East Machias, were Drs. Edwin W. Gehring, Portland, on collection agencies; Herbert S. Everett, St. Stephens, N. B., the Schilling differential blood count and its clinical significance, and John F. Hanson, Machias, coronary thrombosis.

MARYLAND

Personal.—Dr. William K. Skilling has been given a permanent appointment as director of the bureau of child hygiene of the Baltimore Health Department, effective October 1; the bureau was formerly known as the bureau of child welfare. Dr. Skilling has been with the health department since 1924.—Dr. Warfield T. Longcope, professor of medicine, Johns Hopkins University School of Medicine, Baltimore, received the honorary degree of doctor of laws recently from St. Johns College, Annapolis.

Farewell Dinner to Dr. Wilmer.—A farewell dinner was given to Dr. William H. Wilmer, November 19, by the boards of trustees of Johns Hopkins University and Hospital in Baltimore. Dr. Wilmer, who was officially retired as director of the Wilmer Institute of Ophthalmology in July, plans to return to Washington, D. C., where he practiced medicine from 1889 to 1925. He was professor of ophthalmology at Georgetown University School of Medicine from 1906 to 1925. In attendance at the dinner were Daniel Willard, LL.D., president of the board of trustees of the university; Mayor Jackson; Herbert L. Satterlee of the board of the Wilmer Foundation, and Mrs. Henry Breckenridge, originator of the foundation. Newton D. Baker, Cleveland, former Secretary of War, was toastmaster, and speakers included Drs. George E. de Schweinitz, emeritus professor of ophthalmology, University of Pennsylvania School of Medicine, Philadelphia, and William H. Howell, director emeritus of the School of Hygiene and Public Health of the university. The dinner was held in the hall of the Welch Medical Library.

MASSACHUSETTS

Dr. Gallie to Give Shattuck Lecture.—Dr. William E. Gallie, professor of surgery, University of Toronto Faculty of Medicine, will deliver the 1935 Shattuck Lecture of the Massachusetts Medical Society.

Dr. Rowe Dies.—Allan W. Rowe, Ph.D., since 1908 professor of chemistry, Boston University School of Medicine, and director of research at Evans Memorial Hospital since 1921, died, December 6, aged 55. Dr. Rowe graduated from the Massachusetts Institute of Technology in 1901 and received his degree of doctor of philosophy from the University of Göttingen, Germany. A member of many scientific societies, Dr. Rowe has contributed much to the literature on endocrinology and allergy. He was an honorary fellow of the Suffolk County Medical Society.

Research Expedition Returns.—The Harvard-African Expedition, which has been carrying on medical and biologic investigations on onchocerciasis in the Belgian Congo, has returned to this country. The expedition, which left last April under the direction of Dr. Richard P. Strong, was sponsored by the department of tropical medicine, Harvard Medical

School, Boston. Research on the material brought back from the expedition will be completed in the laboratories of the department by Dr. Strong and Jack H. Sandground, Sc.D. It was stated that in some of the villages in the Congo, about 95 per cent of the natives were infected with various degrees of onchocerciasis, many of them totally blind as a result.

Dr. Edsall Retires as Dean of Harvard.—Dr. David Linn Edsall will retire as dean of the faculty of medicine and dentistry of the medical school and of the school of public health of Harvard University, Sept. 1, 1935, and become dean emeritus. Dr. Edsall, who is 65 years of age, has been dean of the medical school since 1918. In 1893 Dr. Edsall graduated in medicine at the University of Pennsylvania, where from 1907 to 1910 he was professor of therapeutics and pharmacology, and from 1910 to 1911 professor of medicine. The following year he spent as professor of preventive medicine at Washington University, St. Louis. In 1912 he was appointed Jackson professor of clinical medicine at Harvard, becoming dean of the medical school and of the faculty of medicine in 1918. He has been dean of the school of public health since 1922 and of the faculty of dentistry since 1924.

MINNESOTA

Annual Registration Due During January.—Every practitioner of medicine and surgery holding a license to practice in Minnesota is required by law to register annually during January with the secretary of the board of medical examiners and at that time to pay a fee of \$2. A licentiate who practices without renewing his license is guilty of a misdemeanor and is liable to prosecution.

Symposium on Fractures.—The Minneapolis Surgical Society held its annual symposium on fractures, December 11, in the auditorium of the Hennepin County Medical Society. The following program was presented:

- Dr. Nels Harvey Nelson, Fracture Disability Estimation.
- Dr. Edward A. Regnier, Fracture of the Neck of the Femur.
- Dr. Roscoe C. Webb, Fracture of the Upper End of the Tibia Involving the Knee Joint.
- Dr. George R. Dunn, Fracture of the Os Calcis.
- Dr. Robert G. Allison, Pathologic Fractures.
- Dr. Willard D. White, Results in Fracture of the Spine.
- Dr. Arthur A. Zierold, Newer Methods of Determining Extent of Traumatic Brain Injury.
- Dr. George D. Eitel, Fracture Dislocation of the Shoulder.

NEBRASKA

Society News.—A symposium on medical care of families of low income was presented before the Omaha-Douglas County Medical Society, Omaha, November 13, by Drs. Rudolph Rix, John R. Kleyla, John Jay Keegan and Frederick O. Beck. —Dr. John Alexander, Ann Arbor, Mich., delivered the annual Alpha Omega Alpha address at the University of Nebraska College of Medicine, Omaha, November 26.

Fifty Years in Practice.—Dr. and Mrs. Peter Harold Salter, Norfolk, were guests of honor at a dinner sponsored by the Madison-Six Counties Medical Society at the Hotel Norfolk, November 2, in honor of Dr. Salter's fiftieth anniversary of medical practice. Dr. Morris Nielsen, Blair, was toastmaster. Dr. Salter is a native of Canada and received his medical education in Toronto and Edinburgh. He was president of the Nebraska State Medical Association, 1909-1910, and was a founder of the Elkhorn Valley Medical Society.

NEW MEXICO

Personal.—Dr. Charles A. Mozley, Albuquerque, has been appointed health officer of Sandoval County and Dr. Hilton W. Gillett, Lovington, for Lea County.

Malaria Control Projects.—FERA drainage projects for malaria mosquito control are under way in Santa Fe, Rio Arriba, Mora and Sierra counties, and projects have been submitted for San Juan and Doña Ana counties.

NEW YORK

Annual Registration Due January 1.—Every practitioner of medicine and surgery in New York is required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration, on application forms furnished by him, and to pay at that time a fee of \$2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives to receive and transmit to him such applications and fees. Practitioners are liable to severe penalties for failing to register and for continuing in practice thereafter.

Exhibit on Medical Progress.—Progress in medicine during the last century was shown in a varied exhibit at Rochester's Centennial Exposition recently. A committee, of which Dr. Stearns S. Bullen was chairman, prepared the exhibit with the cooperation of the University of Rochester School of Medicine, the Rochester Hospital Council, the Genesee Valley Nursing Association, the Rochester Tuberculosis and Health Association, the health bureau and the Temporary Emergency Relief Administration. Among the displays were exhibits depicting pioneer medicine, early medical instruments and modern medical paraphernalia. There were slides showing the development of hospitals and the history of surgery, transparent pictures illustrating prevention and treatment of tuberculosis and the use of the x-rays in diagnosis, and charts showing the increase in life expectancy and the activities of the Medical Society of the County of Monroe. One physician contributed a display of foreign bodies removed from lungs, throats and ears; health agencies showed preparations used in the control of communicable disease. The development of the human infant was portrayed in a series of actual embryos, and another group of pathologic specimens showed organs attacked by various diseases. In addition, there were exhibits on food and sanitation, old medical books and child health in Rochester.

New York City

Honorary Membership in the Academy.—The New York Academy of Medicine at a meeting November 8 awarded honorary memberships to the following scientists: Sir Humphry D. Rolleston, Surrey, England; Dr. August Krogh, Copenhagen, Denmark, Nobel prize winner in 1920; Dr. Claude Regaud, Pasteur Institute, Paris; Dr. William H. Howell, physiologist, Baltimore, and Dr. Frederick George Novy, professor of bacteriology, University of Michigan Medical School, Ann Arbor.

Medical College News.—At the opening session of the Long Island College of Medicine, October 1, Dr. Morgan Willcox Ayres, Upper Montclair, N. J., presented three paintings to the college. One was a portrait of his father, Dr. Daniel Ayres, one of the founders of the college in 1858. The other two are copies of paintings by Sir Joshua Reynolds of Dr. John Hunter and Sir Astley Cooper. Dr. Frank L. Babbott Jr., president of the college, accepted the paintings. Dr. Babbott also announced completion of a new recreation building presented to the college last year by the Misses Jennie and Cornelia Donnellon, who have since died.

Hospital News.—Dr. George R. Brighton has been appointed attending otolaryngologist to Roosevelt Hospital, succeeding Dr. Hampton P. Howell, who resigned after twenty-two years at the head of the department. —The Bronx Hospital held a clinical conference on orthopedics, with presentation of cases of interest to the general practitioner, November 14. Members of the staff who presented cases were Drs. Sigmund Epstein, Maurice H. Herzmark, Abraham B. Pemsler, Aaron Schwartz, Samuel W. Boorstein, Louis Saltzman, David Sashin and Sidney H. Freilich. —Dr. David Adlersberg of the University of Vienna gave a lecture at Mount Sinai Hospital, November 3, on "Modern Trends in the Dietetic Treatment of Diabetes Mellitus."

Personal.—Dr. Charles Diller Ryan, clinic executive of the Payne Whitney Clinic, New York Hospital, has been appointed administrative consultant in psychiatry to the department of hospitals. —Dr. Karl Landsteiner of the staff of the Rockefeller Institute for Medical Research received the honorary degree of doctor of science from Cambridge University, England, October 22. —Dr. Harry Wessler has been appointed chief of the tuberculosis division of the Montefiore Hospital and its country sanatorium, succeeding the late Dr. Maurice Fishberg. —Dr. William H. Park was honored by an achievement award given by the Alumni Association of Columbia University graduate schools, November 12. —Walter F. Gobel, Ph.D., has been promoted from associate to associate member of the staff of the Rockefeller Institute for Medical Research; Drs. Frank L. Horsfall, John W. Murray and Albert B. Sabin have been appointed assistants.

NORTH DAKOTA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1 with the secretary-treasurer of the board of medical examiners and at that time to pay a fee of \$5 if a resident of North Dakota or \$2 if a nonresident. A practitioner may not lawfully practice if he has not registered. If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and 50 cents for each month of default.

OHIO

State Director of Health Appointed.—Dr. Walter H. Hartung, Toledo, has been appointed state director of health by the incoming governor, Martin L. Davey, who takes office January 14. Dr. Hartung, a graduate of Toledo Medical College in 1912, has served two terms as coroner of Lucas County and ran for mayor of Toledo in 1933. He succeeds Dr. Harry G. Southard.

Academy Awards Prize for Poetry.—Dr. Wenzel A. Medlin has been adjudged winner of a poetry contest conducted by the Cleveland Academy of Medicine and declared first poet laureate of the society. Dr. Medlin was awarded a silver cup for a lyric poem of three stanzas entitled "Darrow Hills." Thirty-two poems were entered in the contest, in which Mrs. Katherine Kelley Taylor was the judge. Honors for excellent work also went to Drs. Roy G. Pearce, Akron (nonresident member), Horace E. Mitchell, Lakewood, Torald H. Sollmann, Frank J. Vokoun and Samuel L. Leinel.

District Meetings.—At a meeting of the Union Medical Association of the sixth councilor district in Wooster, November 7, speakers were Drs. Donald D. Shontz, Massillon, on "Treatment of Auricular Fibrillation"; William H. Bunn, Youngstown, "Recognition of Common Cardiac Irregularities"; Roy Wesley Scott, Cleveland, "Coronary Artery Disease," and David Steel, Cleveland, "Roentgen Diagnosis of Syphilitic Aortitis and Unusual Types of Thoracic Aneurysm."—The Eighth District Medical Society held its annual fall meeting in New Lexington, November 1, with the following speakers: Drs. Charles W. McGavran, Columbus, on "Problems Relating to the Colon"; Julien E. Benjamin, Cincinnati, "Present-Day Conceptions in the Prevention of Heart Disease," and Frank W. Harrah, Columbus, "Urology from the Standpoint of the General Practitioner."

Personal.—Dr. Abram L. Van Horn, Cleveland, has been appointed chief of the division of child hygiene of the state department of health. The department has been without a director for two years because of curtailments in the budget.—Dr. Samuel B. Kistler, Coshocton, has been appointed health officer of Coshocton County to fill the unexpired term of the late Dr. David M. Criswell.—Dr. Harry G. Sloan, Cleveland, received the honorary degree of doctor of science from Washington and Jefferson College, Washington, Pa., recently. Dr. Sloan is a graduate and has for several years been a trustee of the college.—Dr. Francis M. Frazier, Bryan, who is also a lawyer, was recently elected judge of the court of common pleas in Williams County.—Dr. Ernst J. Oesterlin, Milwaukee, has been appointed pathologist to the Springfield City Hospital.

PENNSYLVANIA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Pennsylvania is required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction, and to pay a fee of \$1 or such fee as may be fixed by the department of public instruction. A practitioner who fails to register and who continues to practice is liable to a fine of from \$10 to \$100.

Society News.—Dr. Robert S. Dinsmore Jr., Cleveland, addressed the Luzerne County Medical Society, Wilkes-Barre, November 7, on results of malignant disease.—Dr. Paul D. White, Boston, addressed the Cambria County Medical Society, Johnstown, December 6, on "Important Problems in Cardiovascular Diagnosis and Their Treatment."—Brig. Gen. Matthew A. Delaney, commandant of the Army Medical School, Carlisle Barracks, addressed the Dauphin County Medical Society, Harrisburg, December 2, on "What the United States Army Has Contributed to the Progress of Medicine." Drs. Oscar Paul Holmer and Howard K. Petry of the staff of the Harrisburg State Hospital addressed the society in November on "Child Guidance in Its Relation to Medical Practice" and "The Community Relation of a Mental Hospital," respectively.—Drs. George W. Ramsey and John B. McMurray, Washington, were speakers at a meeting of the Fayette County Medical Society, Uniontown, December 6, on "Rheumatic Heart Disease and Subacute Bacterial Endocarditis" and "Differential Diagnosis of Lateral Sinus Thrombosis, Meningitis and Brain Abscess," respectively.

Philadelphia

Seminars on Cardiovascular Disease.—The current group of graduate seminars sponsored by the Philadelphia County Medical Society deals with cardiovascular disease. Speakers for the series are Drs. John Eiman, Charles C. Wolferth, Henry C. Bazett, James E. Talley and Eugene M. Landis.

Presentation of Dental Library.—The administrators of the will of the late L. Aslley Faught, D.D.S., presented his dental library of more than 1,000 volumes to the Philadelphia County Medical Society at a meeting, November 21, in the auditorium of the society. Dr. Faught's son, Mr. Albert Smith Faught, made the presentation; Dr. Seth A. Brumm, president of the society, accepted the gift for the society and Dr. James M. Anders for the library committee. After the ceremony members inspected the library. Dr. Faught, who died about a year ago, was professor of operative dentistry at Temple University for many years. He was the father of Dr. Francis Ashley Faught.

Society News.—Dr. DeForest P. Willard delivered the annual oration of the Philadelphia Academy of Surgery, December 3, on "Relationship of the Parathyroid Gland to Calcium Metabolism." Dr. Benjamin Lipshutz also presented a paper on "An Incision for the Exposure of the Ventral Surface of the Distal End of the Radius and Its Related Structures."—Drs. Douglas Macfarlan and Robert F. Ridpath, among others, addressed the Philadelphia Laryngological Society, December 4, on "Ionization Treatment in the Ear—Present Status," and "Agranulocytic Leukemia," respectively.—The Obstetrical Society of Philadelphia devoted its meeting, December 6, to a discussion of the recent report and recommendations of the maternal mortality survey of Philadelphia. Various phases of the subject were presented by the following speakers: Drs. Jesse O. Arnold, the laity; Barton C. Hirst, the physicians; Clifford B. Lull, the hospitals, and William R. Nicholson, organized medicine.—The meeting of the Philadelphia County Medical Society, December 12, was devoted to a general consideration of fractures for the benefit of the practicing physician. Participants in the program were Drs. Hubley R. Owen, Eldridge L. Eliason, John Royal Moore and Harvey C. Masland.

SOUTH DAKOTA

Society News.—A recent meeting of the Yankton District Medical Society was addressed by Dr. Jacob A. Bargen, Rochester, Minn., on "Management of the Various Types of Colitis." Drs. Francis J. Abts, Yankton, and Joseph C. Ohlmacher, Vermillion, discussed thymoma.—Dr. C. Frederick Rodda, Minneapolis, addressed the Aberdeen District Medical Association recently on acute abdominal conditions in children.

Health Officers' Meeting.—The annual meeting of the South Dakota Health Officers' Association was held at Huron, November 14. Dr. Jay Arthur Myers, Minneapolis, was the guest speaker, giving an address on tuberculosis before the association and another at a public meeting. Among other speakers, Dr. A. S. Rider, Flandreau, president-elect of the South Dakota State Medical Association, discussed "Medical Society Organization."

TEXAS

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Texas is required by law to register annually on or before January 1 with the state board of medical examiners and at that time to pay a fee of \$2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

Dallas County Condemns State Medicine.—The Dallas County Medical Society at a meeting, October 25, adopted a resolution condemning all forms of socialized medicine and participation of the government or lay agencies in the practice of medicine except in cases of necessity. The resolution also condemned mass examination of school children, expressing the belief that such examinations should be made in the physician's office. The members pledged themselves by this action to make these examinations and to institute such measures of prevention as are practicable and acceptable to the parents and to take no part in "wholesale, unscientific, unsafe free examinations, or wholesale preventive measures applied without previous individual study of children." They further pledged themselves to see that no section of the public is neglected because of inability to pay. This resolution was prepared by the president of the state medical association.

UTAH

Hospital Cancer Committees.—Four Salt Lake City hospitals have formed special cancer committees during recent months to work with the standing cancer committee of the Utah State Medical Association. Each committee consists of a surgeon, an internist, a pathologist and a radiologist and in

some cases additional members. At the Salt Lake General Hospital members of the committee are Drs. Orin A. Ogilvie, George A. Cochran, Robert J. Alexander and James P. Kerby; at the Latter-Day Saints Hospital they are Drs. Leland R. Cowan, Ralph T. Richards, William R. Tyndale, Quince B. Coray and Lyman L. Daines; at Holy Cross they are Drs. John J. Galligan, Fuller B. Bailey, Laurence N. Osman, James P. Kerby and Thomas A. Flood, and at St. Marks Hospital Drs. Orin A. Ogilvie, William L. Rich and Charles W. Woodruff. The plan is to study all tumor material entering a hospital, compare the pathologic with the clinical diagnosis, the time elapsing between the time the patient first noticed any symptoms and the first visit to the doctor, and to study treatment and its results.

VERMONT

Society News.—Dr. Ira I. Kaplan, New York, addressed the Rutland Medical and Surgical Society, November 6, on "Malignant Lesions of the Lip, Tongue, Pharynx, Larynx and Esophagus." Dr. Edward M. Livingston, New York, addressed the society, October 23, on "Acute Appendicitis: Its Symptomatology and Differential Diagnosis."—Dr. William R. Morrison, Boston, addressed the Northwestern County Medical Society at Newport recently on "Modern Conceptions of Stomach Surgery."

GENERAL

Lumbermens Mutual Casualty Company Abandons Flat Rate Plan.—Information has been received following the publication of a letter by Dr. W. C. Nordholz in *THE JOURNAL*, November 24, page 1641, that the Lumbermens Mutual Casualty Company, Chicago, has abandoned its flat rate plan for medical service in relationship to noncompensable industrial cases.

Jacobi Fellowship for Women Physicians.—The Women's Medical Association of New York City offers the Mary Putnam Jacobi fellowship of \$1,000 for graduate work abroad in the medical sciences to any woman graduate of an approved medical school. Each candidate must be endorsed by the head of the department in which her previous work has been done, and the recipient must give full time to the study of her problem. Applications should be filed with the secretary of the committee, Dr. Rose Cohen, 36 West Ninetieth Street, New York, by April 1, 1935. They should be accompanied by statements as to health, educational qualifications and the problem proposed for investigation.

Prize Offered for Essay on Goiter.—The American Association for the Study of Goiter again offers the Van Meter prize of \$300 for the best essay on goiter, based on original research, preferably on the basic cause. The prize essay or an abridgement is to be presented at the annual meeting of the association in Salt Lake City, Utah, in June 1935. Competing manuscripts should be in the hands of the corresponding secretary, Dr. William Blair Mosser, Kane, Pa., not later than April 1, 1935. The prize for 1934 was awarded to M. A. B. Brazier, Ph.D., London, England, for her essay on "The Impedance Angle Test for Thyrotoxicosis." Honorable mention went to Prof. Ugo Cerletti, Genoa, Italy, and Dr. Roy McCullagh, Ph.D., Cleveland.

Health at Wilmington and Nashville.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended December 1, indicate that the highest mortality rate (19.1) appears for Nashville, Tenn., and Wilmington, Del., and the rate for the group of cities as a whole, 10.9. The rates for Nashville and Wilmington for the corresponding period last year were 16.1 and 14.7, respectively, and for the group of cities, 11.4. The annual rate for eighty-six cities for the forty-eight weeks of 1934 was 11.3 as against a rate of 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Meeting of Orthopedists.—Dr. Charles LeRoy Lowman, Los Angeles, was chosen president-elect of the Western Orthopedic Association at its second annual meeting in Los Angeles, November 9-10. Other officers are Drs. Lionel D. Prince, president; Merrill C. Mensor, secretary, and Howard H. Markel, treasurer, all of San Francisco. The next meeting will be held in the San Francisco Bay district. The organization of a chapter for the northern district of Washington and Oregon was unanimously approved. Dr. Walter Mosauer, Los

Angeles, was the guest speaker at the banquet, Friday evening, his subject was "Anatomy and Mechanics of Snake Locomotion." Other speakers on the program included:

Dr. Ernest W. Cleary, San Francisco, Simple Devices for Application of Traction to Fractures of Forearm and Leg Bones.
Dr. Charles L. Hawk, Hollywood, Treatment of Chronic Osteomyelitis.
Dr. Brooks P. Stephens, Oakland, Orthopedic Problems of Ameliasis.
Dr. Ward M. Rolland, Los Angeles, Supracondylar Fractures of the Elbow.

Southwest Society Opposes Health Insurance.—The Medical and Surgical Association of the Southwest, embracing Arizona, New Mexico, Western Texas and northern Mexico, at its annual meeting in El Paso, November 22-24, adopted resolutions opposing the establishment of national health or sickness insurance and endorsing the principles adopted by the House of Delegates of the American Medical Association at the Cleveland session. The resolution recommended that the government pass the problem of medical relief arising out of the present depression to the organized medical profession for solution, together with such legal powers and authority as may be necessary. It was asserted that the adoption of health and sickness insurance schemes represents an adjustment to an economy of poverty, whereas the problem in America is an adjustment to an actual or potential economy of abundance. The establishment, therefore, of yet another poverty-born device will serve to hinder rather than facilitate our adjustment and can have no logical justification, it was stated. Dr. James J. Gorman, El Paso, was chosen president-elect of the association, and Dr. David M. Davis, Phoenix, Ariz., became president. Drs. Chester R. Swackhamer, Superior, Ariz., and John G. Moir, Deming, N. M., were elected vice presidents and Dr. William Warner Watkins, Phoenix, secretary. The 1935 meeting will be held in El Paso.

Society News.—Dr. Edward S. Hatch, New Orleans, was elected president of the Clinical Orthopedic Society at its annual meeting in St. Louis, November 9-10. Dr. Philip Hoffmann, St. Louis, was chosen vice president and Dr. James E. M. Thomson, Lincoln, Neb., secretary. Next year's meeting will be held in Indianapolis and Louisville, Ky., dates to be selected later.—Dr. William L. Clark, Philadelphia, was reelected president of the Academy of Physical Medicine at its annual meeting in New York, October 30-31. Among features of the meeting were a symposium on the rôle of electricity in surgery presented by Drs. William D. McFee, Boston, William L. Clark, Philadelphia, Grant E. Ward, Baltimore, Lester R. Whitaker and Benedict F. Boland, Boston; an address by Prof. Isidore Gunzburg, Antwerp, Belgium, on "The European Concept of Physical Medicine," and the presentation of an honorary fellowship to Dr. Robert Tait McKenzie, sculptor and research professor of physical education, University of Pennsylvania, for his "achievement in physical education and sculpture and his notable contribution to the rehabilitation of maimed soldiers during the World War."—At the annual meeting of the American Society of Tropical Medicine, November 16, Dr. Henry E. Meleney, Nashville, Tenn., was chosen president-elect, and Dr. Edward B. Vedder, Washington, D. C., was installed as president. Dr. Alfred C. Reed, San Francisco, was reelected secretary. The dates for the next annual session were tentatively set for Nov. 13-14, 1935.

Government Services

Pediatrician Appointed Assistant Chief of Children's Bureau

Dr. Martha M. Eliot, associate clinical professor of pediatrics at Yale University School of Medicine and for several years director of the division of maternal and child health in the Children's Bureau of the U. S. Department of Labor, has been appointed assistant chief of the bureau in charge of all matters relating to health. Dr. Eliot, a graduate of the Johns Hopkins University School of Medicine, Baltimore, has carried on investigations on growth, nutrition, rickets and diet, with emphasis on the preventive and economic aspects of the problems. She was made instructor in the pediatric department at Yale in 1921, assistant clinical professor in 1927 and associate clinical professor in 1932. At present she is attending pediatrician to the New Haven Hospital and New Haven Dispensary. She has been on the staff of the Children's Bureau since 1924. Among other medical affiliations, Dr. Eliot is a member of the American Pediatric Society; the American Academy of Pediatrics, in which she is chairman of the committee on child health relations, and the National Research Council.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 17, 1934.

The Radium Treatment of Cancer

The report of the Medical Research Council on the medical uses of radium has just been published. The outcome of the research in radium therapy initiated by the Council has helped toward the stabilization of methods and shown that the reactions of the tissues to this form of radiation is most complex and bewildering. While certain of the responses of isolated forms of cell life may be comparatively simple, a very different behavior is shown by tissues that form part of a connected organized structure, and nowhere is this seen better than in the reactions of malignant tumors both to radium and to the x-rays. Even in the simplest living structures the reaction to radium cannot be readily explained or described.

Three varieties of malignant disease (other than skin cancer) offer the most promising field for the use of radium: uterine, buccal and breast cancer.

CANCER OF THE UTERUS

There is little apparent difference in the technic of the treatment of uterine cancer at the chief centers in this country and in the world at large. What is usually aimed at is local treatment with radium supplemented by x-rays to the pelvis. Comparison with the results of surgery show two important points: Frankly operable cases are treated just as successfully by radium as by surgery, but with a much smaller mortality, while inoperable cases give under radium a by no means negligible percentage of clinical cures—apparent freedom from disease for five years. Therefore an increasing number of gynecologists refer their patients for radiotherapy rather than submit them to operation.

CANCER OF THE MOUTH

In buccal cancer it has been a general relief to surgeons to know that, for primary lesions of the tongue, radium is successful in proper hands. At most radium clinics, comparatively little difficulty is felt in dealing with primary growths of the tongue by radium treatment, either interstitial or by means of larger units of 1 Gm. and upward applied externally. The trouble is with secondary growths in the glands. At present there seems to be an even balance of opinion between surgical removal and irradiation, either interstitially or externally by radium and x-rays.

CANCER OF THE BREAST

In breast cancer the position is still more problematic. Owing to its success in early cases, surgery will probably be followed for many years yet. But, in view of the fact that the proportion of success is small once the axilla is invaded, there is need for exploring radiologic methods to the utmost. The methods of interstitial radiation have been used, but the breast is not a favorable site because of the presence of so many important nerves and blood vessels, damage to which is so easy and made good with such difficulty. X-rays are probably the most suitable agent, and if the work of Coutard can be continued on a comprehensive scale, a big step forward will be made. In this country surgery and radiology are used almost to an equal extent in breast cancer, and the chief contributions to the treatment by radium have been initiated here. At the centers in St. Bartholomew's Hospital and Aberdeen the practice for some time has been as follows: The primary growth, with the probable extensions in the axilla and neighboring glands, is treated with interstitial radium. After the lapse of six or eight weeks the primary growth is removed and

examined by pathologists to see the effect of the gamma radiations. Under certain definite conditions of irradiation, comparatively little actively growing growth is left. Of seven patients treated in this way at Aberdeen in 1932, five remain well.

The centers supplied with radium by the Medical Research Council comprise six London hospitals—the Middlesex, University College, St. Bartholomew's, St. Peter's (for genito-urinary diseases), Marie Curie (staffed by women physicians), Royal Free (the London School of Medicine for Women) and St. George's—and hospitals at Birmingham, Cardiff, Aberdeen and Dublin. Manchester does not participate in the council scheme but receives a considerable amount of radium from the Radium Commission, and workers in its center receive grants for study in certain lines of treatment and in biologic problems. Research into the best methods of estimating radium dosage is being carried out at the Radium Institute of Manchester. This is on original lines and promises to be of considerable practical value.

The Scientific Refugees from the German Persecution

In a letter to the *Times*, Lord Rutherford, president of the Academic Assistance Council (formed to assist scientific refugees from the German persecution) reports progress. Of the German scholars and scientists displaced since April 1933, 200 have found permanent places and 325 have been provided with temporary facilities for continuing their research outside Germany. This means that at least two thirds of the total number who are justified in hoping to continue their scientific work have been assisted to remain in the academic world. The activities of the academic assistance committees have been coordinated on an international basis, and the size and nature of the problem are now known.

The Academic Assistance Council is at present giving emergency grants to seventy-one scholars and scientists in the universities of this country to maintain them while seeking permanent posts. Of the scholars to whom the Council made grants before April 1934, approximately one third have found positions outside this country. The council is convinced that this absorption will continue, provided the emergency grants in aid can still be given. But there is danger of the funds being exhausted before permanent placement is achieved. Some national committees on the continent are already faced with collapse, and the resources of the Academic Assistance Council will be brought to an end in July 1935 by its present commitments.

The council has decided that its emergency work of grants in aid, payment of traveling expenses and loans for reestablishment must continue, but that in addition it should make a more permanent contribution to the defense of academic freedom by the creation of a limited number of research fellowships available at the British universities for scholars and scientists of special standing in their subjects. For this purpose and for the continuance of its urgent emergency work the council proposes to issue an appeal for funds. The council has never, in principle, confined its emergency assistance to those displaced from Germany alone, and it proposes that the fellowships shall be available for scholars and scientists in any country who are unable to continue their work for reasons of religion, political opinion or race. For a constructive program of assistance on an international basis there is already the prospect of obtaining from an American source funds for the creation of thirty-six fellowships of three years' duration available in the universities of the British dominions.

Obligatory Medical Examination Before Marriage

In the house of lords, Lord Kilmaine moved that the marriage laws should be so amended as to make it obligatory for both parties to produce medical certificates of fitness before they

come before a minister of religion or the civil authority. He referred to many cases of men and women leading spoiled lives through no fault of their own but owing to some hereditary taint. He proposed that there should be four kinds of certificates. Certificate A would be the "all clear," stating that the parties were perfectly fit to marry and raise a family. Certificate B would show that for some reason of health there should be delay, and the parties could present themselves again after six months. Certificate C would say that the parties could marry without danger to each other, but that it should be a childless marriage. He held strongly that it was wicked to bring children into the world unless there was a reasonable prospect of their being able to lead healthy, happy and useful lives. This implied that some form of birth control must be employed. Certificate D would prohibit the marriage entirely. It would be used in cases in which there was danger not only to the children but to the contracting parties.

The bishop of Norwich opposed the motion. He said that there was a dignity attached to the human race which must never be lost sight of. Failure to obtain a certificate would not always prevent alliances from which children would result. The archbishop of Canterbury dwelt on the practical difficulties of the proposal. In the case of certificate C, how was the impossibility of procreation to be ensured? For the government, Viscount Gage said that the Ministry of Health regarded the proposal as a matter of some importance. He did not think that any serious consideration had been given by the public to limitation of the right to marry except in the case of mental defectives. The attitude of the Ministry of Health was that there was sufficient evidence from experience to justify the testing of public opinion thoroughly in regard to the reports of the Board of Control (the body which controls lunacy administration) and the Departmental Committee on Sterilization. These reports recommended the voluntary sterilization of mental defectives. It was realized that there were undeniable evils, some of which might be prevented, but it was felt that in these delicate matters it was necessary to carry public opinion. To proceed on the lines proposed by Lord Kilmaine without large evidence of public and medical support would be disastrous to the cause he had at heart. The motion was by leave withdrawn.

PARIS

(From Our Regular Correspondent)

Dec. 13, 1934.

Social Insurance Law Unpopular

There is much discontent in French medical circles and an active discussion is taking place as to what can be done to bring the medical profession into line with the rapid changes taking place in organized society, especially since the World War. Clinics, controlled and directed by groups of physicians, as they exist in the United States, are practically nonexistent not only in France but all over Europe. A series of letters in a recent issue of one of the Paris journals reveals the opposition of those who hesitate to abandon the traditions of medicine and the fervent plea of the more progressive physicians to adapt themselves to the social evolution and establish diagnostic centers under private control. The French social insurance law is not very popular, either with those whom it protects against illness and old age or with the medical profession. It differs, however, from similar legislation in Germany in permitting the assured to choose his own physician, who must adjust his charges to a fixed government tariff. The establishment of diagnostic centers all over France by the profession is one solution of the question before the government steps in to organize this method of extending the benefits of modern medicine.

Phlebitis and Embolism Following Gynecologic Operations

In the October 20 issue of the *Progrès médical*, Macias de Torrès, a prominent Spanish surgeon, submitted his experience based on 2,000 major gynecologic operations. There were twenty-five cases (1.25 per cent) of phlebitis affecting the lower extremities, and seven embolisms. More than half, fifteen of the twenty-five cases of phlebitis, were in women over 40. Operations for uterine fibroids constituted more than one third (36 per cent) of those, followed by phlebitis. He agrees with the generally accepted opinion that infection as the direct result of the operation, or latent infection in the removed structures or as the result of trauma during the operation, only exceptionally has any part in postoperative phlebitis or embolism. These complications are rare following salpingectomy of infectious origin but are common after myomectomy or removal of large cysts or after operations for extra-uterine pregnancy. Preceding generalized infections, especially influenza, may have some influence but not a very important one. Anemia as the result of metrorrhagia or cardiovascular changes is certainly an important etiologic factor.

A series of cases was studied to see whether changes in the coagulation time of the blood had any influence. From extensive coordinated laboratory and clinical observation it would appear that it is impossible at present to tell in which patients a phlebitis is likely to appear after operation. The preoperative use of vaccines does not act as a prophylactic, as maintained by some French gynecologists. The administration of cardiac stimulants, perfect asepsis, unnecessary traumatizing of tissue, and a good operative technic are the only measures that might aid in decreasing the possibility of the development of phlebitis. Getting the patients out of bed early is still a debatable prophylactic. He allows the patient to get up on the tenth day, at which time the sutures are removed from the abdominal wall.

In 2,000 laparotomies for gynecologic conditions there were seven (0.35 per cent) fatal embolisms. In some nonfatal cases the pulmonary embolism is often erroneously diagnosed as a bronchopneumonia. Of all the causes of embolism, such as varicose veins, anemia, age, and operations by the vaginal route, the most important factor according to de Torrès appears to be the age of the patient. Of the seven patients, five were above 40, one was 38 and one was much younger. In conclusion, a good operative technic is the only measure that will tend to prevent postoperative thrombosis and embolism.

Typhoid, Shellfish and Fuel Oil

At the October 16 meeting of the Academy of Medicine of Paris, Drs. Loir et Legangneux of Havre read a paper on typhoid, shellfish and fuel oil. The presence of several large oil refineries at this seaport and the constant discharge of fuel oil from steamers caused the authors to study how this can affect the shellfish, especially mollusks and clams, which live along the shores near such a harbor. The immediate cause of this investigation was an epidemic of typhoid this fall, which could be traced to the ingestion of shellfish.

They carried out some experiments to determine how the oil acts on such shellfish.

They found that mollusks absorbed some of the fuel oil, as was evident from the odor and the fact that the mollusks appeared pale and ill nourished.

They studied the effects of fuel oil on typhoid and paratyphoid cultures, which were examined every two hours. No inhibitory action was observed in the development of the cultures. One can best explain infection following the ingestion of shellfish (mollusks, clams and oysters) by the fact that they are rendered incapable of defending themselves against the

development of typhoid and paratyphoid bacilli because of the toxic action of the fuel oil. Clams are more dangerous than any other shellfish, because the clam lives so near the surface of shallow water that it is more likely to have its defensive mechanism of ejecting organisms rendered inert by the fuel oil floating there. The conclusions reached were that the oil per se is not very toxic but leads to a cellular degeneration even when only small quantities are ingested by the mollusk or clam. This places the latter at a disadvantage in trying to struggle against the organisms.

Influence of Exercise on Metabolism

Guy-Laroche, Chaisemartin and Grigaut made some interesting observations on twenty-one army officers during a six weeks intensive training period. No restrictions of diet were required. The first effect noted was an increase in weight in fifteen of the twenty-one. Cholesterol can be considered as an index of fat metabolism as well as that of lipoids in general. When the percentage in the blood is higher than normal, the combustion of these lipoids is delayed in the organism. Examination of the blood revealed a normal figure and remained so in fifteen of the twenty-one. In nine others the percentage was above normal at the beginning but decreased markedly during the six weeks observation period.

The better functioning of the tissues and viscera was followed by a decrease in the blood urea and uric acid, which was especially noticeable in the case of those whose uric acid in the blood was above normal at the beginning. It is essential not to fatigue the individual and to increase the severity of the exercises gradually. Sports and physical culture should be supervised medically in order to avoid the harmful effects of fatigue.

This agrees with the views expressed at the International Congress of Physical Education and Sports held last September in Chamonix, France. It was voted at this congress that special courses be given in medical schools and a diploma be granted at the end of these courses.

Inoculation of Rabbits with Cerebral Tissue in Dementia Paralytica

Bessemans of Ghent University, Belgium, reported his observations at the Academy of Medicine on the inoculation of cerebral tissue obtained during life and at necropsy from a case of dementia paralytica. All the tests for syphilis were positive during life. The cerebral tissue was obtained during a decompression operation. Although the latter was followed by temporary improvement, death occurred thirty-eight days later. More cerebral tissue was obtained for inoculation of rabbits and guinea-pigs at the necropsy, held eight and one-half hours after death. In both instances the animals failed to develop lesions, even though at the first series of inoculations *Spirochaeta pallida* was demonstrated as being active. These experiments show that the spirochete of dementia paralytica is incapable of giving rise in the rabbit, either directly or indirectly by the intermediary of the guinea-pig or of other rabbits, to specific lesions like those caused by the ordinary *Spirochaeta pallida*. Bessemans is of the same opinion as Levaditi, that the spirochete of dementia paralytica is a special form with elective localization for the nervous tissue of man, such that its original pathogenic properties differ from those of the ordinary *Spirochaeta pallida*.

Responsibility in Abortion

An interesting verdict as to the responsibility of a physician in relation to criminal abortion has just been rendered by the court of appeals, to which a decision of a lower court had been referred. A young woman, believing herself to be pregnant,

asked a physician to perform an abortion. He refused but gave her the address of a woman who would comply with her request. The physician also aided by instructing the applicant how to find the abortionist without attracting the attention of the janitor of the apartment house, who in Paris is indirectly the representative of the police. Both the lower and the appeals court decided that the physician was just as responsible for the abortion, in simply indicating where it could be done, as though he himself had performed it. The law in France is very strict in such cases and the physician will be subject to from two to five years of prison and a heavy fine.

BERLIN

(From Our Regular Correspondent)

Oct. 8, 1934.

Liver Function Tests in Nervous Disorders and in Opiate Addiction

Dr. K. Hang of Rostock made liver function tests on patients with polysclerosis, on patients who had had encephalitis and on opium addicts. He made the galactose test, determined the urobilinogen in the urine and occasionally made the test with sodium phenoltetrachlorophthalein and determined the quantity of bilirubin in the serum. In about half of the cases of multiple sclerosis and in nearly all patients with the striatal syndrome there existed disturbances in the carbohydrate fixation capacity of the liver and (less often) disturbances of the pigment metabolism. Similar disturbances of the hepatic function were observed in opium addicts, morphine addicts and in persons who had been given morphine-scopolamine for longer periods and in larger doses, so far as they had withdrawal symptoms. If these were not present or if a diet rich in carbohydrates and deficient in fats and in proteins was prescribed, the metabolic disturbances were less severe or were entirely absent. Such a diet, that is, an antiacidotic one, is the best in morphinism in general, but particularly during and after withdrawal, because it appears to be effective in counteracting the acidosis of morphinism. Functional disturbances of the liver were observed also in a case of codeine addiction but not in an addict to eucodal. The blood sugar, determined during fasting, was regularly rather high or above normal in morphine addicts. By "dehydrochol acid" the blood sugar could be somewhat reduced, the urobilinogenuria could be counteracted, and in some instances the carbohydrate tolerance could be somewhat increased. The same could be observed in parkinsonism and (but less pronounced) in multiple sclerosis. After treatment with liver extracts, by mouth or by injection, the blood sugar (determined on the fasting stomach) increased in the addicts but likewise in parkinsonism and generally also in multiple sclerosis; the urobilinogenuria decreased as a rule or disappeared entirely. The galactose hyperglycemia changed hardly at all in opiate addicts and in patients with parkinsonism, whereas in patients with polysclerosis the carbohydrate tolerance increased as a rule. Liver preparations and "dehydrochol acid" exerted no influence on neurologic conditions, but there was an improvement in the general condition and in the turgor of the tissues. For this reason the two remedies may eventually effect remissions in multiple sclerosis; and in morphine addicts and in persons with the striatal syndrome they may act as general stimulants. The treatment of the striatal syndrome by atropine or by scopolamine reduced the urobilinogenuria but increased the blood sugar content and left the galactose tolerance of the persons with the striatal syndrome generally unchanged. The demonstrated disturbances of the hepatic function in opiate addicts, in multiple sclerosis and probably also in the striatal syndrome are most likely the results and not the cause of the disturbance in the central nervous system.

Bacteriologic Relations between the Appendix and the Oral Cavity

In recent years the department of Professor Gins in the institute for infectious diseases in Berlin has conducted experiments that have clarified the bacterial flora of the teeth, by the cultivation of about twenty former unknown anaerobic organisms without spores. It seemed natural to employ this method also for other tissues. The appendix was chosen because conditions may be expected in its mucous membrane that are favorable for the development and preservation of anaerobic bacteria. The observations thus far have been made on eight surgically removed appendixes, some of which were from acute and some from chronic cases. It was found that the cultivation of non-spore bearing anaerobic bacteria failed in only a single experiment. In all other instances *Leptotrichia*, streptobacilli, pneumosintes, *Bacterium melaninogenicum*, *Fusiformis* or *Vibrio* were produced in pure culture. Approximately ten types that were found were identical with forms that were already known to occur in the oral cavity. Nothing definite can be said as yet about their significance in the pathogenesis of appendicitis. At any rate it is worthy of note that, in the microscopic picture of the smears from the mucous membrane of some of the examined cases, certain formerly not cultivable threadlike bacteria predominated. In the critical evaluation of the observations that were made in these experiments, numerous forms of anaerobic Actinomycetes that appeared in the cultures were disregarded, since their occurrence seems to be almost universal, a fact that so far has not been demonstrated with regard to the other types. Nothing is yet known about the time of the first appearance of the non-spore bearing anaerobes in the appendix, but Gins assumes that, in analogy to the oral cavity, they invade the appendix during early youth. In future studies these types should be given especial attention, since some of them, particularly *Leptotrichia*, may be pathogenic.

Action of Dichlorethylsulphide (Yellow Cross—Mustard Gas) on the Skin

Among the poison gases of the World War, it was the "yellow cross" (mustard gas) that became especially well known. Its peculiar action, namely, the relatively late appearance of the clinical manifestations and the lasting action on the skin, was extremely annoying. Whereas the gradual development of the macroscopic change had been carefully studied, information about the changes within the tissue itself were still lacking. Doerffel and Pöpping of Königsberg, therefore, studied macroscopically and microscopically the course of corrosion of the skin with the mustard gas (dichlorethylsulphide) on animals and compared with it corrosions produced by mineral acids. The corrosives employed for these experiments were undiluted dichlorethylsulphide and its solutions in benzene (1:10, 1:50, 1:100), fuming nitric acid, concentrated sulphuric acid and so on. The exposed portions of the skin were excised after ten minutes, after one, two, six and twelve hours, after one, two, three, six and nine days, and finally after two and three weeks until the process had completely healed. Following the corrosion there developed characteristic changes in the epithelium and in the cutis. A pronounced edema develops in the epidermis and in the cutis, and this within a comparatively short time leads to a subepithelial formation of blisters. The vessels are dilated, and some are plethoric and are surrounded by a perivascular mantle of infiltration (eosinophilia). These changes extend widely beyond the originally corroded focus. Corrosions produced by mineral acids present entirely different aspects. Here develops at the corroded site a drying and shrinking of the tissues, which finally leads to a wedge-shaped shedding of the necrotic region of the skin with a line of demarcation. The changes resulting from mustard gas resemble greatly those produced by x-ray burns.

ITALY

(From Our Regular Correspondent)

Sept. 15, 1934.

The Lombard Surgical Society

The Società Lombarda di chirurgia met recently in Milan under the chairmanship of Professor Donati, director of the surgical clinic of the University of Milan. Rotolo spoke on typhoid peritonitis, after having examined the records of 5,300 necropsies carried out at the Institute of Pathologic Anatomy in Milan. Of the 117 fatal cases of typhoid, in seventeen cases, or 14.5 per cent, there was diffuse peritonitis due to perforation; one case presented a circumscribed peritonitis due to perforation; two cases, peritonitis due to rupture of a suppurative infarct of the spleen, one case due to perforation of a typhoid ulcer. There were twenty-three deaths due to early peritoneal complications, or 19.4 per cent.

Pellegrini dealt with early surgical operations in acute appendicitis. Since the advantages of an early operation are indisputable, he suggested that a special publicity campaign to that end be carried on among the physicians and the general public.

Alberti used intensive radiotherapy in a grave case of post-operative recurrence of sarcoma of the thyroid region, accompanied by metastases of the bony skeleton, to the right tibia and to the femoral diaphysis of the same side. The treatment consisted in the simultaneous application of three casts containing a total of about 290 mg. of radium and kept in position for about three weeks. The reaction was violent, with anemia, fever and asthenia, but the final result was the disappearance of the recurring focus in the neck and the domination of the two metastatic foci in the bones, with complete restoration of the bone destroyed by the tumor, which gradually regained its normal structure. The patient has enjoyed excellent health during the past three years. The speaker took account of the notable changes brought about—particularly in the blood—by the absorption of such an especially large quantity of radiation, and since such changes were then followed by a complete restoration of the normal conditions, he urged his colleagues not to overestimate the damage and the dangers associated with intensive radium therapy and to regard with less skepticism in such cases the possibility of an effective radium treatment.

In the treatment of postoperative duodenal fistulas, Pecchia and Peracchia secured excellent results by using insulin. They hold that this condition is associated with a dysfunctioning of the pancreas, which is accompanied ordinarily by duodenal fistulas and which is the cause of a change in the carbohydrate metabolism. Insulin promotes the cure of the fistulas by reestablishing the exchange of hydrocarbons and acting on the gastric secretion and on the external pancreatic secretion. The speakers are of the opinion that this treatment, combined with hypodermic and intravenous administration of large quantities of dextrose and chlorides in fluid form, is sufficient to bring about a recovery from duodenal fistulas. They recommend this treatment also for the reason that it does not contraindicate other methods of treatment that might be desirable in some cases.

A New Center for Combating Sterility

A center for the diagnosis and treatment of sterility has recently been established at Milan under the supervision of the Cassa edile per le assicurazioni sociali. For two years the problem of childless marriages has received special attention with the aid of the abundant clinical material. The president of the Cassa has now decided to combine and coordinate the activity of its various specialized sanitary organizations in a single center, the aid of which is offered gratuitously not only to its members but also to any one desiring to discover the nature of sterility.

Poisons Used with Suicidal Intent

Meneghette of Trieste has studied the various types of poison used for suicidal purposes. There is a widespread opinion that at various epochs a suggestive factor difficulty of analysis plays a part in the choice of a poison. The accidental and the criminal poisonings do not present much psychologic interest. His observations show that, whereas in the remainder of Italy for every 45 cases of suicide by poisoning there are 100 by firearms, in Venezia Giulia (Trieste) the respective relation is 150:100. During the first two decades of this century the poison most commonly used was corrosive mercuric chloride. Of late the employment of barbiturates has become widespread.

Scrotal Ring of Domrich

Favaro of Modena has spoken before the Surgical Medical Society of this city on the results of his research on the scrotal ring of Domrich (1927), which, he maintains, is none other than the "money bag" (paunch) of Girard (1823) and of the French topographic anatomists of the last century. This condition concerns a thickening of the superficial fascia and of the deep layer of the subcutaneous tissue which lies anteriorly to the opening that communicates below with the third inguinal ring. McGregor demonstrated the third ring in 1928 but did not take cognizance of the work of Domrich. Posteriorly the ring is circumscribed by a similar thickening of the subcutaneous tissue. According to the author, the spermatic cord is often caught at the root of the scrotum as the result of irregular thickenings of the subcutaneous tissue, forming altogether a scrotal inguinal ring.

Vital Statistics

From the monthly bulletin of the Istituto centrale di statistica, it appears that, on March 31, 1934, the resident population of Italy was 42,868,000. The number of new-born for the first five months of the current year (440,100) is greater by 8,795 than that for the same period in 1933 and constitutes 10.4 per thousand inhabitants. The excess of living births over deaths was thus 192,078.

Cabinet Approves Sanitary Laws

The cabinet recently approved the new sanitary laws. The trend has been to make the powers of the sanitary authorities more effective, and to exert a supervision and control over every activity that aims to promote the public health. The cabinet approved also new rules pertaining to the granting of rewards for meritorious civil services. These regulations provide also for the bestowal of medals on those scientists who, in the research laboratories, risk their lives for the welfare of mankind.

RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1934.

Bacteriology of Leprosy

Dr. H. C. de Souza Araujo recently presented before the members of the Academia Nacional de Medicina the results of his experiments on the bacteriology of leprosy, on which he has worked about six years. In spite of the fact that typical acid-alcohol-fast organisms have been isolated from leprosy material of either human or murine origin and indexed as *Mycobacterium leprae*, there are bacteriologists who still wonder whether or not those organisms are the etiologic agents of leprosy. In the official collection of leprosy cultures of the Lister Institute of London, under the numbers from 509 to 522 the following specimens of *Mycobacterium leprae* appear: Kedrowsky, Rost and Williams, Nabarro and Bayon, Clegg I and II, Duval's Chrome, Levy-Chrome, Brinkerhoff I and II, Lepra 8, Barry, Reenstierna, Gurrie and Elly. There is the genus *Mycobacterium*, created by Lehmann and Neumann in

1896, and the genus *Coccithrix* (*Coccithrix leprae*), created by A. Lutz in 1886. Even today Lutz defends the priority of the creation of *Coccithrix* over *Mycobacterium* and the advisability of adopting his genus. During the conference on Leprosy in Manila in January 1931 the members accepted the designation *Mycobacterium leprae*, first genus of the *Mycobacteriaceae* (Chester, 1901), second family in the order of the *Actinomycetales*, under the class of *Schizomycetes*, for the etiologic agent of leprosy. The tendency of modern mycologists is to include in the *Mycobacterium* genus all, or at least the majority, of the specimens of mycobacteria of the *Actinomyces* genus (Harz, 1877), which heretofore have been considered as the third genus of the *Actinomycetaceae* family (Buchanan, 1916). In this connection Drs. Kedrowsky, Brulowa, Platanov and some others reported in 1928 results of experiments during which they observed bacterial mutations in old cultures of tubercle bacilli and of *Mycobacterium leprae*. In the same year the speaker reported results of experiments during which he isolated a pure culture of *Actinomyces* (*A. lepromatis*) from leprosy material. This fact was corroborated in 1932 by Tomas Ocaña of Argentina in four cases of florid leprosy. The speaker has a complete collection of cultures of *Mycobacterium leprae*, with the various specimens of which he has worked from 1928 to date. Some of his experiments have not as yet been reported. Besides the cultures from the English and American collections, he has the following: cultures of the *Streptothrix leproides* of Devke, discovered by J. M. Gomes, which are used as an antigen in the test for deviation of the complement in leprosy; those of the Instituto de Hygiene of São Paulo, which are of great value in early diagnosis of leprosy; Acosta I and II, isolated by F. L. Acosta from lepers in Bogotá, and samples isolated in Assumpção by Luiz Migone.

The results obtained by the speaker while he was working with Kedrowsky's culture, one of the best of the collection, and probably the one that has been recently used in the preparation of a new antileprosy vaccine, confirmed those reported by Fraser and Fietchez in the *Lancet* in 1915. He reported negative results from Shiga's method in 1932 and from Loewenstein's method last year. Ota's cultures from Japan lived but a short time in the speaker's laboratory and he was unable to perform any experiments with them. Soule was unable to send him some of his cultures, because they were so scanty that they sufficed to cover only his own work in immunology. He expects to work in the near future with cultures from Vienna (Loewenstein) and from the University of California (Walker). The speaker discussed Lobel's work, as it appears in the book "*Leprosy of Buffaloes*," Lobel's veterinary doctoral thesis. Lobel reports a disease in buffaloes, of which he studied twenty-one cases in Java. The disease was named tubercular leprosy in buffaloes, because of its resemblance to human tubercular leprosy. It begins by the appearance of erythematous spots in the skin, which evolve into confluent cutaneous nodules in which an acid-fast organism, similar to Hansen's bacillus, is found in great numbers. The histopathology of the disease is also similar to that of human leprosy. Leper cells with globoid bodies are always present in the nodules. Lobel refused the hypothesis of tuberculosis. The study of this new morbid entity in animals with which the natives of Java live in so close promiscuity, since they are the only beasts of burden and almost the only means of transportation in a city in which the endemicity of leprosy is so high, may open new horizons in the pathogenesis of leprosy.

Blastomycosis in Brazil

Dr. Florino de Almeida, assistant head of the laboratory in the department of microbiology of the Faculty of Medicine of São Paulo, recently lectured before the Sociedade de Medicina e Cirurgia on the etiology of blastomycosis in Brazil. He

reviewed the large number of fungi that have been classified as etiologic agents of blastomycosis and focused his studies on *Coccidioides immitis* and *Paracoccidioides brasiliensis*, two varieties related to the Brazilian disease. One case was reported from Argentina and various cases from the United States caused by *Coccidioides immitis*. This mold was incriminated for a long time as the etiologic agent of Brazilian cases of blastomycosis. The speaker stated that the North American and the South American varieties are different, both in their biology and in their morphology. Both fungi show remarkable morphologic differences in the lesions. The speaker, after a review of the literature, projected films showing the clinical aspects of blastomycosis and the characteristics of the etiologic agents.

AUSTRALIA

(From Our Regular Correspondent)

Oct. 19, 1934.

Malaria in Australia

A third of Australia lies within the tropical zone. In the tropics too are Papua and the Mandated Territory of New Guinea. Before the coming of the white man, tropical Australia was probably malaria free but, like Mauritius in the last century, it became infected. Happily, the resulting endemicity has not been of grave extent except in a few scattered areas and instances. In Papua and New Guinea it is otherwise. Malaria is a factor of great importance, which enters in one way or another the daily life and work of every resident. Malaria has never seriously interfered with tropical settlement in Australia as it has done in nearly every other tropical area. There is no evidence to suggest that malaria existed in Australia prior to its early settlement. The disease was imported from overseas. It was first reported in 1838 at Port Essington in the Northern Territory of Australia. The first medical description was given in 1867 by Dr. J. A. White, who described the fevers of the Gulf of Carpentaria in Queensland. In Burketown, which is on the gulf, in 1864 the population was annihilated by the "black sickness," which was probably introduced by Malays coming across in proas. This was almost certainly malignant malaria. In general it might be said that malaria is nowhere endemic in Australia below the tropic of Capricorn. Sporadic cases of indigenous origin have indeed occurred in New South Wales and Southwestern Australia and have occasioned considerable anxiety and alarm, but in general the disease is confined to the narrow coastal strip that borders Australia's million square miles of tropical territory; i. e., to the northwest coast of Western Australia, the Northern Territory, the coastline of the Gulf of Carpentaria, Cape York Peninsula, and the northern Pacific slope as far south as Cairns and Innisfail (19° S.). These areas are popularly regarded as endemic centers.

So far as the vector is concerned, Heydon has definitely incriminated *Anopheles punctulatus* by dissection and experiment, for the Territory of New Guinea, while in the absence of proof, *Anopheles annulipes* is hypothecated for Australia, on account of its preponderance of numbers in malarious localities. The occurrence of isolated "epidemics" or "flare ups" of malignant malaria in the endemic area has been a feature of the history of malaria in Australia. The subject is of topical interest at the moment on account of a sharp epidemic in the Kimberley region of Western Australia. The epidemic can be traced to an outbreak near Wave Hill in July 1933, which smoldered away among the station blacks and their nomadic brethren till with the wet season of 1934 it broke into flame and destroyed 200 natives and a dozen white men. The discussion of malaria cannot be complete without reference to the effective control of malaria that is now being maintained in Darwin and the Northern Territory by Dr. Cook. The chief

strength of his method is to ensure adequate treatment of every case. His efforts to convey medicine and instructions to sufferers embraces the airplane, the camel and the bush mail.

State Ministry of Health Forecast for Queensland

The serious nature of the epidemic of Weil's disease revealed the lack of organization in the state health department in Queensland. Opportunity was taken to appoint Dr. R. W. Cilento as director general of health and medical services. Dr. Cilento's appointment is an important development in what is intended to be a thorough reorganization of the health and local authority administration. The director general will be given control not only of the hospitals and medical services, aborigines, insanity and aged people's homes but also of health services now covered by other departments. Dr. Cilento is highly qualified for the position. He has done valuable work in New Guinea, where he was director of public health. He was director of the Australian Institute of Tropical Medicine at Townsville in 1921 and 1928 and was subsequently the director of the division of tropical hygiene. In the course of his work he has been associated with the hookworm campaign (partly financed by the Rockefeller Foundation), the control of leprosy, chronic nephritis, and dietary problems in New Guinea.

Cremation in Australia

The rate of increase in cremations is greater in Australia than in any other part of the world. With a population of seven million, there are six crematories in operation. The figures for other countries are Germany 109, United States 87, Great Britain 25, Switzerland 20, Denmark 12, Czechoslovakia 11, Sweden 10, France 6 and Norway 5. During the past twelve months there have been three crematories established in Australia, two in New South Wales, and one in Queensland. These have all been of modern design, the Queensland crematory using an electric furnace giving a temperature between 2,000 and 2,500 F. In the Sydney (Rockwood) crematory there were 138 cremations in 1926. In 1933 there were 1,367. At the Melbourne crematory there were 84 in 1928 but this total had increased to 263 in 1933. One aspect of cremation that appeals to the public is that the cost is £10. This is much less than the average cost of a grave site, its preparation, monumental work and maintenance. Religious opposition is evident by the Roman Catholics. The cremation regulations require two medical certificates to be provided before cremation can take place. One views the increasing adoption of cremation with approbation. Even in a young country like Australia, whose history extends over a mere century (Melbourne celebrates its centenary this week), the areas of ground occupied by cemeteries seem unduly large. In Tasmania the cemeteries surround the churches. With the expansion of the great cities, the necessity has frequently arisen for bodies to be disinterred and the cemetery area used for other public purposes.

New Zealand Controls Contraceptives

Legislation has been introduced into the New Zealand parliament to restrict the sale of contraceptives to registered chemists and only to persons over 18 years of age. The use of automatic vending machines is prohibited, as is also the offering for sale in a street or public place. Illuminated signs must not be used for the advertising of contraceptives, but displays can be made within the chemist's shop provided such are not visible to passers-by. The act defines contraceptives as "any chemical or mechanical means for the deliberate restriction of conception."

Epidemic of Weil's Disease in North Queensland

Since October 1933 an epidemic of Weil's disease, or spirochetal jaundice, has been in existence in North Queensland among the sugar cane fields around Ingham. There have been 134 cases and six deaths. The disease has run its usual course

of jaundice, gastric disturbance and multiple hemorrhages. *Leptospira* has been demonstrated, and cultures from the urine of the patients and the kidneys of rats caught in the epidemic area have been positive. Ingham has an average yearly rainfall of 78.56 inches, taken over forty-two years, and during the early months of the epidemic the rainfall was three times the monthly average. Rat infestation is a serious problem in this area. Pollution of the ground and other unhygienic practices of the cane cutters make difficult the epidemiologic control. This is the first time this disease has been recognized in Australia. It is expected that the epidemic will become widespread, as infected rats have been identified over a wide area.

Anthrax from Shaving Brush

A case of anthrax has occurred in Canterbury, New Zealand, as a result of using an imported shaving brush understood to be of Japanese origin. Several similar cases occurred in Melbourne ten years ago.

Marriages

ANDREW B. WHITAKER, Camden, S. C., to Miss Alice Irving Ball of Pine Orchard, Conn., at New Haven, Conn., October 24.

ERNEST WILLIAM BLANCHARD, Traverse City, Mich., to Miss Lillian Swingley of Cincinnati at Covington, Ky., November 12.

RUDOLPH MAXIMILIAN GOEPP, Philadelphia, to Miss Elizabeth Alma Louise Wenning of Nashville, Tenn., October 6.

SIDNEY WILLIAM WATSON, Alexis, Ill., to Miss Margaret Powers of St. Paul, at Bowlers, Minn., November 3.

ALFRED PARKER SMITH, Winchester, Tenn., to Miss Sara Knox McDowell in South Pittsburg, September 21.

SHELBY WILLIAM VANCE, Pineola, N. C., to Miss Frances Elizabeth Hudson of Cartersville, Va., October 25.

WALTER HARRIS KETCHUM JR., Jacksonville, Fla., to Miss Dorothy Alice Dodd in Atlanta, Ga., October 13.

PHILIP A. CAULFIELD, Washington, D. C., to Miss Grace Tumulty in Spring Lake, N. J., September 22.

CLARENCE OLSON, Princeton, Ill., to Miss Ola Mae Dilts of Michigan City, Ind., in Chicago, November 1.

WILLIAM HUTSON PRIOLEAU to Miss Sarah Whitehead Parsons, both of Charleston, S. C., in November.

JAMES KIRBY HOWLES, New Orleans, to Miss Mildred Ione Dunn of Baton Rouge, La., in November.

LEWIS FOX FRISSELL, New York, to Mrs. Ethel Hope Bennett in Newport, R. I., September 27.

ESTHER ELIZABETH SMUCKER, Morton, Ill., to Mr. John Hodel at Tiskilwa, Ill., November 4.

OSCAR J. MICHAEL, Danville, Ill., to Miss Pauline S. Smith of Bridgen, Ont., Canada, October 20.

HOWARD STEPHENS, Mentor, Ohio, to Miss Lenora Rimpes of Cleveland Heights, November 9.

CYRIL J. RADL, Pardeeville, Wis., to Miss Ruth Armstrong of Wauwatosa, November 10.

JACOB C. LEONARD JR. to Miss Mary Louise Moffitt, both of Lexington, N. C., October 20.

EDWARD J. CALLAHAN, New York, to Miss Emma Jessup of Essex Fells, N. J., July 1.

MADISON H. BUCKLEY, Martin, Tenn., to Miss Sue Margaret Moore of Dresden, recently.

OLIN A. ELLIOTT to Miss Pauline Zaayer, both of Des Moines, Iowa, August 31.

GEORGE A. DUNCAN, New York, to Miss Kathryn E. Hewitt of Baltimore, recently.

SARKIS H. KASH, Cudahy, Wis., to Miss Dorothy Amman of Racine, November 10.

HARRY JACOBS, Brooklyn, to Miss Celia Hornung of Corning, N. Y., November 29.

JAMES E. ORR to Miss Margaret James, both of Seneca, S. C., October 24.

JOHN L. BUNDY to Miss Laura Yorke, both of Rock Hill, S. C., October 19.

ADNER WOLF to Dr. ANNE ROBINSON, both of New York, November 24.

Deaths

Edward Dix Fisher, New York; University of the City of New York Medical Department, 1878; in 1911 member of the House of Delegates of the American Medical Association and in 1911-1912 Chairman of the Section on Nervous and Mental Diseases; professor emeritus of neurology, University and Bellevue Hospital Medical College, assistant to the chair of materia medica, 1881-1884, instructor in diseases of the nervous system, 1884-1885, lecturer in the department of nervous diseases, 1885-1888; adjunct professor of medical jurisprudence and psychological medicine, 1888-1890, adjunct professor of nervous diseases, 1891-1892, adjunct professor of nervous diseases, medical jurisprudence and psychological medicine, 1892-1893, professor of mental and nervous diseases, 1893-1898; upon the consolidation of the medical department of New York University with the Bellevue Hospital Medical College in 1898, he became professor of diseases of the nervous system and served until 1906 was professor of nervous and mental diseases in 1906-1924 and professor of neurology in 1924-1928, when he became professor emeritus; member of the Medical Society of the State of New York and the Association for Research in Nervous and Mental Diseases; past president of the American Neurological Association and the Medical Society of the County of New York; at various times on the staffs of the Bellevue, Willard Parker and St. Vincent hospitals; aged 78; died, November 23, of cerebral arteriosclerosis.

Cornelius Godfrey Coakley ☉ New York; University of the City of New York Medical Department, 1887; professor of otolaryngology, Columbia University College of Physicians and Surgeons; lecturer in anatomy, 1889-1890, and instructor of histology, 1889-1896, at his alma mater; clinical professor of laryngology, 1898-1905, and professor, 1905-1914, University and Bellevue Hospital Medical College; member of the American Laryngological Association and the American Otolological Society; fellow of the American College of Surgeons; consultant in otolaryngology, Babies, Bellevue, Sea View, Woman's, Sloane, Skin and Cancer and Southampton hospitals and the New York Infirmary for Women and Children; author of "Diseases of the Nose and Throat"; aged 72; director and attending otolaryngologist, ear, nose and throat service, Presbyterian Hospital, where he died, November 22, of heart disease.

John Walter Carmack ☉ Indianapolis; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; in 1934 elected Secretary of the Section on Laryngology, Otolaryngology and Rhinology of the American Medical Association; clinical professor of rhinology, otology and laryngology, Indiana University School of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological Association, and the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; surgeon to the Robert W. Long Hospital, James Whitcomb Riley Hospital for Children, Indianapolis City, Methodist Episcopal and St. Vincent's hospitals; aged 49; was killed, December 5, in an airplane accident.

Arthur Monroe Mendenhall ☉ Indianapolis; University of Pennsylvania School of Medicine, Philadelphia, 1909; professor of obstetrics, Indiana University School of Medicine; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; member of the school board for seven years, school medical inspector for five years and health officer of Jamestown, R. I., in 1916; on the staffs of the Robert W. Long, Indianapolis City and Florence Crittenden hospitals, William H. Coleman Hospital for Women, Methodist Episcopal, St. Vincent's and Christian hospitals; aged 50; was killed, December 5, in an airplane accident.

Hampton Lansden Fancher ☉ Chattanooga, Tenn.; University of the South Medical Department, Sevanee, 1899; in 1926 member of the House of Delegates of the American Medical Association; at one time professor of gynecology at his alma mater; fellow of the American College of Surgeons; past president of the Tennessee State Medical Association and the Chattanooga and Hamilton County Medical Society; medical director of the Provident Life and Accident Insurance Company; for many years on the staffs of the Erlanger Hospital; aged 61; died, November 12, of pneumonia.

Percy Todd Phillips, Santa Cruz, Calif.; Western Reserve University Medical Department, Cleveland, 1889; member and past president of the California Medical Association; past president of the Nevada State Medical Association and the

Santa Cruz County Medical Society; member and past president of the California State Board of Medical Examiners and past president of the Nevada State Board of Medical Examiners; fellow of the American College of Surgeons; on the staff of the Hanly Hospital; aged 66; died, October 28, of chronic myocarditis.

Arnold Sturmdorf * New York; College of Physicians and Surgeons in the City of New York, Medical Department of Columbia College, 1886; fellow of the American College of Surgeons; associate surgeon to the Woman's Hospital, consulting gynecologist to the Manhattan State Hospital and the Jewish Memorial Hospital, New York, and the Brownsville Hospital, Brooklyn; consulting surgeon to the Community Hospital, New York, and the Williamsburg Maternity Hospital, Brooklyn; aged 72; died, November 13, of coronary occlusion.

Philip Michael Grausman * New York; Columbia University College of Physicians and Surgeons, New York, 1900; served during the World War; fellow of the American College of Surgeons; director of surgery, Gouverneur Hospital, where he had served in various grades for nearly twenty-four years; director and chief surgeon to the Hospital for Joint Diseases and attending surgeon to the Lebanon Hospital, New York; consulting surgeon to the Beth Israel Hospital, Newark, N. J.; aged 58; died, November 21, of acute coronary thrombosis.

Leroy Thompson, Chicago; Hahnemann Medical College and Hospital, Chicago, 1908; fellow of the American College of Surgeons; consulting oculist and aurist of the Illinois Bell Telephone Company and chief consultant in ophthalmology and otology of the Illinois State Industrial Commission; on the staffs of St. Luke's and the Illinois Masonic hospitals; formerly chief of the staff of the Illinois Eye and Ear Infirmary; aged 51; died, November 14, in Bath, N. Y., of carcinoma.

Standish McCleary * Baltimore; College of Physicians and Surgeons, Baltimore, 1890; professor of histology and special pathology at his alma mater, which later became the University of Maryland School of Medicine and College of Physicians and Surgeons, where he was professor of pathology and clinical medicine; on the staff and member of the board of the Mercy Hospital and on the staff of the University Hospital; aged 64; died, November 19, of coronary thrombosis.

Victor Ray Sr. * Cincinnati; Miami Medical College, Cincinnati, 1897; emeritus professor of ophthalmology, University of Cincinnati College of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology; past president of the Cincinnati Academy of Medicine; formerly director of the department of Ophthalmology, Cincinnati General Hospital, and on the consulting staff of the Good Samaritan Hospital; aged 68; died, October 25, of heart disease.

David Charles Strong, Upper Lake, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the California Medical Association; fellow of the American College of Surgeons; at one time physician in charge of the San Bernardino (Calif.) County Hospital; on the staff of St. Francis Hospital, San Francisco; aged 55; died, September 8, of coronary occlusion and mitral insufficiency.

Alvin Walter Baird * Portland, Ore.; Cornell University Medical College, New York, 1905; past president of the Portland City and County Medical Society; at one time assistant professor of surgery, University of Oregon Medical School; member of the North Pacific Surgical Association; fellow of the American College of Surgeons; on the staff of the Multnomah Hospital; aged 68; died, October 10.

Thomas Francis Rockwell, Rockville, Conn.; University of the City of New York Medical Department, 1881; member of the Connecticut State Medical Society; past president of the Toland County Medical Society; veteran of the Spanish-American War; on the staff of the Rockville City Hospital; aged 80; died, October 15, of carcinoma of the rectum.

Samuel McCoy Sproat * Chillicothe, Ohio; University of Michigan Medical School, Ann Arbor, 1913; fellow of the American College of Surgeons; served during the World War; on the staff of the Chillicothe Hospital; aged 45, was instantly killed, November 9, when the automobile in which he was driving collided with a wagon.

Lloyd Melville Sackett, Oklahoma City, Okla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; associate professor of gynecology, University of Oklahoma School of Medicine; on the staffs of the Wesley and University hospitals; aged 54; died, November 12, of pneumonia.

Robert Barnard Slocum, Wilmington, N. C.; Johns Hopkins University School of Medicine, Baltimore, 1905; fellow

of the American College of Surgeons; chief surgeon to the Atlantic Coast Line Railroad; aged 57; died, November 16, in the Johns Hopkins Hospital, Baltimore, following an operation for gallstones.

Clara E. Jones, Goldsboro, N. C.; Woman's Medical College of Pennsylvania, Philadelphia, 1894; member of the Medical Society of the State of North Carolina; for twenty-six years on the staff of the State Hospital; aged 87; died, November 19, of carcinoma of the liver and duodenum.

John Luther Kelly, Oak Grove, La.; College of Physicians and Surgeons, Memphis, Tenn., 1907; member of the Louisiana State Medical Society; served during the World War; member of the state board of health; aged 52; was killed, November 7, in an automobile accident.

John Haggart, Durango, Colo.; Western University Faculty of Medicine, London, Ont., Canada, 1887; member of the Colorado State Medical Society; formerly mayor of Durango; on the staff of the Mercy Hospital; aged 69; died, November 6, in Denver, of carcinoma of the stomach.

William Ferris Curran * Waco, Texas; University of Maryland School of Medicine, Baltimore, 1904; member of the Associated Anesthetists of the United States and Canada; county health officer; aged 61; died, October 15, of cirrhosis of the liver and esophageal hemorrhage.

James Herman Poulton * Springfield, Ohio; Starling-Ohio Medical College, Columbus, 1912; past president of the Clark County Medical Society; served during the World War; on the staff of the Springfield City Hospital; aged 47; died, October 16, of heart disease.

Robert Wesley Randall, Royersford, Pa.; Medico-Chirurgical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; on the staff of the Pottstown (Pa.) Hospital; aged 44; died suddenly, October 20, of heart disease.

Charles Greenberry Bryant, Jonesville, N. C. (licensed in North Carolina in 1902); veteran of the Spanish-American War; formerly member of the state legislature; aged 69; died, October 16, in the Hugh Chatham Memorial Hospital, Elkin, of cardiorenal disease.

Park Mitchell Barrett * Surg., Lieut. Commander, U. S. Navy; St. Clairsville, Ohio; Georgetown University School of Medicine, Washington, D. C., 1911; entered the navy in 1917; aged 47; was killed, October 8, at Napa, Calif., in an automobile accident.

Harry Woodruff Tittle, New Florence, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1895; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 61; died, November 13, of bronchopneumonia.

Clarence William Baldrige * Iowa City, Iowa; State University of Iowa College of Medicine, Iowa City, 1921; associate professor of theory and practice of medicine at his alma mater; aged 38; was killed, November 22, in an automobile accident.

John Allen Morris, Knoxville, Iowa; Medical College of the State of South Carolina, Charleston, 1929; on the staff of the Veterans' Administration Facility; aged 31; died, October 28, in the Iowa Methodist Hospital, Des Moines, of Hodgkin's disease.

John B. Derrickson * Frederica, Del.; Medico-Chirurgical College of Philadelphia, 1899; past president of the Medical Society of Delaware; director of the Sussex County Health Unit; aged 59; died, October 3, in the Milford (Del.) Hospital.

George Clyde Kneedler * Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 66; died, October 12, of carcinoma of the ascending colon.

Julius Lingenfelder, Hermann, Mo.; Universität München Medizinische Fakultät, Germany, 1889; member of the Missouri State Medical Association; aged 70; died suddenly, November 4, of heart disease and arteriosclerosis.

Albert Isaiah York, Wilton, Maine; Medical School of Maine, Portland, 1898; member of the Maine Medical Association; past president of the Franklin County Medical Society; aged 63; died, October 16, of coronary occlusion.

William Harry Sutton, Midville, Ga.; University of Georgia Medical Department, Augusta, 1908; member of the Medical Association of Georgia; aged 51; was found dead, November 1, of acute dilatation of the heart.

Osmon Cleander Baker Nason, Franklin, Mass.; Boston University School of Medicine, 1891; Harvard University Medical School, Boston, 1901; member of the Massachusetts Medical Society; aged 76; died, October 7.

Walter Theodore Crosby, Manchester, N. H.; Harvard University Medical School, Boston, 1899; fellow of the American College of Surgeons; on the staff of the Sacred Heart Hospital; aged 63; died, September 21.

Elliott W. Kirk, Veedersburg, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Indiana State Medical Association; aged 60; died suddenly, November 6, of cerebral hemorrhage.

John Henry Collenburg, Baltimore; University of Maryland School of Medicine, Baltimore, 1879; aged 82; died, November 13, in St. Agnes' Hospital, of hypertension, arteriosclerosis and cerebral hemorrhage.

Herbert Keith Young, Timmonsville, S. C.; Jefferson Medical College of Philadelphia, 1932; intern at the Bryn Mawr (Pa.) Hospital; aged 26; died, September 28, in the Jefferson Hospital, Philadelphia.

John Richard Parker, Gallatin, Tenn.; University of Louisville (Ky.) School of Medicine, 1893; member of the Tennessee State Medical Association; aged 62; was found dead, November 7, of heart disease.

John Wilbur Chambers, Rudolph, Ohio; Starling Medical College, Columbus, 1894; aged 67; died, November 10, in the Rheinfrank Hospital, Perrysburg, following an operation for appendicitis.

Linus M. Ellis, Washington, Ga.; Atlanta College of Physicians and Surgeons, 1899; member of the Medical Association of Georgia; aged 56; died suddenly, November 1, of cerebral hemorrhage.

Reuben Wesley Mondhank, Lancaster, Ohio; Ohio Medical University, Columbus, 1896; on the staff of the Lancaster Municipal Hospital; aged 59; died, November 12, of Hodgkin's disease.

Edmund Fremont Danford, Glouster, Ohio; Medical College of Ohio, Cincinnati, 1881; member of the Ohio State Medical Association; aged 78; was found dead, November 7, of heart disease.

Peter Randall Powell, Detroit; University of Arkansas School of Medicine, Little Rock, 1908; on the staff of the Grace Hospital; aged 51; died, November 8, of cerebral hemorrhage.

Frederick Joseph Boody, Bishop, Calif.; College of Physicians and Surgeons, Los Angeles, 1913; aged 46; died, September 8, of comminuted fracture of the pelvis and other injuries.

Ephraim Melvin Folsom, Mount Vernon, Ill.; Barnes Medical College, St. Louis, 1896; served during the World War; aged 64; died suddenly, November 7, of heart disease.

Oscar Frederick Collum, McRae, Ga.; Atlanta School of Medicine, 1907; member of the Medical Association of Georgia; aged 52; died, November 14, of heart disease.

Maurice Edward Marlow, New York; Syracuse University College of Medicine, 1924; aged 33; died, November 18, of an overdose of morphine, self administered.

Arthur Henry Stafford, Orlando, Fla.; Detroit Homeopathic College, 1906; served during the World War; aged 53; died, November 8, of cerebral hemorrhage.

William Alexander Campbell, Ponoka, Alta., Canada; Trinity Medical College, Toronto, 1899; aged 61; died, September 1, in Edmonton, of cerebral thrombosis.

William Marcus Peters, Northport, Ala.; Birmingham Medical College, 1906; served during the World War; aged 52; died, October 19, of coronary occlusion.

Henry Otho Lee, Ludlow, Miss.; Mississippi Medical College, Meridian, 1907; Memphis (Tenn.) Hospital Medical College, 1913; aged 55; died, October 15.

Jonas A. Park, Caldwell, Ohio; Ohio Medical University, Columbus, 1895; served during the World War; aged 69; died, October 5, in Columbus, of septicemia.

Louis Frederick Grebe, Reading, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; aged 40; died, November 6, of heart disease.

Walter Christian Hirzel, Hidalgo, Texas; Cleveland Homeopathic Medical College, 1902; served during the World War; aged 69; died, October 6.

Augustus E. Perlewitz, Chicago; Hering Medical College, Chicago, 1907; aged 77; died, October 22, of cerebral hemorrhage and arteriosclerosis.

Cyrus Knecht, Matawan, N. J.; Jefferson Medical College of Philadelphia, 1880; aged 83; died suddenly, October 30, in Maplewood, of heart disease.

Robert John Bickel, Fort Wayne, Ind.; Indiana University School of Medicine, Indianapolis, 1931; aged 31; died, November 17, of carcinoma.

John Ira Tucker, St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1912; aged 54; died, October 7, of influenza and bronchopneumonia.

Joseph Patrick Kelly, Kansas City, Mo.; University of Kansas School of Medicine, 1915; aged 51; died, October 21, of mitral regurgitation.

Grant Porter, Plainfield, Ill.; St. Louis College of Physicians and Surgeons, 1896; aged 62; died, October 20, of carcinoma of the larynx.

Alonzo K. Collins, Birmingham, Ala.; Louisville (Ky.) Medical College, 1890; aged 62; died suddenly, October 30, of heart disease.

Leon Gabriel Sweeney, Scranton, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1911; aged 49; died in August.

James C. Pennington, Andalusia, Ala.; University of Tennessee Medical Department, Nashville, 1894; aged 72; died, September 25.

Oliver Paul Mercer, Indianapolis; Medical College of Indiana, Indianapolis, 1904; aged 58; died, November 11, of heart disease.

John McDermott, Lockwood, Mo.; Barnes Medical College, St. Louis, 1895; aged 69; died, October 23, of nephritis and uremia.

James A. Howard, McConnell, Tenn.; University of Tennessee Medical Department, Nashville, 1901; aged 72; died, October 12.

Stephen Herbert Cornell, Blockville, N. Y.; Detroit College of Medicine, 1890; aged 65; died, November 11, of pneumonia.

Jean Paul Grenier, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1919; aged 39; died, September 24.

William J. Neely, Nampa, Idaho; American Medical College, St. Louis, 1876; Civil War veteran; aged 93; died, September 2.

Thomas Lovett, Montreal, Que., Canada (licensed in Quebec in 1901); aged 66; died, August 17, in St. Mary's Hospital.

Daniel Grady Arnold, Tyler, Texas; University of Texas School of Medicine, Galveston, 1917; aged 42; died, in October.

Asa Byron Leinbaugh, Akron, Ohio; Ohio Medical University, Columbus, 1897; aged 70; died, October 27, of heart disease.

Susan Isabel Moody, Teheran, Persia; Harvey Medical College, Chicago, 1904; aged 83; died, October 23, of heart disease.

William Nellis Kennedy, Fair Oaks, Calif.; California Medical College, San Francisco, 1898; aged 76; died, September 20.

David J. Johnston, Iroquois, Ont., Canada; University of Toronto Faculty of Medicine, 1887; aged 73; died, September 10.

James T. Keator, Bermuda, La.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1887; aged 68; died, October 12.

Oral I. Daley, Porterville, Calif.; College of Physicians and Surgeons of San Francisco, 1901; aged 55; died, September 24.

William C. Lamb, Montrose, Miss.; Memphis (Tenn.) Hospital Medical College, 1896; aged 70; died, September 12.

Samuel S. Jones, Minneapolis; Rush Medical College, Chicago, 1881; aged 85; died, November 12, of angina pectoris.

Emma Frances Angell Drake, Inglewood, Calif.; Boston University School of Medicine, 1882; aged 85; died, October 4.

David Erastus Lyons, Lake Charles, La.; Kentucky School of Medicine, Louisville, 1890; aged 68; died, September 17.

Francis E. Cozad, Powersville, Mo. (licensed in Missouri in 1888); aged 88; died, October 30, of arteriosclerosis.

Charles Clifford Kieffer, Carlisle, Pa.; Jefferson Medical College of Philadelphia, 1888; aged 66; died, October 3.

Wilson A. Koontz, Grove Hill, Va. (licensed in Virginia by exemption); aged 83; died, October 13, of senility.

Frank Porter, Waubashene, Ont., Canada; Trinity Medical College, Toronto, 1898; aged 75; died, September 4.

John Caithness Innes, Port Credit, Ont., Canada; M.R.C.S., England, 1877; died, September 28.

Bureau of Investigation

CLARA ROSS, INC.

Another Medical Mail-Order Fraud Debarred from the Mails

Clara Ross, Inc., was a Missouri corporation organized in 1932 that sold through the mails alleged treatments for "sinus trouble," hay fever and stomach disorders. On Oct. 22, 1934, Judge Karl A. Crowley, Solicitor for the Post Office Department, in a memorandum for the Postmaster General, recommended the issuance of a fraud order against Clara Ross, Inc., because the concern was "engaged in conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises." On Oct. 30, 1934, the Postmaster General issued such an order.

Clara Ross, Inc., was operated by one Clark F. Ross, president and secretary of the corporation, who did business from a third-floor flat in St. Louis, Mo. Although Clark F. Ross was purporting to treat human ailments, he had no medical or pharmaceutical qualifications; he was essentially a mail-order advertising man. "Clara Ross," whose name was given to the enterprise, was the divorced wife of Clark F. Ross.

In the advertising it was held out that Clara Ross had "suffered untold misery from sinus trouble for seven years" and that she had tried every known method of treatment, but all

ment brought out the fact, obvious enough to physicians, that the Ross treatment for hay fever consisted of ingredients well known to the medical profession, and Ross' representation that "nothing like" that treatment had ever been offered before was false and fraudulent.

The cure for "stomach trouble" that Ross had for sale consisted of his Toxic Poison Eliminator that formed part of the treatments for hay fever and sinusitis, plus a number of white capsules designated "Stomach Conditioner." The latter nostrum was found by the federal chemists to consist of a combination of bismuth subcarbonate, magnesium carbonate, baking soda, chalk, powdered rhubarb, papaya and oil of peppermint. Here again the government's medical experts pointed out that the so-called Ross treatment for stomach trouble was essentially laxative and antacid; that it was not "entirely different" but, as in the case of all the other so-called remedies sold by Ross, the ingredients were well known to the medical profession. The medical men pointed out, further, that what is loosely called "stomach trouble" may be due to a number of causes, including ulcers, cancer, cirrhosis of the liver, gallstones, etc., and that obviously the treatment might vary radically, according to the cause.

Judge Crowley's memorandum also points out that while Ross in his advertising matter laid considerable emphasis on a so-called "Positive No Risk" refund "Guarantee," the government produced evidence to show that in the actual operation of the business the guarantee was uniformly construed in a manner detrimental to the interest of purchasers.

As already stated, the mails were closed to this swindle October 30, this year.

SOME MISCELLANEOUS NOSTRUMS

Elsaco (Electrovita).—"Elsaco" seems to be a later name for what used to be called "Electrovita." Under the old name this nostrum was the subject of an article in this department of THE JOURNAL, Jan. 23, 1932. In August, 1934, Electrovita was declared misbranded under the National Food and Drugs Act because the claims made for it were false and fraudulent. The government chemists reported, as the A. M. A. Chemical Laboratory had previously shown, that the stuff "consisted essentially of diluted lime water."

Indo-Vin.—This nostrum appears to be another "patent medicine" put out by G. H. Mosby, who presumably is the same Mosby who originated "Konjola," from which he was alleged to have made a huge fortune. The Federal Trade Commission issued a complaint against the Mosby Company, but in November, 1933, dismissed the complaint because the company went out of business. Konjola was said to contain "32 different ingredients, 22 of which are Nature's own roots and herbs." Indo-Vin, according to the advertising, "contains 32 ingredients, 22 of which are extracts from the finest medicinal plants." Is Indo-Vin a new name for Konjola?

Catalyn.—Catalyn is a "patent medicine" exploited by the Vitamin Products Company of Milwaukee. It has been advertised under the claim that it would "most effectively restore normal metabolism where abnormality is present," that it "supplies the vital elements necessary for normal functioning of the human system," and that it was to be recommended in cases of goiter, hardening of the arteries, heart trouble, high blood pressure, insomnia and prostate trouble. It was also claimed that acidosis, anemia, Bright's disease, dropsy, enlarged tonsils, menstrual disorders, nervousness, and the "ills of pregnancy" were all particularly responsive to "Catalyn treatment." Other equally preposterous claims have been made for it. Such claims were declared false and fraudulent by the Food and Drug Administration, which seized a quantity of Catalyn in May, 1933. In July, 1933, no claimant having appeared for the Catalyn that had been seized by the government, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed (Notice of Judgment 21213, issued August, 1934). According to the government chemists, Catalyn consisted essentially of plant material, including wheat bran, wheat starch, glandular material, including epinephrine, and milk sugar.

SINUS PAIN

I suffered untold misery from Sinus trouble for seven years. Every method known was tried to clear me up; I changed climate three times, had two operations, used special electric appliances, but all failed. Then I located a wonderful treatment, and now my head is clear as a bell. No more 12-hour headaches. No more sleepless nights. I am never bothered a single moment. Write me and I'll gladly tell you how I succeeded in curbing my Sinus misery.

CLARA ROSS, INC.,
3152 Magnolia, Apt. K, St. Louis, Mo.

Typical Ross Advertisement (1933)

failed. Then, according to the advertising, she located a wonderful treatment, and "now my head is clear as a bell." As a matter of fact, Mrs. Ross admitted to the Post Office Inspector who investigated the case that she was not free of sinus trouble, but still suffered from it and expected to continue to suffer from it indefinitely!

The alleged treatment sent out by Clark F. Ross to those who wrote for the sinus-trouble cure consisted of a white powder called "Toxic Poison Eliminator," an olive-colored liquid called "Nostril Cleanser" and an atomizer. The Toxic Poison Eliminator, which was to be taken internally, was found to consist principally of Rochelle salts with a small quantity of phenolphthalein and flavored with oil of cinnamon. The liquid to be used in the atomizer was found by the government chemists to be composed essentially of alcohol and boric acid, with small quantities of sodium benzoate, eucalyptol, methyl salicylate, menthol, sodium salicylate and oil of thyme. Expert medical evidence submitted in the case disclosed, of course, that this combination was not a "wonderful discovery," that it would not and could not bring about complete freedom from sinus trouble, and further, that in certain instances it might prove harmful.

Ross' hay fever treatment was the same as his "sinus trouble" treatment and in addition, a bottle of liquid called "Eye Lotion," a tube of menthol salve referred to as "Nasal Balm," together with a metallic cup for the administration of the Eye Lotion. The federal chemists reported that the Eye Lotion was simply a solution of boric acid and the Nasal Balm was essentially a salve containing menthol. Expert testimony for the govern-

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SUBLUXATION OF SACRO-ILIAC SYNCHONDROSIS

To the Editor:—Please give briefly the manipulations necessary to replace a subluxation of the sacro-iliac synchondrosis. Kindly omit name. M.D., Utah.

ANSWER.—Manipulation of the pelvis is analogous to performing the routine examination of these parts more thoroughly than is done for diagnostic purposes. Before this manipulation is carried out, one must rule out tuberculosis, osteomyelitis, acute infectious arthritis, neoplasms, fracture, dislocation and spinal cord tumor. The benefit that follows manipulation is due, in part, to readjustment of the pelvic joints but chiefly to the stretching of the shortened hamstring muscles and tendons.

The chief methods of manipulation are known by the names of Baer, Magnuson, Cox, Nutter and Fisher.

The anesthetic should include (1) hypodermic injection of morphine and atropine one hour before manipulation, (2) induction with nitrous oxide or ethylene, and (3) complete anesthesia under ether. This manipulation can be done under spinal anesthesia.

A most important point in manipulation of the back is protection of the patient's head and neck against any sudden movement.

The patient is placed supine on a low table or preferably on a mat on the floor. On the stretcher are eight hand straps: three on each side and one at each end. As soon as the patient is completely anesthetized, he is lifted by four persons and carefully placed on the floor.

In his first series Baer manipulated 100 patients, with immediate relief in almost every case and with relapse in only three. According to his technic the patient is placed on a low, non-movable table, flat on his back, and then anesthetized. The anesthetization should be carried to the point of complete relaxation of all muscular tissue, for the force to be exerted at times is great and muscular rigidity carries with it some danger to the patient.

While an assistant holds the pelvis firmly, the operator grasps the calf of the leg and flexes the fully extended limb. The hamstring muscles are found to be in a state of spasm. They are attached to the tuberosity of the ischium at their proximal end and to the head of the tibia and fibula at their distal extremity. As the fully extended leg is flexed on the thigh, the hamstring muscles pull on the tuberosity of the ischium and the top of the ilium is pulled backward to meet the sacral junction. This procedure of stretching is carried on until the hamstring muscles are thoroughly relaxed, a condition indicated by the fact that the fully extended leg can be flexed to a position far beyond a right angle; indeed, the dorsum of the foot almost touches the shoulder. A definite click is often heard during the manipulation, which some have thought to be due to a replacement of the misplaced sacro-iliac articulation. Of this, however, Baer was not convinced, for it has seemed that the click is to be heard and felt by a slight subluxation of the head of the femur as it pushes against the hamstring while the leg is in extreme flexion. The presence of the click is always synchronous with the release of the hamstring muscles and indicates that the work has been accomplished. If one now looks at the back, one will find that the flat back has been replaced by a back with a normal lumbar lordosis. Care should be taken in the manipulation, for it is quite conceivable that with careless handling one may obtain a subluxation of the knee joint backward causing a paralysis, or that one may cause a fracture of the head of the femur.

The only two complications that occurred in Baer's series of 100 cases were in one case the setting up of a femoral phlebitis, and in the other, owing to his inability to make a proper diagnosis, the production (some weeks later) of a tuberculous abscess springing from the sacro-iliac joint. After the manipulation has been completed, the patient should be placed on a Goldthwait frame and put up in a plaster dressing extending from the nipple line down to the knee on the affected side. This is done to preserve the lumbar lordosis that has been obtained by the procedure.

The patient is allowed to remain in this cast in bed for a period of ten days, when a small pelvic strap, as indicated for the mild forms, is worn as a preventive measure for the next two months.

Fisher's manipulation is similar to the one of Baer.

In the Magnuson manipulation the patient is placed on his back with the affected half of his body projecting from the side of the table several inches. The affected limb is manipulated as in the Baer manipulation and from this position of hyperflexion is suddenly thrust into the position of hyperextension. The second part of the manipulation consists in locking the hands under the patient's lumbar spine and giving the patient a sudden pull upward in order to increase the lumbar lordosis.

For Cox's manipulation, which is similar to Nutter's, the patient is placed on a table face downward, his weight being supported on the elbows and abdomen and his hands grasping the edge of the table securely. The surgeon, while standing on a box near the feet of the patient, firmly grasps his ankles and lifts his body clear of the table, the body being supported above by the elbows alone. It is held in this manner for several minutes, with the legs in abduction, strong steady traction being made on the affected leg, while an assistant makes firm pressure over the sacrum. The body should be lifted up and down while the traction is being made. There is usually sudden marked relief as the bones slip into place, and the lumbar curvature is in most instances restored at once. The mechanism is as follows:

In lifting the patient's body by the ankles, one hyperextends the spine and thus relaxes the strong posterior sacro-iliac ligaments and also relieves the joint from the pull of the hamstrings. The abduction relieves the supporting action of the psoas muscles. In other words, one places the joint in the position it occupies at the time of displacement, which is hyperextension. The strong pull on the leg of the affected side unlocks the joint by increasing the deformity due to the action of the extensor quadriceps muscles, especially the rectus femoris, sartorius and iliopsoas, which exert a downward and outward pull on the upper anterior part of the ilium, thus increasing the separation from the sacrum and at the same time relaxing the pull from the hamstrings. Reversing the force occurs when the weight of the body drags the spine forward and favors replacement of the ilium by forcing the sacrum forward. This progress is aided by pressure being made over the sacrum by an assistant and by the steady traction on the affected limb, which, as was noted, also tends to unlock or separate the joint. It can be readily seen that the dragging position of the suspended body, together with traction on the affected side, which relaxes the joint, and firm pressure over the sacrum will tend to replace the bones, thus fulfilling Gumm's rule. After replacement, a firm support of adhesive tape is passed behind from in front of one great trochanter to the other. It must be remembered that it is essential to place the support low, well down on the buttocks, below the level of the trochanter, as any lateral pressure above this point tends to separate the joint and produce great pain. The straps should extend from the anterior part of the ilium on one side to a similar point on the other side and should cover the buttock and lower lumbar spine, below the trochanter. A firm pad of cotton or felt over the sacrum will maintain pressure on it at all times. This dressing should be reapplied in about six days. The patient should be put to bed for one week if the displacement is acute, and a small firm pillow so placed as to maintain the lumbar curvature and keep any strain off the injured ligaments.

The following manipulation is recommended by Lewin:

1. Flex the thigh of the unaffected side on the abdomen (knee flexed).
2. Flex the thigh of the affected side.
3. Flex the thigh of the unaffected side (knee extended); do the Lasègue test.
4. Flex the thigh of the affected side till the toes approach the anesthetist's cap.
5. Do the fabere test of the unaffected side.
6. Do the fabere test of the affected side.
7. Stretch the achilles tendon of the unaffected side (if unilateral sciatic pain).
8. Stretch the achilles tendon of the affected side.
9. Stand over the patient, straddling his body, lock both hands under his lumbar spine, and hyperextend the lumbar region.
10. Do the Gaenslen test: unaffected sacro-iliac; affected sacro-iliac.
11. Do the Magnuson manipulation: unaffected side; affected side.
12. Do the Cox manipulation.
13. Then remove the ether mask. Have the patient sit up. Hold his head firmly. Hyperflex the back until his head can be placed between his knees. Bend the back toward the affected side. Bend the back away from the affected side. Repeat 3 and 4.

14. Do straight leg raising: unaffected side; affected side.
15. Strap the entire pelvis. If a good sacro-iliac belt is not at hand, one should strap the entire pelvis with adhesive tape.
16. If it is a unilateral case, leg traction should be applied to the affected side and the foot of the bed elevated.

Some authors do not advise a plaster-of-paris cast but raise the legs or suspend them. Boards should be placed under the mattress. Physical therapy, including radiant heat, massage, diathermy and manipulations, should be started. A pelvic belt can be applied and pelvic traction used. Some patients do well on a curved Bradford frame without traction.

If the displacement of the sacrum appears to be backward, the thigh is flexed as fully as possible with the knee fully extended. This has the effect of rendering the hamstrings tight and, owing to the attachment to the ischium, this portion of the innominate bone is pulled forward, resulting in the iliac bone slipping backward into position on the sacrum.

If the displacement of the sacrum appears to be forward, the patient is placed in the prone position or lying on the side, and the thigh is hyperextended. During this movement the innominate bone moves with the femur owing to the attachment of the Y-shaped ligament of Bigelow, and the ilium slips forward into place. The inquirer should consult:

- Baer, W. S.: Sacro-Iliac Strain, *Bull. Johns Hopkins Hosp.* 28: 159 (May) 1917.
Jackson, R. H.: Chronic Sacro-Iliac Strain with Attendant Sciatica, *Am. J. Surg.* 24: 456 (May) 1934.

TREATMENT OF SYPHILIS

To the Editor:—A man, aged 21, weighing 185 pounds (84 Kg.) presented himself with a lesion on the preputial fold, which was eroded, round, indurated and relatively painless. There was a bilateral inguinal adenopathy, more marked on the left. The personal history was unreliable. A dark field examination revealed no spirochetes, and a Meinel test was reported negative. It was nevertheless thought advisable to begin treatment, and eight doses of neoarsphenamine were given five days apart in the following doses: 0.45, 0.6, 0.6, 0.75, 0.75, 0.75, 0.75, and 0.75 Gm. After ten days' rest he was started on mercury inunctions and two weeks later developed a maculopapular eruption on the palms and soles. This was followed soon after by a generalized macular, nonpruritic rash. At the same time he had a sore throat and erosive patches in the mouth, headache, bone pains in the legs and general malaise. The picture was clinically that of secondary syphilis and there was prompt disappearance of all symptoms after two more doses of neoarsphenamine of 0.9 Gm. Was this secondary syphilis? If not, what might it have been? Granted that the patient had syphilis, was the treatment adequate? Is there anything in the literature that describes such an occurrence? In about half of the treatments described a solvent containing sodium thiosulphate was used. Is it possible that this neutralizes the arsenical for the parasite as well as for the host?

M.D., Alaska.

ANSWER:—It would be difficult to describe a case that has been more grievously mismanaged than this; at least six major errors have been committed. Penile lesions should never be treated as primary syphilis on suspicion. The diagnosis must be made by a demonstration of *Spirochaeta pallida* by dark field, the presence of a positive blood Wassermann reaction, or both. Assuming, however, that the clinical diagnosis of primary syphilis was correct, the first course of neoarsphenamine should not have been followed by any rest period, and an insoluble salt of bismuth, given intramuscularly, should have been used in place of mercury by inunction. When the skin eruption and mucous lesions appeared, the diagnosis of delayed secondary syphilis should have been verified either by a Wassermann test of the blood or by the dark field demonstration of the organisms in one of the open lesions.

The clinical description is compatible with the diagnosis of delayed secondary syphilis, but a similar picture might also be caused by erythema multiforme.

Granting that this does represent a relapse with delayed secondary lesions, two further doses of neoarsphenamine are utterly inadequate treatment.

The literature is filled with similar occurrences. A description of this and analogous situations may be found in chapter XXVII (The Arspenamine Resistant and Wassermann Fast Patient) in the recent monograph by Moore, "The Modern Treatment of Syphilis."

The use of a solvent for neoarsphenamine containing sodium thiosulphate is irrational and unnecessary. The therapeutic efficiency of the drug is slightly decreased by this procedure, as is also its toxicity.

It is suggested that from this point on the patient be managed in accordance with the principles set forth in the article by the Cooperative Clinical Group (Stokes, J. H.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J.; Parran, Thomas Jr.; Vonderlehr, R. A.; Usilton, Lida J.: Standard Treatment Procedure in Early Syphilis, *THE JOURNAL*, April 21, 1934, p. 1267).

DIAGNOSTIC SIGNS IN LOW BACK CONDITIONS

To the Editor:—Will you kindly explain Lasègue's, Neri's, Mennell's, Demianoff's and Patrick's signs, in reference to differential diagnosis of low back and hip conditions.

M.D., Indiana.

ANSWER:—Lasègue's sign in sciatica is positive when flexion of the thigh on the hip is painless and when the knee is bent such flexion is easily made; this distinguishes the case from hip joint disease.

Neri's sign is a sign of organic hemiplegia, consisting in the spontaneous bending of the knee of the affected side as the leg is passively lifted, the patient being in the dorsal position. The patient being recumbent, his upper extremities are extended and pronated on the examining table: when the forearm is flexed by the hand of the examiner passed under it, the sound forearm remains pronated but the paretic forearm goes into supination.

In eliciting Mennell's sign an examining thumb is placed over the posterosuperior spine of the sacrum and then made to slide, first outward and then inward. If on pressure over the former point tenderness is detected, it is due to a sensitive deposit in the structures of the gluteal aspect of the posterosuperior spine. If the tenderness is over the inner point, it is probable that the superior ligaments of the sacral iliac joint are strained and sensitive. If the tenderness is increased by pressure backward on the anterosuperior aspect of the ilium and decreased by pulling forward the crst from behind, this is positive proof that it is caused by the sensitive ligaments.

Demianoff discusses a sign that permits the differentiation of pain originating in the lumbosacral muscles from lumbar pain of any other origin. The sign is obtained by placing the patient on his back and lifting his extended leg. In the presence of lumbago, this produces pain in the lumbar region, which prevents raising the leg high enough to form an angle of 10 degrees or less with the table or bed on which the patient rests.

In Patrick's test, with the patient supine, the thigh and knee are flexed and the external malleolus is placed over the patella of the opposite leg; the knee is depressed, and if pain is produced thereby arthritis of the hip is indicated. Patrick calls this test fabere sign, from the initial letters of the movements necessary to elicit it: flexion, abduction, external rotation, extension.

WHOOPIING COUGH

To the Editor:—I was called to see a girl, aged 3 years, Sept. 3, 1933, when I obtained a history of a nonproductive cough of two days' duration, which was worse at night. When the patient was seen, the cough was already coming in paroxysms followed by the crowing sound characteristic of pertussis. In addition, the patient vomited all food ingested. There had been two cases of pertussis in the family during the previous month, which I had treated, to one of which the patient had been exposed two weeks previously. Despite the brevity of the prodromal stage, according to the history, therefore, a diagnosis of pertussis was made. This impression was supported by a blood study made the following day, in which the following was found: 12,000 white blood cells, 15 per cent neutrophilic polymorphonuclears, 82 per cent lymphocytes, and 3 per cent eosinophils. A cough plate was not taken. The patient's cough gradually subsided, and when she was seen, Sept. 20, 1934, the cough had almost completely disappeared. September 30 the patient had a slight chill, following which her temperature rose to 102 F. She also began to cough, but when she was examined on the following day the only positive finding was moderately enlarged and congested tonsils. The temperature persisted at about 100 to 101 for a few days and then returned to normal. The cough became steadily worse, however, and on October 7 the cough was coming in paroxysms, at the end of which the patient expectorated thick mucus. The mother told me at this time that the patient had been playing with a boy who had recently developed whooping cough, and she asked me if it was possible that her child had contracted the disease again. A blood count was therefore taken with the following result: white blood cells, 15,000; neutrophils, 16; small lymphocytes, 69; large lymphocytes, 10; large mononuclears, 4; basophils, 1. At present the cough is very severe and of the typical pertussis variety, and the patient vomits all food ingested. Do you believe as I do that this is a case of recurrence of pertussis? If so, how would you account for the fact that the second attack is worse than the first? Have there been other reports of pertussis recurring in the same individual within a short space of time?

ALEXANDER S. WIENER, M.D., Brooklyn.

ANSWER:—It is unfortunate that diagnostic cough plates were not exposed both last year and this year. In a child so young the differential count is not infrequently misleading (the percentage of lymphocytes is naturally high). The clinical evidence of pertussis is more convincing this year than it was last. It is not at all unlikely, however, that the child had pertussis last year and that this year's cough is not due to *Bacillus pertussis* at all but to pathogens that have invaded the same bronchial lining where the pertussis infection was last year. Possibly next year the child might again develop quite a misleading cough. The chill and temperature of 102

at the onset this year are not part of the pertussis. It is not unusual for grandmothers or mothers to contract pertussis a second time (from pertussis children in the household), but it would be extremely rare indeed for a child of 3 to contract pertussis twice.

TREATMENT OF CONGENITAL SYPHILIS

To the Editor:—A baby, aged 5 weeks and weighing approximately 6 pounds, with congenital syphilis, has just come under my care. I am informed that the blood from the cord was Kahn positive. The child has snuffles and a vesicular eruption of the scalp and macular eruption of the buttocks and thighs; also a thin purulent discharge from one eye. There is no enlargement of liver or spleen or other evidence of heredo-syphilis, but both parents are Kahn positive and the mother received only four injections of nearsphenamine during the last trimester of pregnancy. Granting that the diagnosis is correct, what would be the proper course of treatment? Kindly omit name. M.D., Michigan.

ANSWER.—The generally accepted management of the syphilitic infant is as follows:

To begin with, intramuscular injections of 0.025 Gm. of sulpharsphenamine should be given every third or fourth day, for four injections. The dose may then be cautiously increased to 0.050 Gm. every fifth day and after the eighth injection to 0.075 Gm. and following this general rule of increases reach an optimal dose of 20 mg. per kilogram. As soon as the interval between injections reaches seven days, a bismuth compound should be given intramuscularly, particularly bismuth salicylate. The bismuth compound should be given once a week between the sulpharsphenamine injections but never substituted for the sulpharsphenamine itself. The dose should not exceed 25 mg. of bismuth metal per week. The length of the sulpharsphenamine and bismuth course should be fifteen injections of each. The interval between sulpharsphenamine courses should be from four to six weeks, this period being covered by the administration of bismuth. A total of from thirty to thirty-five injections of each drug should be considered a minimum if the tolerance permits. Mercury injections may be used after the completion of the sulpharsphenamine and bismuth courses but should not be used during the sulpharsphenamine treatment. Mercury by mouth should be discarded.

Rest intervals not properly covered by bismuth treatment will result in relapses in the congenital syphilis of infants as in the acquired syphilis of adults. Such a child must be kept under observation throughout life and the treatment renewed if necessary. Treatment should be continued for at least a year after the total disappearance of every sign of the disease, both clinical and serologic. Spinal fluid examination should be made at the end of the second and third years.

The syphilitic infant, usually cachectic, presents difficult nutritional problems. Breast milk should be given if possible. The proper vitamins should be added to the diet. Anemia if present should be combated by iron.

BLOOD FLOW THROUGH KIDNEY

To the Editor:—After reading your answer to the question by an Alabama M.D. in regard to volume of blood flow through the kidney per minute (*THE JOURNAL*, July 14, p. 129) I see no reason why this cannot be done, because it has been done by experimental physiologists and, with certain modifications, could be applied to determining the blood flow per minute through the kidney of man. The method is to catheterize each kidney individually, i.e., each ureter, and then do a blood urea or sulphate determination on the catheterized urine specimen on a measured volume collected over a measured length of time and from this calculate the flow of blood through the kidney per unit time. In doing this test other nontreshold substances could be chosen, but sometimes others which are ordinarily nontreshold substances will exceed the threshold and no longer be nontreshold substances; but if urea or inorganic sulphate is used as the nontreshold substance, this difficulty will be overcome.

OLIVER V. RENAUD, Medical Student, Chicago.

ANSWER.—The most serious objection to the method suggested for determining blood flow through the kidney, and one which entirely invalidates it, is the fact that excretion of urine is not necessarily proportional to blood flow. This fact has been demonstrated repeatedly. Recent studies on the experimental animal, in which the flow of blood through the kidney was measured accurately by the thermo-stromuhr method of Rein, revealed a general parallelism, although not a direct proportionality, between blood flow to the kidney and creatinine clearance. Medes and Herrick (*Proc. Soc. Exper. Biol. & Med.* 31:116 [Oct.] 1933) observed that in the cases in which fluctuations in blood flow were large, and in which creatinine clearance levels failed to return to their preoperative level (with application of the unit to the renal artery), there was no direct proportionality between the blood flow and creatinine clearance. Similarly, it has been noted by Herrick, Essex and Baldes

(*Am. J. Physiol.* 99:696 [Feb.] 1932) that, in some cases of diuresis in the experimental animal, the flow of blood through the kidney did not increase.

In addition, it should be recalled that the kidney is an organ in which there is often great variation in blood flow, in arterial, glomerular and venous pressure and in secretory activity, and under the circumstances of many variable factors it is necessary that all other factors be constant or known in order to conclude that variability in one factor, for example in excretion of a substance, is directly proportional to any other single factor, such as, for example, blood flow. Similarly, there is no proof that blood flowing through the kidney is always cleared of a nontreshold substance in the same proportion and to the same extent.

From the practical standpoint, bilateral simultaneous catheterization might reflexly interfere with excretion of urine by one of the kidneys.

CORONARY THROMBOSIS AFTER SUDDEN EXERTION

To the Editor:—A white man, aged 47, married, father of several children, who has enjoyed good health all his life, having worked at hard farm labor for the past eight years, never missing a day, was suddenly taken ill in the following manner: While about his usual work loading baskets of potatoes on a truck, he slipped on a potato while in the act of raising a basketful above his head. He was suddenly seized with a severe pain in the chest, associated with nausea and vomiting. He was taken to his home, where he was seen with the usual signs and symptoms of coronary thrombosis. He was treated with rest, and morphine was required to control the pain. After several weeks' rest in bed he improved enough to be removed to a hospital, where an electrocardiogram corroborated the diagnosis of coronary thrombosis. Several days later he attempted to do light work against medical advice. The condition was aggravated, infarcts developing in both lungs and multiple emboli occurring, together with marked jaundice. Eventually the patient died. The autopsy proved the diagnosis, the cause of death being given as cardiac dilatation, coronary thrombosis, with resulting multiple emboli. The question in point is, therefore, not the diagnosis but the cause of the attack. Is it possible that in a man, heretofore symptom free, such an attack should be brought about or precipitated by sudden unusual exertion? Can you give me references to or give me a case in point where such a condition has been brought about? Please omit name.

M.D., New Jersey.

ANSWER.—One knows too little in regard to the causative factors in coronary thrombosis to say much that is definite in this case. The possibility cannot be ruled out that a thrombosis had occurred silently, prior to the exertion, and had caused a certain amount of damage. This damage did not express itself subjectively or objectively until the time of the exertion, when a damaged ventricular wall was forced to withstand an increased intraventricular pressure.

Attacks of coronary thrombosis are more frequent at rest, or in the rest following exertion, but do occur during exertion.

S. A. Levine (*Medicine* 8:245 [Sept.] 1928) reports the cases used in his study. Cases 73 and 95 occurred suddenly during exertion.

Hochrein (*München. med. Wchschr.* 81:1653 [Oct.] 1933), in an article in which he discusses the possibility of foreseeing coronary thrombosis, mentions briefly the occurrence of coronary thrombosis due to sudden psychic shock.

THE SKIN AS A SOURCE OF ANTIBODIES

To the Editor:—Is it generally considered true that most of the immunity developed in the system when bacterial invasion takes place is produced by the skin in generating antibodies or substances that act on the germs? For instance, it is well known that a severe attack of smallpox will at times clear up or apparently does clear up syphilis. If this is true, the skin must be the medium by which antibodies form, or whatever substance it is that acts antagonistic to the spirochetes. What drugs are known, if any, that will assist the skin in developing this immunity? Please omit name.

M.D., California.

ANSWER.—While the skin no doubt plays an important part in reactions of immunity, it is not an accepted teaching that the skin is the main source of antibodies. The exact place or places where antibodies are formed is not known for sure, but the evidence at hand indicates that the lymph nodes, the spleen, the marrow and the reticulo-endothelial system, which is widely distributed, are concerned directly in antibody formation. In smallpox there is no evidence that the reactions which result in immunity are limited to the skin. The so-called specific lesions may occur in the pharyngeal, esophageal and rectal mucous membranes as well as in the skin. The spleen is enlarged, the marrow may be the seat of small foci of necrosis, and there are cellular infiltrations in the liver and other organs. These lesions indicate that the virus of smallpox and its products are widely disseminated throughout the body and consequently reach antibody forming centers everywhere. If it is true that an attack of smallpox actually does "clear up" syphilis,

this effect might be due to a nonspecific stimulation of anti-syphilitic reactions like that which appears to take place in instances of nonspecific protein therapy for other conditions. It is safe to say that no drugs are known that will stimulate directly the immune reactions of the skin.

ELONGATION OF TRANSVERSE PROCESSES OF LUMBAR VERTEBRAE

To the Editor:—Please inform me as to the probable danger of strain or injury in the case of long transverse processes of the fifth lumbar vertebra that touch or practically touch the sacrum or crest of the ilium. Also inform me as to the remedy for this condition.

E. C. McCulloch, M.D., Staten Island, N. Y.

ANSWER.—Elongation of the transverse processes of the fifth lumbar vertebra is a lesion that forms the basis of considerable orthopedic discussion. It is interesting to note that the lesion may or may not be the cause of the symptoms complained of.

Roentgenograms may be deceptive; that is, they may indicate that the transverse process is touching the crest of the ilium whereas it might be an optical illusion, proved by stereoscopic films.

There are three other conditions in this region that should be considered:

1. Calcification of the iliolumbar ligaments.
2. Sacralization of the fifth lumbar transverse process.
3. Lumbarization of the first sacral segment.

It is interesting to note also that elongation of the transverse process may be on the side contralateral to the region complained of.

Many of the symptoms clear up when the area is treated for arthritic lumbosacro-iliac strain or arthritis, but some require resection of the transverse processes, for which condition Magnuson, Bauman, and Putti of Bologna, Italy, have described a successful operation.

The roentgenogram may be deceptive in indicating to the surgeon that this is an easy operation.

DERMATITIS OF EYELIDS

To the Editor:—A woman has had dermatitis of the lids for six months. During the last three weeks she has abstained from the use of cosmetics with only fair results, although this is the only improvement noted to date. How long a period of abstinence from the use of cosmetics is required for one to form an opinion of the offending agent? Please describe the patch tests as I should use them. Can witch hazel cause dermatitis of this type? The trouble in this case is limited to the lower lids and the lower edge of the upper lids. The patient had a "nervous breakdown," which kept her in bed for a month just preceding the present trouble. Could she have received anything during treatment for the breakdown internally or through the skin that could have caused this dermatitis? Please omit my name.

M.D., New York.

ANSWER.—The condition described may not necessarily be due to cosmetics but may be some other form of allergy or may be a reflex. If the offending cause is removed, the condition should clear spontaneously within a comparatively few days. It is unlikely that witch hazel can cause the condition described. The patch tests had best be made by a trained allergist, as they do not mean much to one untrained in allergic methods. It is suggested that the patient be observed to determine whether or not irritating substances are used that will continue the condition described. In the meantime the use of water and creams of any sort is to be avoided and the area should be covered each night with a simple zinc oxide ointment.

MALDESCENT OF TESTICLES

To the Editor:—The article of Dr. Samuel Cohn of San Francisco on the "Anterior Pituitary-Like Principle in the Treatment of Malescent of the Testicle" (*THE JOURNAL*, July 14) has an especial interest for me in that I have several such cases. However, two are infants aged 5 and 6 months, respectively. I should like to know whether there has been any such work on infants of this age, or would it be better to wait until school age before administering the substance? Please omit name.

M.D., New Jersey.

ANSWER.—The experience of most pediatricians indicates that many instances of malescent of the testicle, noted at birth, will show spontaneous improvement during the first few months of life. Others descend during the first few years. However, since it is the general consensus that intra-abdominal testes show a considerable tendency toward malignant changes and, since the higher temperature of the abdomen (as compared with the scrotum) is thought to tend toward testicular atrophy or at least impaired function, it would seem that the use of anterior pituitary-like substance is justified even at as early an age as 1 or 2 years. Some authors, however, believe that the hypertrophy of the accessory sexual organs incident on such therapy may be disadvantageous at this early age.

STREPTOCOCCIC IMMUNITY IN DOGS

To the Editor:—I have been told that dogs are immune to the effects of streptococci. I want to know if this is true, and I would also like to know if there has been any experimentation with dogs, goats and donkeys in the preparation of antitoxins. If you can tell me where I can get this information, I will thank you.

J. J. HANNA, M.D., Quanah, Texas.

ANSWER.—Comparatively little seems to be known about the action of streptococci in dogs. The statement is sometimes made that dogs are "relatively immune" to streptococci. Forms of streptococci occur in the intestine of dogs. According to Hamilton Kirk (Canine Distemper, London, Baillière, Tindall & Cox, 1922) "Jensen in 1896 declared that the pneumonia of distemper was due to a streptococcus which he demonstrated."

Occasional experiments have been made with dogs, goats and donkeys in the preparation of antitoxin. Foshay (*Am. J. M. Sc.* 187:235 [Feb.] 1934) has prepared a potent antitularense serum from the blood of immunized goats. The difficulty of excluding the possibility that a given dog might be in the incubation period of rabies would make it unsafe to use the dog for antitoxin production.

BRANCHIAL CYST

To the Editor:—I have under my care a full term normal male infant about 3 weeks old. At the age of 3 days a swelling was noted at the angle of the jaw on the right, anterior to the sternomastoid muscle. The swelling appeared to be subcutaneous and cystic and continued to enlarge. Aspiration was done after two weeks and 10 cc. of straw colored fluid was removed. The cyst is probably branchiogenic in origin. What treatment would you advise? If you advise a sclerosing agent, which should be employed? The maternal grandmother states that the mother had a similar condition in infancy, which disappeared spontaneously. A brother of the mother also had the same condition but died in infancy. A 2½ year old sister of this patient has a cleft palate and club feet and is feeble-minded. Please omit name.

M.D., Michigan.

ANSWER.—From the description and location, the diagnosis of branchial cyst is probably correct. The treatment of such conditions with caustic and sclerosing agents is unsatisfactory and not recommended. If the cyst is quite superficial, as seems likely, excision is not difficult and is desirable. Deeper cysts or fistulas of branchial origin require greater skill for their successful removal. Superficial cysts and fistulas of this group may eliminate themselves if an external opening is maintained. As long as the swelling does not increase there is no hazard in delay, although spontaneous cure is hardly to be expected.

POSSIBLE TUBERCULOUS ULCER OF TONGUE

To the Editor:—I have a patient who has moderately advanced pulmonary tuberculosis. There is also some slight laryngeal involvement but no ulceration that I have seen. Several months ago this man had a sharp tooth on which the tip of his tongue became cut very slightly. The tooth has been taken care of, but an ulcer has formed at the tip of the tongue where the small cut was. He had the ulcer three or four months previous to his visit to me. I am in doubt just what steps I should take in the treatment of this lesion. Should I leave it alone? Should I cauterize it? If so, with what? If left alone, what will be the ultimate outcome? Please omit name and town.

M.D., California.

ANSWER.—Because of the presence of pulmonary tuberculosis, the possibility of this ulcer being tuberculous should be seriously considered. Examination of smears made from the floor of the ulcer for the tubercle bacillus should be done, or a piece of the ulcer removed by biopsy may be examined by a pathologist for tuberculosis. If the diagnosis of tuberculosis is sustained, the lesion should be removed with the actual cautery or by excision, the wound being closed with sutures. If not removed, the tuberculous ulcer of the tongue tends to spread, becomes very painful, and in its later stages offers a serious prognosis. Removal by excision or the cautery is probably wise even though a diagnosis of tuberculosis is not made.

OPERATION FOR CATARACT

To the Editor:—Can you give me the name of an ophthalmic surgeon who does the intracapsular (Indian) operation for cataract for choice? I understand that some men do the operation in clinic cases but will not do it in their private work, which seems to me to be an indication that they do not have much confidence in it. I am developing cataract in both eyes, and the lenticular opacities are so centrally located that I will in all probability have a long period of semiblindness before I can have the usual two stage operation. If there is any one in the middle West who has had enough experience in the one stage operation to do it successfully I should like to consult him.

M.D., Ohio.

ANSWER.—The majority of ophthalmic surgeons have abandoned the Indian intracapsular operation because of the high risks involved. Those of clinical experience who perform the

intracapsular operation are utilizing the Elschmig technic, the Knapp technic or the Barraquer technic. All these methods are of the intracapsular type, all are fairly safe, and all yield satisfactory results in the hands of experienced operators. None of these types of operation require full maturity of lens as does the older intracapsular method. In practically every large city there are one or more experienced ophthalmic surgeons doing one of these intracapsular operations.

LARVAE IN HUMAN SKIN

To the Editor—I recently saw a child, aged about 6 months, who had several papules on its body from two of which, the mother claims, a white larva about half an inch in length escaped. She brought the larva to the office but it was dried and unrecognizable, although it certainly was a larva of some kind. The other papules dried up and disappeared. I have been unable to find anything in the literature regarding such skin condition.

M D, Ontario.

ANSWER.—A great many larvae of widely different forms have been found in the human skin, some of them burrowing and forming a narrow, usually crooked, inflammatory line, designated creeping eruption. Others form only a papule, which in some cases enlarges to resemble a furuncle.

Two recent articles in American literature on creeping eruption are:

Bedford, G. V., Williams, D. H., and Newton, M. V. B.: *Creeping Eruption Caused by Gastrophilus Intestinalis*, *Canad M A J* 28: 377 (April) 1933

McCarthy, Lee: *Creeping Eruption Due to Ancylostoma Brasiliense*, *Arch Dermat & Syph* 27: 490 (March) 1933

The larvae of heel flies, incorrectly called bot flies, are sometimes found in human skin, producing papules or furuncle-like lesions with a black point at the apex, an opening through which the larva breathes. This is hypodermiasis or ox warble disease (Toomey, T. N. *Brit J Dermat* 34:31 [Feb] 1922). Warble is an old word related to "wormil," meaning a swelling due to the larva of the heel fly.

ELECTROCOAGULATION IN CHRONIC ENDOCERVICITIS

To the Editor—Can one use the electrocoagulating portion of a diathermy machine in the treatment of chronic endocervicitis or is the cautery more advisable? Kindly omit name if this is answered in THE JOURNAL

M D, New York

ANSWER.—Removal or destruction of the diseased endocervix may be accomplished in many ways. The entire cervix may be cored out, or it may be coagulated with the diathermy machine. In the hands of the majority of experienced men, the nasal cautery tip has proved to be the most satisfactory. The outfit for employment of this method is now relatively inexpensive and should be included in the armamentarium of every one whose work includes the treatment of gynecologic patients.

SYPHILITIC IRITIS

To the Editor—I am writing in regard to two syphilitic iritis cases I now have under treatment. Would you please advise me of your latest methods of treatment for such cases?

GORDON LAWYER, M D., Cambridge, Ohio

ANSWER.—If the iritis is in the active stage, the best results will follow the use of foreign proteins combined with anti-syphilitic measures. Typhoid vaccine in shock-producing doses should be given intravenously every forty-eight hours for from three to six injections, to be followed immediately by nearsphenamine in small but frequently repeated doses. It is far better to use 0.1 Gm. every forty-eight hours than 0.3 Gm twice a week. In these stages, iodides are of but little value. The local treatment is the same as for any form of iritis; namely, atropine and heat. If the acute stage of the iritis has passed, it is far better that the ophthalmologist turn the patient over to a syphilologist for further treatment.

IDENTIFICATION OF SEMINAL STAINS

To the Editor—In your answer to the question of M D., Kentucky, in relation to the identification of seminal stains found in the clothing of the deceased after death (THE JOURNAL, October 20, p 1255) you state that the semen might run out through a bullet wound involving the seminal vesicles and that it is also a possibility that stains might have been deposited sometime before the episode that led to the man's death. While this is correct as far as it goes, one of the most important considerations is the postmortem ejaculation of semen that not infrequently follows many types of death, especially violent ones. The latter fact must be borne in mind if serious errors are to be avoided.

LOUIS L. LEFKOWITZ, M D., New York.

Assistant Medical Examiner.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 7. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates)*. The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates)*. New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates)*. The examination will be held in various cities of the United States and Canada, March 23. *Final oral and clinical examination (Group A and Group B candidates)*. Atlantic City, N. J., June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY. Philadelphia, June 10. *Application must be filed at least sixty days prior to date of examination*. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. New York, June 8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: *Basic Science*. Tucson, Dec. 18. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical*. Phoenix, Jan. 23. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix

COLORADO: Denver, Jan. 18. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Dec. 27-28. *Medical*. Washington, Jan. 14-15. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

ILLINOIS: Chicago, Jan. 22-24. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield

IOWA: Des Moines, Jan. 3-5. Dir., Division of Licensure and Registration, Mr. H. W. Greife, Capitol Bldg., Des Moines

MINNESOTA: *Basic Science*. Minneapolis, Jan. 23. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 15-17. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia

NEBRASKA: *Basic Science*. Omaha, Jan. 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 28-31. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany

NORTH DAKOTA: Grand Forks, Jan. 1-4. Sec., Dr. G. M. Williamson, 44 1/2 S. 3d St., Grand Forks

OREGON: Portland, Jan. 2-4. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland

PENNSYLVANIA: Philadelphia, Jan. 8-12. Dir., Bureau of Professional Licensing, Mr. W. M. Denison, 400 Education Bldg., Harrisburg

RHODE ISLAND: Providence, Jan. 3-4. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence

SOUTH DAKOTA: Pierre, Jan. 15-16. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre

TENNESSEE: Memphis, Dec. 20-21. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis

WASHINGTON: *Basic Science*. Seattle, Jan. 10-11. *Medical*. Seattle, Jan. 14-16. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia

WISCONSIN: Madison, Jan. 8-10. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse

West Virginia July Report

Dr. Arthur E. McClue, secretary, Public Health Council of West Virginia, reports the oral and written examination held in Wheeling, July 9-11, 1934. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Fifteen candidates were examined, all of whom passed. Twelve physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Emory University School of Medicine	(1933)		89.4
Rush Medical College	(1934)		84.8, 85.8
University of Louisville School of Medicine	(1933)		86.5
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933)		86.7
New York University, University and Bellevue Hospital Medical College	(1930)	87.9, (1932)	87.4
Duke University School of	(1932)		87
Jefferson Medical College of	(1933)		86
University of Pennsylvania	(1916)		86.9
Medical College of Virginia	(1933)	84.7, 86.5, 89.7	93.5

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Louisville School of Medicine	(1933)		Kentucky
St. Louis University School of Medicine	(1928)		Ohio
Starling Medical College, Ohio	(1900)		Ohio
Jefferson Medical College of Philadelphia	(1931)		Penna
University of Tennessee College of Medicine	(1932)		Tennessee
Medical College of Virginia	(1932), (1933), 2) Virginia		N. Carolina,
University of Virginia Department of Medicine	(1932)		Virginia
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Washington University School of Medicine	(1929)		N. B. M. Ex

Book Notices

A Text-Book of Pathology. Edited by E. T. Bell, M.D., Professor of Pathology in the University of Minnesota, Minneapolis. Second edition. Cloth. Price, \$8.50. Pp. 767, with 366 illustrations. Philadelphia: Lea & Febiger, 1934.

This edition, enlarged and revised, is an improvement, as new material has been added. The book contains sufficient pathologic physiology and clinical data to make it a more interesting and more suitable book than the older textbooks that are confined largely to the descriptive morbid anatomic and microscopic changes. The text is concise, the language is simple, the style is easy, and the sentences are noted for their short and clear cut expressions. The first portion consists of a section on general pathology, perhaps too brief, but which if supplemented by lectures would meet the purpose in the average course of study. The section on tumors can be considered adequate. A great part of the book is taken up with special pathology, which is treated in an excellent and concise manner. Illustrations are for the most part adequate. Perhaps a few statements might be questioned. Rheumatic fever is not generally accepted as yet as being due to streptococci. On the other hand, scarlet fever is most generally accepted to be due to a special type of hemolytic streptococci. In a discussion of streptococcic sore throat epidemics, a statement that the infection may be milk borne through contamination of a milk man with a sore throat is incorrect, as all work points to the infected udder of a cow being the source of infection. The term *Streptococcus mucosus* is still employed and should not be used in American literature, as this organism is definitely *Pneumococcus mucosus*. Tumors are discussed in an excellent brief manner. The relation of trauma, chronic irritation and the experimental work on production of cancer are well discussed. The histogenetic terms for tumors of the nervous system have been adopted. Lympho-epithelioma tumors of the throat are included. An interesting addition to the discussions of the tumor are the remarks on prognosis and radio-sensitivity of neoplasms. The classification of diseases of the kidney is confusing. The recent conceptions of nephrosis are emphasized. In discussing diseases of the heart, Clawson includes a simple, clear classification and emphasizes recurrent rheumatic infections of the heart, a condition neglected by most textbooks. One might perhaps question the statement that Aschoff nodules occur in 45 per cent of cases of subacute bacterial endocarditis, as most workers believe that these nodules are seen only in rheumatic infections. The pathology of only a few infectious diseases is discussed. In a discussion of hay fever, a statement that the majority of hay fever sufferers finally develop asthma is of course incorrect. The pathology of nervous diseases includes a brief statement of the various forms of encephalitis and parkinsonian diseases. The chapter on diseases of the blood is written by Downey. The histogenesis of blood cells and the recent work on liver and liver extracts in relation to the anemias are well described. Agranulocytosis is considered infectious in origin, and the possible relationship to amidopyrine is not mentioned. These omissions, however, are comparatively slight, for the book is well balanced and serves as an excellent textbook for beginners in pathology. It brings practitioners recent work and pathology discussed in terms of clinical medicine and abnormal physiology.

Active Immunization Against Diphtheria: Its Effect on the Distribution of Antitoxic Immunity and Case and Carrier Infection. By Sheldon F. Dudley, Percival M. May and Joseph A. O'Flynn. With a note by J. Orr Ewing. Medical Research Council, Special Report Series, No. 195. Paper. Price, 3s. Pp. 140, with 15 illustrations. London: His Majesty's Stationery Office, 1934.

An unusual opportunity presented itself at the Greenwich Hospital School in London to study the degree of immunity acquired under natural conditions by a group of about 1,000 boys over a period of seven years in comparison with the immunity obtained under artificial conditions of immunization at the same institution. From 1921 to 1928 the authorities at this school would not permit the administration of an immunizing agent but did sanction the Schick testing of the children. During the following five years, artificial immunization with toxoid was employed. The authors concluded that

three doses of diphtheria toxoid can produce in three months as high an immunity as three years' residence in a community where diphtheria is endemic. The community in this instance was the boys' school, where the children live rather intimately, associated with one another and subjected to the dangers of direct contact infection. The authors further state that the natural progress of immunization was accompanied by a high mortality and that there occurred one case of clinical diphtheria for every three or four latent immunizations. When active immunization with toxoid was employed in 1928, clinical diphtheria almost disappeared from the school; but in the winter of 1932 a rather virulent outbreak occurred in spite of the fact that about 90 per cent of the children were Schick immune. This outbreak was due to a diphtheria bacillus extremely toxigenic and virulent to guinea-pigs. The incidence was greater among those who had been immunized with toxoid than among the natural Schick immune. However, the cases in the Schick immune or in the relapsed Schick immune were all mild. It was observed that, after the artificial immunization of the school, higher virulent carrier rates were recorded, while the number of avirulent carriers practically disappeared. They observed, however, that in determining this variation in the percentage of virulent carriers the same boys have not been observed over an extended period of time. They believe, however, that the sampling does represent a fair index of the variation in the carrier rate. The authors confirmed the hypothesis first verified experimentally by Dudley in 1922 and Zingher in 1923 that latent immunization is caused by carrier infection with virulent diphtheria bacilli. They further state that artificial active immunization is an almost certain protection against recognizable clinical diphtheria but is no protection against carrier infection. It may under certain conditions increase the number of virulent carriers, not only by replacing the Schick susceptibles who rarely carry virulent diphtheria bacilli, by Schick immunes who are all potential carriers, but also by substituting virulent for avirulent diphtheria infections.

A Textbook of Gynecology. By Arthur Hale Curtis, M.D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School. Second edition. Cloth. Price, \$6. Pp. 493, with 300 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This edition contains 112 pages more than the first. Lacking is the usual publisher's statement listing revisions and additions. A detailed comparison of the second with the first volume is essential to an understanding of the conscientious way in which the new material has been woven into the original fabric. Credit is due the author for this painstaking work, nor should credit be withheld from the publisher for permitting an almost complete resetting. The orderly sequence of the original volume and its concise virtue are not lost, yet substantial progress is made toward a broader consideration of fundamentals, found wanting in the first edition. Whether through remissness or modest intent, neither author nor publisher has signalized the improvements in the second edition. Some of them should be mentioned: The section on cancer of the cervix has been revised and improved for teaching purposes. Admirable illustrations of the Wertheim hysterectomy comprise a valuable addition. A new section on tumors of the broad ligaments is included. An operation not included in the first edition is advocated and carefully described. This consists in the combination of advancement of the bladder with transfer of the bases of the broad ligaments and amputation of the cervix.

The section on internal secretions in their relation to gynecology is entirely rewritten and greatly enlarged and improved. The management of pelvic tuberculosis is seen from a slightly different angle; surgery is soft-pedaled. The sections on operative management and postoperative care have been admirably rearranged and amplified. The section on sterility is broadened and strengthened. For the rest, there is scarcely a section in the book, however brief, that has not come in for its share of change for the better.

The illustrations, for the most part by Tom Jones, offer a striking contribution to the excellence of the volume. Many illustrations of interval stages in operative procedures have been added, reduced in size without loss of subject value. In general, the illustrations of operative procedures are unusually good,

particularly those depicting plastic procedures involving the vaginal approach.

As a basic textbook for the academic teaching of gynecology, this book is not yet ideal. It is practical, concise and readable but, after all, more concerned with clinical essentials than with fundamental and academic grounding. For clinical teaching combined with case study and surgical observation it is nearly perfect. As a reference for the clinician in practice it is invaluable.

In the surgical management of prolapse, cystocele and rectocele, in the conservative and radical management of pelvic infection and in the management of genital cancer the book is superlative. In certain fields, particularly in vaginal plastic surgery, it is a classic, years ahead of its time. For the rest, it is often excellent, seldom less than adequate. The first edition proved to be an invaluable adjunct to the working library. The second edition is greatly broadened in scope and commensurately more valuable. No book in its field will be referred to more frequently or with more profit by either clinician or specialist.

Union Internationale contre le cancer; Conférence préparatoire tenue le 22 mars 1934 au Ministère de la Santé publique à Paris. Compte rendu sténographique. Paper. Pp. 80. Paris: The Union, [n. d.]

These two pamphlets are a transcript of the organization meeting of the International League Against Cancer. The first International Cancer Congress originated at the suggestion of the late Dr. Harvey R. Gaylord of the State Institute for the Study of Malignant Disease, at Buffalo. As Professor Czerny had just opened his institute for cancer investigation in Heidelberg, and Prof. Paul Ehrlich the institute for experimental therapy in Frankfurt, the meeting was held in September 1906 at Heidelberg and Frankfurt. The congress was attended by representative clinical and laboratory students of cancer. Obviously, as the meeting was held in Germany, the members were predominantly German, but representatives from England, France, the United States and other countries were present. Every aspect of the subject was considered, scientific research, treatment both by surgery and radiation, and statistics. Among the famous men present now no longer living were Jensen, Metchnikoff, Pozzi, Waldeyer, Czerny and Ehrlich. Jensen died only a few months ago, and it was he who in one sense originated experimental cancer research, for he was the first to study in detail the transplantation of animal tumors. The second congress was held in Paris in 1910 and was well attended. In 1913 another small conference was held in Brussels. Then came the war, and it was not until 1923 that a conference was held in Strasbourg, with a limited group of investigators attending. The American Society for the Control of Cancer called a conference in 1927, which was held at Lake Mohonk. In the scope of its papers this meeting was chiefly devoted to the questions of teaching, lay publicity and the organization of cancer clinics in which the society was interested. A year later a similar invitation conference was called in London, and certain phases of the cancer problem were discussed in great detail. This meeting was more general in scope than the Mohonk conference. Both conferences published important contributions to the subject of cancer research and cancer education in their proceedings. Finally, in 1933 the third international congress assembled in Madrid. The decision to hold this congress was made rather late and it was difficult to get together a representative group on short notice. It was felt by the delegates to the Madrid conference that some more formal organization should be created which would guide and somewhat control future congresses, the next of which will be held in Rome in 1936. In compliance with the wishes of the delegates to this congress, Justin Godart, president of the French Society for the Control of Cancer, was requested by the president of that congress to call a meeting of delegates from those organizations interested in cancer, and this meeting was held March 22 of this year in Paris. The response was world wide, sixty-eight delegates coming from North and South America, all the countries of Europe and some from the Far East. The purpose of this meeting was to decide whether there should be created a formal organization to be known as the International League Against Cancer. This group decided that it would be wise to establish such a body, voted that its headquarters should be in Paris, and discussed the

many activities in which such an organization might properly engage. It was recognized that a question of immediate importance was to aid the local committee having charge of the next congress in Rome and to assist it in the organization of its program of papers, clinics and symposiums and also to suggest possible subjects for discussion. To this end a constitution and by-laws were adopted which should govern further developments. All teaching and research organizations are eligible to join the society on the payment of a small fee, and governments also are asked to nominate delegates. Among other suggestions for the possible activities of the society was that to prepare an international classification for tumors and to determine uniform criteria for the recording of cancer statistics. If sufficient funds can be obtained, it was proposed to establish a central office in Paris, from which information of all sorts concerning cancer might be supplied, reprints collected to be lent to investigators unable to subscribe to the journals containing the original articles, photostats prepared at the request of investigators unable to obtain reprints, and a card index of the literature on cancer to be made so that any investigator might obtain, at a small cost, the literature on any phase of cancer research or education on which he desires information. It was also proposed to publish a small, inexpensive bulletin which would be sent to all the members of the organization and to others interested in the subject of cancer, reports of the committee meetings and of the plenary conferences of the delegates, with short notes on other matters that might be of interest to those engaged either in research or in treatment of cancer and in cancer education. An executive committee was elected by the plenary conference to carry on in the interim and it met in Paris, July 17. The full meeting of all the delegates from the various countries that have agreed to combine in this venture will be held in Paris, December 16. At that meeting it is expected that the outlines of the program for the Rome International Cancer Congress will be completed and a permanent executive committee established from those countries which have sent official delegates.

Surgical Nursing. By Hugh Cabot, M.D., C.M.G., F.A.C.S., Senior Consultant, Mayo Clinic, Rochester, Minn., and Mary Dodd Giles, R.N., A.M., Associate Professor of Nursing Education, Vanderbilt University. Second edition. Cloth. Price, \$3. Pp. 441, with 123 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

The authors have attempted to state underlying principles of the practice of surgery and to correlate surgical nursing procedures with these principles. They have been fairly successful, though the correlation might be improved. In some instances the treatment represented to be indicated is apparently quite individualistic and does not conform to the accepted principles of many surgeons. There is a tendency to encourage the nurse to take over a considerable part of what is still regarded as the practice of medicine. The illustrations might be improved in order to cause them to be of educational value and not merely illustrations. Submitting this edition to a representative group of recognized surgeons and conforming to their recommendations might result in a more practical, worth-while third edition.

Über die Wirkungen der Röntgenstrahlen auf die Lungen. Von Rolf Bull Engelstad. Acta radiologica, Supplementum XIX. Paper. Price, 10 Swedish crowns. Pp. 93, with 35 illustrations. Stockholm: P. A. Norstedt & Soner, 1934.

It has been known for many years that excessive irradiation of the chest with either radium or x-rays can produce permanent fibrotic changes in the lungs. This fact was of relatively little practical importance until the development in recent years of the method of administering extremely large doses of radiation in the attempt to cure cancer of the lung, mediastinum or breast. While Holfelder has suggested the use of an oblique beam in the treatment of carcinoma of the breast and many workers in the field supplement moderate roentgen treatments with large doses of buried but highly filtered radium the action of which is chiefly local, nevertheless it has become more and more obvious that this fibrosis of the lung is one of the limiting factors in the treatment of malignant conditions in the chest. Most of the previous work on the subject has been done in a purely qualitative way and with doses that could not be administered to human beings. This monograph is therefore a welcome contribution to the subject. First of all, Engelstad has

been careful to determine the dosage of x-rays that he administered, no matter what the filtration or voltage. He used rabbits in his experiments and protected them as far as possible with lead rubber. Small animals of this type are not suitable for such work, as the lateral scattering from the impinging beam is considerable and the animals may not infrequently die from moderate exposures. Beginning with moderate doses just sufficient to produce an erythema, approximately 1,500 roentgens, or about three times that for the human skin, he found no serious damage in the lung or pleura. The lymph follicles were shrunken and there was some hyperemia with edema of the lung tissue, and occasionally some capillary hemorrhages. The lymph follicle changes appeared in a few hours after the irradiation, the others later. Equal numbers of roentgens applied to the chest gave the same effect despite the variations in voltage and filtration. With larger doses, approximately 3,400 roentgens in a single sitting, fairly extensive degenerative processes could be observed four hours after the termination of the exposure. The lymphocytic tissue of the lung had practically vanished. Leukocytic exudate was present in the alveoli. The alveolar epithelium showed degenerative changes and after some months the lungs showed considerable sclerosis, degeneration and proliferation of the bronchial epithelium, exudate in the pleura, calcification, and even the presence of bone. To this lesion the rabbit is probably peculiarly sensitive. The dose causing these changes, however, is larger than would ever be given to a human being in a single sitting but is not larger than is at present frequently administered with the fractional technic now employed. The author found in his experiments that the time factor played an important part in determining the amount of lesion in the lung, for while no difference was noted when equal doses of x-rays of different wavelengths were administered in the same time, when the treatment was greatly prolonged a much larger total dose could be given than when the whole was administered at a single sitting, thus confirming the work of Coutard and his followers. In another series of animals, doses between 9,000 and 21,000 roentgens were given. As might be expected, most of the animals died fairly promptly even when the dose was divided into three or four sittings, but such doses would never be given to human beings. Obviously, the reader will consult the text for the histologic details and will be instructed in these matters by the excellent illustrations, mostly photomicrographs, of the damaged tissues. An extensive bibliography is appended. The subject would seem to be closed, certainly for the rabbit, and it is unlikely that the use of dogs or cats would reveal any other changes of importance.

Diabetic Manual for Patients. By Henry J. John, M.A., M.D., F.A.C.P., Director of the Diabetic Department and Laboratories of the Cleveland Clinic. Second edition. Cloth. Price, \$2. Pp. 232, with 47 illustrations. St. Louis: C. V. Mosby Company, 1934.

This manual is attractively written and will hold the attention of the patient. The diagrams are ingenious. The text is sound, sensible and practical. The author cheers the patient by recording a list of patients who took insulin and later were able to discontinue it. Many will differ radically with his interpretation of reactions and will not agree that they are present with a high blood sugar; but that is a comparatively minor point. Sample menus are given for carbohydrate 140 Gm., protein 60 Gm., fat 111 Gm., and evidently this is a diet which the author frequently employs. Any practitioner can recommend this manual to his patient without any misgivings. It is sure to do good.

Vie et rajeunissement: Une nouvelle méthode générale de traitement et mes expériences de rajeunissement de Bologne et de Paris. Par le Dr. Francesco Cavazzi. Préface du Profr. Charles Richet de l'Institut de France. Paper. Price, 22 francs. Pp. 88, with 47 illustrations. Paris: Gaston Dolin & Cie, 1934.

Dr. Cavazzi of Bologna has a method which is a variant of that of testicular extract injection. Cavazzi says that Brown-Séquard's original method of opotherapy failed, not because it was wrong in principle, but because he had used an extract that did not and could not contain the active endocrine substances. The testicular hormones (like other hormones) pass directly into the efferent blood, according to the exact conception of an internal secretion as enunciated by Claude Bernard.

The author therefore used the serum of testicular efferent blood from young and healthy animals, as this, he declares, must contain the testicular hormones. According to Cavazzi, the species of animal is a matter of indifference, because the efficacy of the hormones is a chemical matter. A number of old men were treated both at Bologna and in Paris. Cavazzi says that all were greatly improved. He believes that the phenomena of "rejuvenation" observed are due to the amelioration of the specific nutrition of the nervous system (hormone nutrition) and especially of the spinal cord by the action proper of the testicular hormone. This, he avers, is a biologic, not a pharmacologic or pharmacodynamic, excitation: a reacquisition of nervous energy by the action of the hormones. Nothing is said about the method of preparation of the serum. The clinical data given are especially meager. Empiricism is the substance of the work. It is regrettable that the term "rejuvenation" is used rather loosely. More scientific and exact data instead of speculative statements, coupled with subdued enthusiasm, might perhaps tend to less skepticism.

Physical Diagnosis. By Richard C. Cabot, M.D. Eleventh edition. Cloth. Price, \$5. Pp. 540, with 317 illustrations. Baltimore: William Wood & Company, 1934.

The new edition of this standard textbook has been thoroughly revised and reset in new type. Sections concerned with laboratory data have been omitted, thus offering more space for other chapters. Coronary heart disease is much more adequately described in this edition than heretofore. A section on pulmonary heart disease has been added. The sections on head and neck, tuberculosis, pulmonary emphysema, and lesions of the large intestine have been enlarged. A new chapter is devoted to the electrocardiogram. As the author stresses in the preface, no attempt has been made to describe diagnostic procedures with which he is not familiar and no space is given to the description of tests that he believes are useless.

A Contribution to the Problem of the Relationship Between the B Vitamins and the Protein, Fat and Carbohydrate Contents of Food. By P. Vogt-Møller, Reservelæge ved St. Elisabeth's Hospitals Medicinske Afdeling, Copenhagen. Paper. Pp. 165. Copenhagen, Denmark: Levin & Munksgaard, 1934.

This report, in Danish, accompanied by an English summary, covers experimental investigations (1929-1931) in which mice were used to ascertain whether requirements for the B vitamins vary at different levels of protein, fat and carbohydrate in the diet. This question is important in the quantitative determination of the B vitamins as well as from a clinical standpoint. When given a rich fat diet, the animals seemed to need less vitamin B₁, while the requirement of B₂ seemed to be increased; increased vitamin B₁ caused an earlier development of pellagra and death. A high carbohydrate diet seemed to increase the need for B₁ and/or B₄. A high protein diet appeared to increase B₂ needs. The results of the experiments show that the composition of the diets on which experimental animals are fed has a large influence on the quantitative biologic determinations of the constituents of the vitamin B complex, so that the feeding of experimental animals with diets of uniform composition is necessary in comparative investigations of the vitamin content of foods.

Applied Anatomy: The Construction of the Human Body Considered in Relation to Its Functions, Diseases and Injuries. By Gwilym G. Davis, M.D. Ninth edition revised by George P. Muller, M.D., Professor of Clinical Surgery, Graduate School of Medicine, University of Pennsylvania. Assisted by Bernard J. Alpers, M.D., Assistant Professor of Neurology, Graduate School of Medicine, University of Pennsylvania, Sirlin W. Moorhead, M.D., Assistant Professor of Urology, University of Pennsylvania, Robert A. Kimbrough Jr., M.D., Associate in Obstetrics and Gynecology, University of Pennsylvania, I. S. Ravidin, M.D., Professor of Surgical Research, University of Pennsylvania, and S. Dana Weeder, M.D., Surgeon to the Germantown Hospital. Cloth. Price, \$9. Pp. 717, with 675 illustrations by Ervin F. Faber. Philadelphia, London & Montreal: J. B. Lippincott Company, 1934.

The profession will welcome a revision of a book that is considered by many to be a classic. The fact that this is the ninth edition attests its popularity. It has been entirely reset and, in part, reillustrated. The author's aim was to teach surgical principles through the medium of anatomic relations. Many of the sections have been rewritten, notably the surgical specialties. A few sections have not been rewritten and an excellent example is the part on extremities, which was so well

written originally that few changes were indicated. Most of the illustrations were made from dissections made by the author, or under his direction. The frozen anatomic sections should be of considerable value to the student and surgeon. The reviser and his assistants have done a commendable piece of work. The book represents an excellent job of publishing and can be recommended highly.

Medicolegal

Medical Practice Acts: Revocation of License; Pregnancy to Be Proved When Abortion Is Charged.—The state of Iowa instituted an action in equity to revoke Brown's license to practice medicine, charging him with unprofessional and dishonorable conduct in procuring a criminal abortion. The trial court dismissed the proceedings. The state then appealed to the Supreme Court of Iowa. That court reversed the order of the trial court and directed it to revoke the defendant's license but later, on rehearing, affirmed the trial court's ruling dismissing the cause.

To establish the charge that Brown procured a criminal abortion, said the Supreme Court, the evidence must show that the female on whom the operation was alleged to have been performed was pregnant. This, the court held, the evidence in this case failed to do. The girl herself, a child 15 years old, refused to testify. The trial court did not permit her family physician to testify, because of the privileged communications statute of Iowa. Her mother testified that the family physician said the child was pregnant; but, said the Supreme Court, this testimony, while admissible as proof that the statement was made, cannot be considered as evidence of the truth of that statement. There was evidence that after the family physician had advised the mother as to the child's condition her father arranged with the defendant to treat her; that the defendant examined her and advised that she be given quinine; that the girl visited the defendant two or three times subsequently; that on one visit he used a metallic instrument and inserted a rubber tube and some gauze in the vagina, and advised the removal of the tube when the child began to have cramps; that about five hours later the child did have cramps and the tube was removed; and that the child passed clots of bad-smelling blood the following morning. This evidence, said the court, fails to show that the child was pregnant, since there was no expert evidence that these treatments were such as are recognized as adapted to and ordinarily given to produce an abortion and were not given for a legitimate purpose. There are many things in the evidence, said the court, that arouse a very strong suspicion, but the court cannot condemn on a suspicion.

Holding that the evidence failed to establish that the child was pregnant, the Supreme Court accordingly affirmed the ruling of the trial court dismissing the proceedings.—*State v. Brown (Iowa)*, 245 N. E. 348; 253 N. E. 836.

Malpractice: Volkmann's Contracture Attributed to Tight Bandage.—The plaintiff sustained a compound fracture of the humerus, about three inches above the elbow. The defendant-physician, at a hospital, reduced the fracture, placed the arm in a splint, and bandaged it. The plaintiff remained in the hospital ten days, during which period the bandage was changed two or three times. After the plaintiff left the hospital, although he complained of pain, the bandage was not changed for approximately three weeks, at which time the splint was removed. It was then discovered that the plaintiff had a Volkmann's contracture, evidenced by inability to straighten the wrist and fingers. The injury was permanent and practically deprived the plaintiff of the use of his arm from the elbow down. Charging the defendant with negligent treatment, the plaintiff sued and obtained a judgment for \$4,000, from which the defendant appealed to the Supreme Court of Washington.

The plaintiff attributed his condition to tight bandaging that stopped the flow of arterial blood. The defendant apparently contended that the permanent disability was due either to a

blood clot that got into the artery feeding the lower arm or to an injury to the spiral nerve sustained at the time of the fracture. The medical testimony was in substantial agreement that if during the three weeks immediately prior to the removal of the splint the hand was excessively swollen and had a bluish or purplish color, it would indicate that the flow of blood had been arrested by pressure on the arm. If, on the other hand, "the flow of blood was arrested by a blood clot or injury to the nerve," the hand would be pale or have a cadaverous appearance. Lay witnesses who had seen the hand and arm during the three weeks testified that the hand and fingers were excessively swollen and had a bluish or purplish color. This testimony, observed the court, directly supported the plaintiff's theory and the medical testimony offered by him to the effect that the bandages were too tight and that this caused the disability. There was testimony that if the hand, during the three weeks, became excessively swollen, or if the patient complained of pain, the bandages should have been removed to determine the cause. We recognize the rules, said the court, that the mere fact that bad results follow treatment is not of itself evidence of negligence on the part of the physician, and that if the treatment actually employed has the approval of at least a respectable minority of the medical profession there would not be negligence. These rules, however, have no application in the present case, because the question is what caused the condition of the arm. If the condition was caused by too tight bandaging, it necessarily follows that the defendant was negligent in failing to give the arm proper care. The mere fact that more physicians testified for the defendant than for the plaintiff was not considered by the court to be of controlling importance. The Supreme Court concluded that the judgment of the trial court was warranted by the evidence and that judgment was affirmed.—*Griginski v. Lane (Wash.)*, 30 P. (2d) 970.

Workmen's Compensation Acts: Landry's Paralysis Attributed to a Cold.—On March 8, 1932, a very cold day, the employee, during the course of his employment, fell into a hole filled with water, wetting one of his legs. On the following morning he went to work as usual but complained that he did not feel well. He returned home about 3:30 p. m. and went to bed. His family physician was called and prescribed for a cold. The employee returned to work the next day but continued to complain of feeling bad. Complaining of neuralgia of his face, he was compelled to quit work, March 24, and was taken to the Walter Reed Hospital on the evening of March 25. An examination disclosed that he was suffering from Landry's paralysis. He died on the morning of March 26. Under the longshoremen's and harbor workers' compensation act, made applicable to the District of Columbia by an act of Congress, the deputy commissioner awarded compensation to the employee's widow. The supreme court of the District of Columbia sustained the award and the insurance company appealed to the Court of Appeals.

The only question with which we are concerned, said the Court of Appeals, is whether there is substantial evidence of a causal connection between the immersion and the paralysis. The attending physician testified that, prior to the accident, the employee was in perfect health and that in his opinion there was a causal relation between the accident and the paralysis. This conclusion, he testified, was reached "by a process of elimination." Asked to explain this statement, the physician testified that Landry's paralysis may be due to various causes, infection, exposure to cold, infectious diseases, like typhoid fever, scarlet fever and other fevers, and tuberculosis. Every potential cause other than exposure to cold, he testified, was eliminated in the postmortem report. A physician who performed an autopsy on the body testified that "this man apparently got his cold from the submerging and Landry's paralysis from the cold. . . . There is a causal relation between the 'flu' and Landry's." There was other medical testimony but the court did not deem it necessary to consider it, because the testimony already reviewed was sufficient to sustain the award. The decree of the supreme court of the District of Columbia sustaining the award was affirmed.—*Massachusetts Bonding & Ins. Co. v. Hoage (District of Columbia)*, 69 F. (2d) 575.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
American Association for the Study of Neoplastic Diseases, Dec. 27-29. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D.C., Secretary.
Puerto Rico, Medical Association of, Santurce, Dec. 14-16. Dr. Julio R. Rolenson, Box 3403, Santurce, Secretary.
Society of American Bacteriologists, Chicago, Dec. 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

Third Conference on Rheumatic Diseases

First Annual Meeting, held at Cleveland, June 11, 1934

(Continued from page 1804)

The Rôle of the Reticulo-Endothelial System in the Deposition of Colloidal and Particulate Matter in Articular Cavities

DRS. JOHN G. KUHN and H. L. WETHERFORD, Boston: The most important function of the reticulo-endothelial system is that of active phagocytosis. When the cells of this system are unable to free the body from invading micro-organisms, infection takes place; and when toxic substances or bacteria cannot be removed with sufficient rapidity, local injury of tissue results. This study attempts to ascertain the activities of the reticulo-endothelial system in and about joints. A 1 per cent solution of trypan blue was repeatedly injected, subcutaneously, into animals, chiefly rats. After many injections, some animals died without apparent cause. Extensive staining of skin, subcutaneous tissues, liver, spleen, kidneys and bone marrow was found. Moderate staining of joints was found after numerous injections, but practically none after one or only a few injections. Numerous dye-laden histiocytes were seen beneath the synovial membrane. The reactions of joint tissue to a mixture of trypan blue, sodium carminate and india ink were studied. The histologic observations suggest that absorption and deposition of particulate matter occur in proportion to the size of the individually precipitated particles. There was little evidence of intra-articular inflammatory response. Since these experiments indicate that material larger than molecular size can be carried by the mobile cells of the reticulo-endothelial system from the skin and subcutaneous tissue and stored in joints, it would seem that bacteria and metabolic products not in solution are handled similarly.

The production of a mild inflammation in articular tissues by the intra-articular injection of potassium iodide tended to increase the deposition of the subcutaneously injected trypan blue. In joints experimentally traumatized, there was no definite increase in the deposit of trypan blue in the articular tissues, although there seemed to be a much greater accumulation of dye-laden histiocytes in periarticular tissues. By repeated intra-articular injections of india ink or liquid petrolatum, attempts were made to block the reticulo-endothelial system; that is, to fill its cells so completely that further phagocytosis was impossible. With others we were unable to produce more than a temporary depression of phagocytic activity. The resulting transitory, local blocking is ineffective in preventing the deposition of colloidal and particulate matter elsewhere.

Absorption of material into joints from the gastro-intestinal tract can result by way of the cells of the reticulo-endothelial system, as demonstrated by intra-articular deposits of dye given intragastrically. After noting the unequal distribution of these materials, and their feeble phagocytosis and storage in joints in comparison to other tissues, one wonders how solutions of intricate molecular composition and the host of colloidal solutions advocated for arthritis can be very effective as bactericidal agents or metabolic stimulants.

DISCUSSION

DR. ROBERT B. OSGOOD, Boston: Drs. Kuhn and Wetherford seem to have proved that materials of greater than molecular

size can be carried to the joints from the gastro-intestinal tract and from other tissues through the medium of agents belonging to the reticulo-endothelial system. However, such possible etiologic material seems to be stored in the articulations less easily than in other tissues, for example the bone marrow. The corollary of this suggests the question, which the investigators very sanely raise, as to whether various injected substances, such as vaccines, are likely to be therapeutically effective in arthritis, considering their intricate molecular composition and the many colloidal solutions, which would seem to be probably much attenuated and perhaps actually changed in composition before they can reach the joint tissues. The paper is so thought provoking that it stimulates the hope that its authors will continue their research along these lines.

DR. JOSEPH KOVACS, New York: I hardly believe that acute inflammations in general stimulate the cells of the reticulo-endothelial system to increased activity. Under such conditions an increase in deposits of dye might be explained by the fact that, in acute inflammation, there is an increased supply, and perhaps stasis, of blood which would enable the histiocytes to absorb and store more dye from the blood. Although an impaired circulation can be found in more than half the cases of chronic arthritis, I doubt that an increased storage of dye could be found except in the more acute or subacute stages, when increased blood supply and stasis are present.

The Effect of a High Fat Diet on Four People with Gout

DRS. L. MAXWELL LOCKIE and ROGER S. HUBBARD, Buffalo: Two male patients with tophaceous gout and two with tophaceous gout were fed a diet high in fat while they were free from symptoms (at least one week after the end of their previous attack). The diets contained from 20 to 50 (generally 50) Gm. of carbohydrate, from 50 to 60 Gm. of protein and from 220 to 300 Gm. of fat; they were low in purine content, containing an average of 0.04 Gm. of uric acid daily. Each time these patients were given such a high-fat diet a typical attack of acute gouty arthritis developed within two to six days, generally within forty-eight to seventy-two hours. The joint symptoms subsided completely within two to three days after the patients were placed on a diet high in carbohydrate, such a diet consisting of from 350 to 400 Gm. of carbohydrate, from 50 to 60 Gm. of protein and from 50 to 130, although generally from 50 to 60, Gm. of fat. The uric acid in the blood of such patients on a high-fat diet increased if they were kept on the diet long enough. Simultaneously, the excretion of uric acid in urine decreased. In the case of a boy, aged 16 years, with tophaceous gout the uric acid in the blood rose from 8.6 to 16 mg. while he was on the high-fat diet, and it remained at the latter concentration for several days in spite of the institution of a diet high in carbohydrate, until salicylates were given, when it reverted to its former level. The presence of acetone in these cases was not determined, although it may be assumed that some degree of ketonuria was present. A negative effect of seven days of a high fat diet on the symptoms of several patients with atrophic or hypertrophic arthritis was observed. Since a diet high in fat did not aggravate the symptoms of patients with atrophic or hypertrophic arthritis but did provoke exacerbations among four patients with gout, it seems possible that this procedure may be a useful test in the differential diagnosis of gout. These observations also suggest that the logical diet in gout should include a low fat content.

DISCUSSION

DR. PHILIP S. HENCH, Rochester, Minn.: A few years ago I reported a study of 100 cases of gout. An outstanding fact was that it took about fifteen hundred years to diagnose them; that is, an average of fifteen years elapsed between the first attack and the establishment of the correct diagnosis. The reason for such delay lies in the erroneous idea that the characteristic changes used in the past for diagnosis are expected to appear reasonably early, and that hyperuricemia, punched-out areas and preferably tophi should be present before a diagnosis is made. Palpable or roentgenographic tophi are generally late phenomena, and even the uric acid in the blood may be normal for some time after the onset of gout. Obviously, more help is needed in making early diagnoses. Even when the physician

is certain of the diagnosis, a patient often refuses prolonged dietary restrictions unless he can be convinced that certain foods are harmful. Herein lies one of the values of provocative tests in gout, although these test diets in use today are generally of doubtful value. When the response to a high purine test is undoubtedly positive, its significance is appreciated; but, unfortunately, responses are often unconvincing, even in known gout. Less than half of a series of patients with known gout noted significant increases in symptoms, and in some the uric acid in the blood was lower just after than before the high purine test diet. In about 15 per cent of a series of cases of undoubted chronic atrophic arthritis, increases of pain were noted on the test diet; however, this probably was coincidental. The report of Drs. Lockie and Hubbard proposes a more useful provocative test and suggests a definite therapeutic corollary as well as a new line of thought concerning the pathogenesis of gout. While Harding and his colleagues spoke of the effects of a "high fat diet," both they and Umeda insisted that "a diet sufficiently high in fat to produce ketosis" was necessary to produce significant increase in the blood uric acid. The diets used by Lockie and Hubbard were probably not ketogenic, as it is practically impossible to develop ketosis on a carbohydrate intake of more than from 15 to 20 Gm. It must be determined whether ketosis is a requisite for a provocation. I have given a few patients with chronic atrophic (infectious) arthritis diets high in fat, with the carbohydrates varying between 15 and 50 Gm. No flare up of joint symptoms was noted, and no unusual rise in uric acid in the blood was noted unless ketosis was established. The therapeutic corollary is of greater importance. It may be possible for a patient with gout to enjoy less restrictions with regard to purine if he is protected by a high intake of carbohydrate. These studies indicate anew that gout is not a problem just of purines or uric acid but that it is more profound. The French have demonstrated that cholesterol is precipitated in tophi in addition to urates. This work might be interpreted as indicating in gout a disturbance of fat as well as of purine metabolism. To date, however, it is thought that fats merely lower the ability of the kidneys to excrete urates. In the meantime, with the increasing use of ketogenic diets for infections of the urinary tract, if acute arthritis suddenly develops in a patient being so treated, an investigation for gout seems in order.

DR. FRANCIS HALL, Boston: This paper calls attention to the fact that gout still exists in the United States. Erroneously calling it rheumatic fever, toxic, traumatic or hypertrophic arthritis, physicians are misdiagnosing a large number of cases of typical and atypical gout because they fail to think of it. It suggests a more accurate method of diagnosis. There are many cases of arthritis without tophi, with or without the typical series of attacks but with borderline concentrations of uric acid in the blood, and in these roentgenograms may reveal punched-out areas in bones and it may be difficult to make a diagnosis. A provocative diet high in purines is of value in some cases, but a diet high in fat may prove of greater diagnostic merit. This study emphasizes what has previously been known but not generally recalled, and that is that a high fat intake retards elimination of urates by the kidneys and that the diet in gout should be high in carbohydrates and low not only in purines but also in fat. It must also not be forgotten what Folin, Berglund and Derick demonstrated, that a diet high in purine-free proteins stimulates excretions of urate. There are many unsolved problems concerning gout and uric acid; for example: Why doesn't gout attack patients with a high concentration of uric acid in the blood, such as in nephritis, leukemia, polycythemia, and pneumonia? What part, if any, does the liver play, and why is there a diminution in the excretion of uric acid before an attack? Searching for other leads in solving these problems, I have found a low metabolic rate among some patients between attacks of gouty arthritis. They have also exhibited stigmas, a history, and a response to medication with thyroid extract suggestive of thyroid deficiency. If this is not coincidental it may indicate that a slow flow of blood may be a conditioning factor. Burian demonstrated that exercise increased the excretion of uric acid from three to five times. Trauma will precipitate gout, and I have seen several patients whose pronated feet led to trauma of the knecs and toes. Correction of such defects may be important.

Calcium and Cholesterol Metabolism in Arthritis

DR. EDWARD F. HARTUNG, New York: Previous studies on the calcium balance and concentration of calcium in the blood serum of patients with arthritis have been few and are inconclusive. By Clark's modification of the Kramer and Tisdall method I have determined the serum calcium in fifty cases of atrophic (rheumatoid) and in fifty cases of hypertrophic (osteo) arthritis, comparing the values with those of 852 control cases previously studied at the Mayo Clinic by Greene and Hench in addition to 128 controls of my own. There is a slight but significant decrease of serum calcium in hypertrophic arthritis. This decrease cannot be explained by the fact that this disorder occurs in an old-age group. The serum calcium in rheumatoid arthritis does not disclose a significant variation from normal.

It has been observed that there is a significant decrease in the blood plasma cholesterol with some infections. By the method of Sackett I have found an increase of plasma cholesterol in cases of hypertrophic arthritis. This increase cannot be explained by the fact that patients with this disorder tend to be obese. The plasma cholesterol in atrophic arthritis tends to be lower than the average normal. The arithmetical mean for cholesterol in fifty-nine cases of hypertrophic arthritis was 235 mg. per hundred cubic centimeters of blood; in thirty-three cases of atrophic arthritis it was 175 mg., compared with the mean value of 195 mg. for a control group of thirty-three normal persons. These observations suggest that hypertrophic arthritis is a degenerative disease and that atrophic arthritis may be infectious.

The Roentgenologic Changes in Various Types of Chronic Arthritis

DRS. G. D. TAYLOR, A. B. FERGUSON and HAIG KASABACH, New York: We have studied in detail the roentgenograms in fifty-two cases of rheumatoid (atrophic) arthritis, thirty-two cases of osteo-arthritis, twelve cases of gout, eleven cases of gonococcic arthritis, thirty-two cases of tuberculous arthritis, twelve cases of Marie-Strümpell spondylitis, and twelve cases of Still's disease. The six chief alterations studied were general and local decalcification, production of bone by lippling or osteophyte formation, localized loss of bone substance, alterations in joint space, fibrous or bony ankylosis, and changes in soft tissues, such as atrophy, swelling or effusion.

In all types of chronic arthritis there may occur some degree of local decalcification, bone production, narrowing of joint spaces (destruction of cartilage) or ankylosis (in osteo-arthritis this occurs in the spinal column and sacro-iliac joints only). General decalcification is frequent in cases of osteo-arthritis (in 75 per cent of cases) but it is of slight degree and is normal for that age period, whereas in rheumatoid arthritis (in 95 per cent of cases) it is marked and extensive and is not accounted for by changes due to age. Atrophic loss of substance is as common in rheumatoid arthritis (85 per cent) as it is in gout (83 per cent). The soft tissue shadows are of utmost importance in roentgenologic diagnosis of arthritis and are frequently neglected. The hands and feet are the sites of choice to show detail in generalized roentgenologic changes, especially in rheumatoid arthritis. Anteroposterior and lateral views of corresponding joints of the extremities are necessary for determining the degree of decalcification and changes in soft tissue. The roentgenograms may show little or no change in the early months of rheumatoid, osteo-arthritis or Marie-Strümpell arthritis, gout or Still's disease, but they are important at this stage in the differential diagnosis of gonococcic and tuberculous arthritis. It is essential, for a rational interpretation of roentgen shadows, that the roentgenologist know at least the duration and the severity of the joint symptoms. No single feature is diagnostic, but each group of these clinically typical cases has a basic pattern or grouping of roentgenologic changes.

Osteo-arthritis and rheumatoid arthritis appear by the roentgenogram to be distinct entities. Both osteo-arthritis and rheumatoid arthritis may occur in the same case and in the same joint, and in such cases the characteristic changes of each type can usually be demonstrated in the same roentgenograms. The cases of rheumatoid arthritis form one distinct group with constant roentgenologic changes that do not suggest a further subdivision of this group.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*), are abstracted below.

American Journal of Cancer, New York

22: 249-496 (Oct.) 1934

- *Cancer of Stomach. H. K. Gray and D. C. Balfour, with appendix by R. R. Kirklin, Rochester, Minn.—p. 249.
- *Arsenical Keratoses and Carcinomas. C. C. Franseen and G. W. Taylor, Boston.—p. 287.
- Liver in Relation to Normal and Malignant Growth: Review. A. Haddow, Edinburgh, Scotland.—p. 308.
- Neoplastic Disease of Kidney of Frog, *Rana Pipiens*: II. Occurrence Metastasis. B. Lucké, Philadelphia.—p. 326.
- Comparison of Apparent End Results in Cases of Carcinoma of Mouth in Relation to Length of Follow Up. C. C. Lund, Boston.—p. 335.
- Studies in Bone Sarcoma: II. Is New Bone Formation in Osteogenic Sarcoma Result of Local Supersaturation of Tissue Fluids with Calcium? A. Brunschwig and P. H. Harmon, Chicago.—p. 342.
- Simple Adenomatous Polyp of Rectum. W. M. Shedden, Boston.—p. 347.
- Action of Radium on Tissue Cultures. F. B. Flinn, J. Victor, N. Stillman and D. MacDonald, New York.—p. 351.
- Intensities from Various Radium Packs. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 359.
- Roffo's Test in Cancer: Statistical Results of Eleven Thousand Cases. A. Gandolfo, Buenos Aires, Argentina.—p. 363.
- Tumors of Muscle. C. F. Geschickter, Baltimore.—p. 378.

Cancer of Stomach.—Gray and Balfour point out that, in its various forms, cancer of the stomach may be considered either one of the most hopeless or one of the most curable types of cancer. The increase in the incidence of malignant processes of the stomach is undoubtedly partially the result of those achievements in preventive medicine which have increased the span of life. Because of progress in diagnosis, cancer of the stomach is being recognized in its earlier stages, and on this depends the possibility of cure. Experience has now shown that a malignant process of the stomach may be curable if diagnosed early enough in its growth. Permanent cures are rare in relation to the number of cases encountered. If, however, the fact that early removal is the only known method of cure were emphasized more, a larger number of persons would undoubtedly submit promptly to examination and operation, with consequent increase in the number of satisfactory results. In cancer of the stomach, death will inevitably occur within a period of months if the disease is not interrupted in its course. The authors feel that exploration is warranted in any case of cancer of the stomach, unless it is clearly incurable because of distant metastasis or unless the lesion itself is definitely inoperable, as evidenced by roentgenologic examination.

Arsenical Keratoses and Carcinomas.—Franseen and Taylor report nine cases of carcinoma due definitely to arsenic and five cases of carcinoma probably of arsenical origin. One case in which only keratoses were caused by arsenic is described. Four additional cases, illustrative of lesions produced possibly by arsenic, are discussed. They state that arsenic may become deposited in the skin and manifest its carcinogenic property as late as forty years after the ingestion of, or occupational exposure to, arsenic. The carcinogenic property of inorganic arsenic is not universally appreciated and, as a result, cases of carcinoma of the skin may be produced inadvertently. Inorganic trivalent arsenic, usually in the form of solution of potassium arsenite, appears to be the chief offending agent. Chronic arsenical lesions following the administration of organic arsenic compounds are exceedingly rare. That arsenical carcinomas are not invariably of the squamous cell type is evidenced by the fact that more than one third of the carcinomas in the series were of the basal cell type. Although the grade of the malignant process in the squamous cell lesions is usually

low, metastasis to the groin and the axilla is not an infrequent event, as the authors attested in their series by this occurrence in nine lesions, two thirds of which were graded I, histologically. With all lesions of any considerable size, therefore, the regional lymph nodes should be removed, in spite of a low histologic grading. Patients presenting early arsenical lesions may be spared extensive operations or untimely death by prophylactic destruction of precancerous arsenical keratoses; or, by careful and frequent observation, these keratoses may be destroyed at the moment malignant changes threaten.

American Journal of Pathology, Boston

10: 569-712 (Sept.) 1934

- Formation of Intercellular Substance by Administration of Ascorbic Acid (Vitamin C) in Experimental Scorbutus. V. Menkin, S. B. Wolbach and Miriam F. Menkin, Boston.—p. 569.
- *Inclusions in Renal Epithelial Cells Following Use of Certain Bismuth Preparations. A. M. Pappenheimer and Eugenia H. Maechling, New York.—p. 577.
- Glycogen-Storage Disease: Thesaurismosis Glycogenica (von Gierke). Eleanor M. Humphreys and K. Kato, Chicago.—p. 589.
- Alterations in Mineral Constituents of Anterior Horn Cells in Experimental Poliomyelitis. W. E. Patton, St. Louis.—p. 615.
- Intranuclear Inclusions in Salivary Glands of Moles. Eleanor J. Rector and L. E. Rector, St. Louis.—p. 629.
- Encephalomyelitis, Probably Due to Lead Poisoning: Report of Case. A. B. Baker, Minneapolis.—p. 637.
- *Unidentified Parasite in Heart Muscle. W. C. Von Glahn, New York.—p. 647.
- Tuberculosis of the Major Bronchi. H. S. Reichle and T. T. Frost, Cleveland.—p. 651.

Inclusions in Renal Epithelial Cells Following Use of Bismuth Preparations.—Pappenheimer and Maechling found refractile globules within nuclei and cytoplasm of renal epithelial cells in two cases following intramuscular injection, in one instance of bismocymol (a bismuth derivative of camphocarbonic acid) and in the other of potassium bismuth tartrate with butyn. Similar globules were found in the renal epithelial cells of rats after the injection of appropriate doses of bismocymol. The chemical nature of these globules was not determined; they gave equivocal reactions for bismuth, were insoluble in lipid solvents and in strong alkalis and acids, resisted tryptic digestion and did not react for iron or calcium, but stained as myelin by the Spielmeyer method.

Unidentified Parasite in Heart Muscle.—During the routine study of the muscle of the heart from a case of aortic stenosis and insufficiency, Von Glahn discovered, at necropsy, peculiar solid bodies within the sarcoplasm of the hypertrophied heart muscle. The end of the body adjacent to the nucleus was rounded bluntly; the other end was pointed. Near the bluntly rounded end was an oval vesicular nucleus containing one or more chromatin particles, and close to this nucleus, in some instances, a solid round structure. One or more oval vacuoles were present, often near the pointed end. The bodies averaged 52.5 microns in length and 5.5 microns in width. They were usually straight, except for slight undulation. One body was found that was turned abruptly at right angles close to the muscle nucleus; another was sharply bent on itself. Another of these bodies was divided longitudinally through part of its length. Two larger bodies were discovered that had been cut across in sectioning the block of muscle. In many of the muscle fibers, fragments were found; and it was obvious that they were parts of more than one of these bodies. The only internal structure that could be distinguished, aside from vacuoles and nucleus with its nucleolus and chromatin material, were fine granules in the bluntly rounded portion. In the phosphotungstic acid hematoxylin preparations, the peripheries of the bodies were refractive. These bodies were not encapsulated; they seemed somewhat rigid in the fixed preparation. They appeared to be surrounded by clear fluid. They were situated adjacent to the muscle nucleus, with the long axis parallel to the direction of the myofibrils. The nucleus of the muscle was indented or invaginated by the bodies. The myofibrils were pushed to either side by the bodies but were otherwise unchanged. The heart muscle containing these bodies was not enlarged. There was no inflammatory reaction about the muscle containing the bodies. The bodies were numerous in the posterior part of the left ventricle and less in the muscle from the apex of this ventricle. The author has shown preparations of the bodies to many pathologists and

protozoologists. The consensus was that these bodies were of parasitic nature, but none could identify them. It is not believed that the bodies had any part in the production of the hypertrophy of the heart.

American Journal of Psychiatry, New York

91: 241-484 (Sept.) 1934

- Comments on Psychiatry. W. C. Rappleye, New York.—p. 241.
 Etiology of So-Called Schizophrenic Psychoses, with Especial Reference to Their Occurrence in Twins. A. J. Rosanoff, Leva M. Handy, Isabel Rosanoff Plesset and S. Brush, Los Angeles.—p. 247.
 Use of Music in Case of Psychoneurosis. W. van de Wall and E. D. Bond, Philadelphia.—p. 287.
 Marihuana Intoxication: Clinical Study of Cannabis Sativa Intoxication. W. Bromberg, New York.—p. 303.
 Family Care of Mental Patients. H. M. Pollock, New York.—p. 331.
 Family Care of the Insane. C. E. Thompson, East Gardner, Mass.—p. 337.

American Journal of Syphilis and Neurology, St. Louis

18: 433-590 (Oct.) 1934

- *Reinfection in Syphilis and Chancre Redux: Report of Cases. J. V. Klauder, Philadelphia, and T. Butterworth, Reading, Pa.—p. 433.
 Simple Method of Detecting Syphilis in Routine Dental Practice. C. R. Rein and M. H. Feldman, New York.—p. 440.
 Pernicious Anemia Following Resection for Gastric Syphilis. H. A. Singer and F. Steigmann, Chicago.—p. 444.
 Results of Treatment in Late Mucocutaneous and Osseous (Benign Late) Syphilis. H. Wasserman and M. J. Goodman, Baltimore.—p. 458.
 Bismuth in Treatment of Syphilis. Helen Harrington, New York.—p. 468.
 Juvenile Paretic Neurosyphilis Studies: I. Incidence, Sex and Age at Onset. W. C. Menninger, Topeka, Kan.—p. 486.
 *Forced Spinal Drainage in Treatment of Case of Gastric Crisis. R. M. Fellows, Topeka, Kan.—p. 505.
 Diagnosis and Treatment File for Neurosyphilis Clinics. S. H. Epstein, Boston.—p. 516.

Reinfection in Syphilis and Chancre Redux.—Klauder and Butterworth present the diagnostic features of recurrent indurations of the penis and a clinically indisputable case of reinfection with syphilis. They also report a case of chancre redux associated with active neurosyphilis. Two rabbits inoculated with tissue from the chancre redux failed to present evidence of syphilis. As far as they know, this is the first reported instance of rabbit inoculation with tissue from a chancre redux. The negative results in two rabbits are inconsistent with the conception of reactivation of spirochetes at the site of the chancre. Allergy or the hypersensitive state of syphilized tissue may play a part in the development of a chancre redux. It is possible that trauma, a nonspecific irritant, acts as a stimulant to this tissue, causing it to react in a characteristic manner in the absence of the specific irritant, *Spirochaeta pallida*. The authors interpret the negative rabbit inoculation in their case as favoring the latter theory.

Forced Spinal Drainage in Gastric Crisis.—Fellows discusses a case of dementia paralytica with tabes with gastric crisis treated by forced spinal drainage. It is a therapeutic axiom to treat a case of dementia paralytica with tabes at the start as if the case were one of dementia paralytica, the tabetic element being neglected temporarily since, unless treated properly, the patient will die of dementia paralytica before he is incapacitated by the tabes. In the author's case, however, because of the distressing and damaging gastric condition, it was imperative that the treatment be pointed toward relief of a symptom that is associated with the tabetic part of the picture. The treatment was outlined as nearly as possible to conform with accepted modern methods of treatment for dementia paralytica with tabes complicated with gastric crisis; that is, intensified routine treatment with large doses of arsenicals, shorter courses of bismuth compounds and iodides, later tryparsamide, and, in case of failure, fever therapy. These measures failed to relieve the gastric crisis, and spinal drainage was instituted with beneficial results, after which malarial therapy was used. Complete alleviation of the gastric crisis with no recurrence to date followed the use of forced spinal drainage. The patient at present is working efficiently at his job, his whole attitude is changed, he is happy, cheerful and cooperative, his memory is excellent and there is no impairment of calculation. His weight, which was 171 pounds (77.7 Kg.) when he was first examined at the clinic, fell subsequently to 156 pounds (71 Kg.), but is at present 175 pounds (79.5 Kg.).

Annals of Surgery, Philadelphia

100: 561-882 (Oct.) 1934

- Division of Surgery into Specialties. D. F. Jones, Boston.—p. 561.
 Total Ablation of Thyroid for Angina Pectoris and Congestive Heart Failure: Results of Eighteen Months' Experience. C. G. Mixer, H. L. Blumgart and D. D. Berlin, Boston.—p. 570.
 Total Thyroidectomy for Angina Pectoris. E. C. Cutler and M. T. Schnitzer, Boston.—p. 578.
 Operative Treatment of Hyperparathyroidism. E. D. Churchill, Boston.—p. 606.
 *Transplantation of Living Grafts of Thyroid and Parathyroid Glands. H. B. Stone, J. C. Owings and G. O. Gey, Baltimore.—p. 613.
 Diabetes and Hyperthyroidism. E. P. Joslin and F. H. Lahey, Boston.—p. 629.
 Principles of and Results After Amputation for Diabetic Gangrene. L. S. McKittrick and T. C. Pratt, Boston.—p. 638.
 *Relation of Hypophysis, Hypothalamus and Autonomic Nervous System to Carbohydrate Metabolism. L. Davis, Chicago.—p. 654.
 Indications and Contraindications for Denervation of Adrenal Glands. G. Crile, Cleveland.—p. 667.
 Suprarenal Cortical Syndrome with Presentation of Ten Cases. W. Walters, R. M. Wilder and E. J. Kepler, Rochester, Minn.—p. 670.
 Transplantation of Adrenal Cortex for Addison's Disease. E. Beer and B. S. Oppenheimer, New York.—p. 689.
 Consideration of Possible Toxic and Nervous Factors in Production of Traumatic Shock. W. B. Cannon, Boston.—p. 704.
 Primary Shock. D. B. Phemister and Huherta Livingstone, Chicago.—p. 714.
 Shock with Particular Reference to That Due to Hemorrhage and Trauma to Muscles. B. Brooks and A. Blalock, Nashville, Tenn.—p. 728.
 Effect of Adrenal Cortical Extract in Controlling Shock Following Injection of Aqueous Extracts of Closed Intestinal Loops. G. J. Heuer and W. D. Andrus, New York.—p. 734.
 Conservative Treatment of Arteriosclerotic Peripheral Vascular Diseases: Passive Vascular Exercises (Pavaex Therapy). L. G. Herrmann and M. R. Reid, Cincinnati.—p. 750.
 *Simultaneous Vein Ligation: Experimental and Clinical Study of Therapeutic Venous Occlusion. B. Brooks and G. S. Johnson, Nashville, Tenn.—p. 761.
 Bilateral Trigeminal Neuralgia. C. H. Frazier, Philadelphia.—p. 770.
 Gynecomastia, Virginal Hypertrophy and Fibro-Adenomas of Breast. D. Lewis and C. F. Geschickter, Baltimore.—p. 779.
 Technic of Total Unilateral Pneumectomy. E. Archibald, Montreal.—p. 796.
 *Elephantiasis and Clinical Implications of Its Experimental Reproduction in Animals. J. Homaas, C. K. Drinker and Madeleine Field, Boston.—p. 812.
 Displacements in Fractures of Neck of Femur. W. Darrach and Barbara B. Stimson, New York.—p. 833.
 General Question of Emergency Treatment of Fractures. F. W. Bancroft, New York.—p. 843.
 Therapeutic Portent of Biology of Cancer. J. L. Yates, Milwaukee.—p. 852.

Transplantation of Living Grafts of Thyroid and Parathyroid.—Stone and his associates have made preliminary reports of their efforts to transplant living thyroid and parathyroid tissue from one animal to another. They now report further progress, describe their technic, record the beginning of a number of human experiments and prove that, at least in dogs, it is possible to have homografts of thyroid tissue live for long periods. They have employed their method of grafting in ten human cases, five thyroid and five parathyroid. Only two of these cases have been done long enough to form a basis for any conclusion as to the success of the graft. Four of the five thyroid cases were not exactly of the sort that they would recommend for testing the method. Three of these cases were infantile or juvenile patients diagnosed as cretins and in such patients there is always the possibility of pluriglandular disorders that may blur the picture and confuse inferences. The fourth was an adult with spontaneous myxedema complicated by angina pectoris, introducing a disturbing element again in the clinical estimation of the results. Only the fifth case is one of surgical removal of thyroid tissue with resultant hypothyroidism, suitable for an uncomplicated test of the procedure of grafting. In three of the five parathyroid cases, less than two months have elapsed since grafting. In the other two cases, now fifteen months and ten months respectively have elapsed since the first grafts, and the authors believe these to be successful. Their clinical recovery from all symptoms and the return of their blood chemistry to normal are evidence of such a result. The long period of stationary or progressive tetany, in spite of other forms of treatment before the grafting and the change in the picture afterward, convinces them that the grafts played a part in the recovery. It may be that they did not survive themselves but set in motion processes that led to the development of the patient's own surviving parathyroid tissue, if any was present.

Relation of Hypophysis, Hypothalamus and Autonomic Nervous System to Carbohydrate Metabolism.—Davis says that hyperglycemia and glycosuria are not produced by pancreatectomy in cats that have a lesion of the hypophysis. Bilateral hypothalamic lesions, symmetrically placed, may be followed by pancreatectomy without the development of hyperglycemia and glycosuria. Such lesions must be situated in the tuber cinereum slightly rostradorsolateral to the mamillary bodies at the level of the ventromedial hypothalamic nucleus. Stimulation of the superior cervical sympathetic ganglion and the stellate ganglion in cats produces a marked hyperglycemia and glycosuria. These results are not obtained following section of the splanchnic nerves or bilateral symmetrical lesions of the hypothalamus. There are many clinical examples of the relationship between the various lobes of the hypophysis and a neural mechanism in the hypothalamus. Besides the question of carbohydrate metabolism there is the occurrence of diabetes insipidus, adiposity, thermal regulation, pathologic sleep and states of hypoglycemia. To the influence on carbohydrate metabolism of this rather well defined neurohypophyseal mechanism is added the relationship of the autonomic nervous system and the thoracic and abdominal viscera. The author has no evidence as yet that would lead to any information regarding the source of the carbohydrates mobilized in his experiments. The work of Griffith led him to believe that hyperglycemia may develop from stimulation experiments without involving the pancreas, thyroid, parathyroid or hypophysis, provided the suprarenals are intact. As a corollary, Houssay, Biasotti and Rietti have reported that the diabetogenic action of anterior lobe extract may be observed in the absence of the pancreas, hypophysis, thyroid, ovaries, testicles, splanchnic nerves, lumbar sympathetic chains, suprarenals or a lesion of the tuber cinereum. They concluded, however, that the liver alone was necessary. Certain it is that there is evidence enough to throw some doubt on the idea that the islets of the pancreas have an independent secretory control over carbohydrate metabolism. It is well established that typical lesions exclusively characteristic of diabetes have not been found in the pancreas. In fact, Allen has observed changes in the pancreas described as characteristic of diabetes in almost 50 per cent of cases in which there was no diabetes. It would indeed be strange if nature had concentrated the control of such a vital function in one organ. It is more logical to believe that sugar disposal is more carefully safeguarded by perhaps multiple mechanisms.

Simultaneous Vein Ligation.—From their experimental studies Brooks and Johnson are convinced that ligation of veins does under certain conditions influence favorably the incidence of gangrene after arterial obstruction. In clinical experience it has been found that the most convincing evidence for assigning any value to therapeutic ligation of a vein has been found in the instances in which the conditions corresponded best with those present in the experimental laboratory. Furthermore, these instances occur infrequently. From both experimental study and clinical experience the authors believe that ligation of the vein is a measure from which beneficial results can be expected only if there is a more or less abrupt and localized arterial occlusion which reduces the blood flow in an extremity to a dangerous level for a period of time only slightly in excess of that in which the anemia would be tolerated, and if there is reason to believe that, if the gangrene can be averted for this period, subsequent development of collateral circulation will take the extremity out of the danger zone. In their clinical experience they performed deliberate ligation of a healthy vein seventeen times. In two instances in which there was localized arterial obstruction with active progress of gangrene, it seemed that the immediate and marked improvement could hardly be attributed to anything other than the venous occlusion. In fourteen instances of arterial obstruction due to arteriosclerosis, the results obtained were such as to suggest a possible beneficial effect in some instances, but they believe that one can expect a favorable result in only a relatively small proportion of carefully selected patients. They know of no evidence which would indicate that any beneficial results could be expected from therapeutic vein ligation in thrombo-angiitis obliterans.

Experimental Elephantiasis in Animals.—Homans and his associates state that experimental elephantiasis in the canine is identical for all practical purposes with the commonest

varieties in human beings: filarial, surgical, sporadic and familial. It is called forth in a typical form by lymph stasis alone and, without other influences, progresses to an advanced state of fibrosis and deformity. In the experimental and human diseases, the same high protein concentration occurs in the tissue fluid. As this concentration rises toward that of blood serum, fibrosis also increases and aggravates lymph stasis, so that a vicious circle of protein concentration and fibrosis is set up. Once elephantiasis is established there may set in the same recurrent attacks of fever and local inflammation, usually spoken of as lymphangitis. Hemolytic streptococci can be cultivated from the tissue fluids in the early hours of each attack only in the dog. The same bacteria call forth a typical attack in another animal when injected, in appropriate quantity, into a lymph-obstructed leg. It must be supposed that bacteria of a similar nature may be recovered from the tissues in human elephantiasis. The lymphatics draining the affected part, being disabled or destroyed, the tissue fluids circulate under the influence of gravity. In the dog, once the disease is well advanced, they gravitate through wide spaces lined with endothelium, which may lie close to or actually in the skin and on reaching normal tissues are carried off promptly. In the human being there is evidence that the same thing occurs. It should be the prime object of treatment, after study, with the aid of dyes, of the routes most available for the tissue fluids, to preserve at operation the greatest possible amount of tissue carrying such routes and to remove the greatest possible amount of lymph-choked fibrosed subcutaneous tissue and aponeurosis incapable of carrying the fluid. It is unlikely that the muscles play more than an indirect part in favoring the circulation of tissue fluid. Nevertheless, if the fluid could be introduced among them, this would be an advantage. There is evidence that lymphatic obstruction within the abdomen may often be a cause for elephantiasis nostra. Elephantiasis consequent on repeated attacks of infection from such sources as epidermophytosis or ulcers is probably distinguishable clinically from elephantiasis due primarily to lymph stasis. In the former, the enlargement cannot develop without the infectious attacks. In the latter, the infectious attacks are often grafted on lymph stasis and aggravate the disease.

Archives of Otolaryngology, Chicago

20:447-614 (Oct.) 1934

- Bacteriology of Acute Infections of Middle Ear and Mastoid. J. R. Page, New York.—p. 447.
Bacteremia and Acute Infections of Upper Respiratory Tract. H. C. Bailenger, Chicago.—p. 452.
Vicarious Vocal Mechanisms: Anatomy, Physiology and Development of Speech in Laryngectomized Persons. L. A. Kallen, New York.—p. 460.
*Method of Specific Treatment in Certain Streptococcal Infections. H. L. Baum, Denver.—p. 504.
Treatment of Traumatic Injuries to Nose, with Especial Reference to Automobile Accidents. W. W. Carter, New York.—p. 513.
Principles Underlying Ciliary Activity in Respiratory Tract: II. Comparison of Nasal Clearance in Man, Monkey and Other Mammals. A. M. Lucas and L. C. Douglas, St. Louis.—p. 518.
Chronic Antrum Infection: Treatment by Intranasal Antrum Operation and Packing: Clinical and Experimental Results. H. M. Goodyear, Cincinnati.—p. 542.
Organic Foreign Bodies in Bronchi: Reaction of Lung Tissue in Rabbits. H. J. Hara, Los Angeles.—p. 549.

Specific Treatment in Streptococcal Infections.—The preliminary studies of Baum suggest that blood serums from patients convalescing from various streptococcal infections frequently contain immune substances antagonistic to similar but not necessarily identical organisms. Specificity seems to be indicated by positive agglutination tests. Moderate doses of such serums, properly checked for specificity, or blood transfusions from their donors, have proved highly effective in the treatment of many varieties of streptococcal infection. The method is essentially clinical, and the author has made no effort to identify the various strains of streptococci by complicated laboratory methods. Startling improvement is invariably noted in the second twenty-four hours if the serum is to be of any value to the recipient. In acute cases some improvement may even begin to show itself before that time, but seldom in less than twelve hours. There is a fall in temperature, with subsidence of swelling and soreness in the soft tissues; and diminution in discharge, if any is present. If positive and

definite improvement is not noted, it is useless to continue the administration of the serum. The author has thus far used the method with success in streptococcic tonsillitis, tonsilloadenitis, pharyngitis, laryngitis, cellulitis, otitis media, mastoiditis, sinusitis and cardio-arthritis disease.

Archives of Pathology, Chicago

18: 459-604 (Oct.) 1934

Pathology of Central Nervous System in Canine Black Tongue. Margaret Crane-Lillie and C. P. Rhoads, New York.—p. 459.

Studies in Atherosclerosis: Chemical, Experimental and Morphologic: I and II. Rôles of Cholesterol Metabolism, Blood Pressure and Structure of Aorta; Fat Angle of Aorta (F. A. A.) and Infiltration-Expression Theory of Lipoid Deposit. S. R. Rosenthal, Chicago.—p. 473.

*Specific Chemotherapy for Cancer. H. E. Eggers, Omaha.—p. 507.

*Rôle of Histamine in Inflammation. J. R. E. Morgan, Toronto.—p. 516.

Specific Chemotherapy for Cancer.—Eggers studied the effects of various agents on transplantable rat tumors. The two tumors used for the experiments were of rather high virulence. Of the two, strain R39 was decidedly of greater malignancy than strain FRC; it withstood implantation with almost complete success and was of rapid growth, killing its host generally within about seven weeks. Strain FRC also withstood implantation well, but not with the same uniform success. It was of slower growth and took considerably longer to cause death. Several lead salts were found to cause complete disappearance of all the FRC tumors treated; with strain R39 the best achievement was the disappearance of 50 per cent of the small number of tumors studied. Results obtained with lead salts gave no clue as to the effectiveness of the arsonium compounds. Of the several arsonium salts studied, success was obtained only with tetramethylarsonium gluconate. It was possible to cause the disappearance of relatively nonmalignant tumors in the rats studied with some, but not absolute, regularity. With more malignant tumors this effect was occasionally manifest if the tumors were treated while still small. Greater uniformity of success was obtained with these tumors, if small, when the arsonium salt was administered along with insulin. This procedure was uniformly more successful with the R39 tumor than with the FRC strain, confirming the theory on which the coadministration of insulin was based. If the affinity of a cancer cell for carbohydrate is a function of its malignancy, or vice versa, with less malignant tumors less ability of the cancerous tissue to avail itself of systemic reserve carbohydrate and so less chance of a shielding effect by this might be expected. With strain R39, particularly, the only tumors treated with any uniformity of success were those which had been implanted a short time (three days) previously. The toxicity of tetramethylarsonium gluconate for rats is low. While occasionally animals died in a comparatively short time after receiving a 5 mg. dose, these deaths occurred so seldom that they must be regarded as due to intercurrent disease. The intoxication observed after this dose was acute and apparently associated entirely with disintegration of the tumor. When the gluconate was given in doses of 5 mg. on successive days, several animals received from 40 to 45 mg. without evidence of intoxication. Only one animal was observed with changes of tissue indicative of death from intoxication which had received 20 mg. of the arsonium gluconate along with 0.08 unit of insulin. In general, the course of the treated tumors was preceded by a period of definite softening, with gradual absorption of the softened mass. At times there was direct shrinkage with increased induration; recurrences were more likely to occur after this than after softening. Indirect evidence to the effect that treatment was responsible for the disappearance is furnished by the peculiar course of the latter—the rather prompt softening, followed by gradual absorption. Also the relatively high rates of disappearance in the suitably treated rats were altogether disproportionate to those in animals treated otherwise. As to tumors in man, it would appear necessary to select cases of early and superficially accessible recurrent malignant growth; late and otherwise hopeless cases would be useless, in view of the quantitative relation shown so clearly with rat tumors. For the same reason, should the agent show any effectiveness with tumors in man, its use would appear to be as an adjunct to surgical removal of the great mass of the tumor tissue.

Histamine in Inflammation.—Morgan shows that histamine, when acting on the minute vessels of the skin of dog and man, causes capillary dilatation and engorgement with a slowing of the blood stream and an exudation of fluid. Injury and destruction of tissue, irrespective of the etiologic factor, will allow the liberation of small quantities of the amine, resulting in this reaction. The part played by histamine in the process of inflammation is confined to its effect on the small vessels. Histamine does not call forth the cellular elements in the inflammatory exudate.

Arkansas Medical Society Journal, Fort Smith

31: 71-86 (Oct.) 1934

Allergy: An Everyday Problem. W. T. Wootton, Hot Springs National Park.—p. 71.

Childhood Tuberculosis. A. A. Blair, Fort Smith.—p. 74.

Journal of Lab. and Clinical Medicine, St. Louis

20: 1-112 (Oct.) 1934

Variations in Reaction of Different Parts of Central Nervous System as Influenced by Depressant and Stimulating Drugs. D. E. Jackson, Cincinnati.—p. 1.

Mechanism of Blood Changes During Treatment of Secondary and Pernicious Anemia. C. A. Elvehjem and M. O. Schultze, Madison, Wis.—p. 13.

Effect of Ultraviolet Light on Some Sympathomimetic Substances. P. L. Ewing, Chicago.—p. 16.

*Rôle of Amidopyrine in Etiology of Granulocytopenia, with Especial Reference to Its Chemical Structure. L. F. Herz, New York.—p. 33.

Bactericidal and Fungicidal Action of Homologous Halogen Phenol Derivatives and Its "Quasi-Specific" Character: II. Derivatives of Orthochlorophenol: Notes on Chlorine-Free Alkyl Phenol Derivatives. E. Klarmann, V. A. Shternov and L. W. Gates, Bloomfield, N. J.—p. 40.

Study of Coccidioides Immitis. Cornelia McDonald, Montgomery, Ala.—p. 47.

Observations on Gonococcal Action of Mallophene in Urine. R. D. Herrold, Chicago.—p. 53.

*Effect of Alpha Dinitrophenol (1-2-4) on Blood Cholesterol in Man. L. F. Grant and P. G. Schube, Boston.—p. 56.

Urobilinuria: False Ehrlich Reaction Caused by Pyridium Medication. J. W. Farthing and J. S. P. Beck, Philadelphia.—p. 61.

Comparative Study of Kelly Test and Friedman Modification of Zondek-Aschheim Test for Pregnancy. H. R. Hulpieu, J. H. Weatherby and C. G. Culbertson, Indianapolis.—p. 63.

Micromethod for Estimation of Hemoglobin: Modification of Benzidine Reaction. T. V. Letonoff, Philadelphia.—p. 66.

Bactericidal Power of Blood. R. Ottenberg, New York.—p. 70.

*Method for Quantitating the Reducing Substance of the Anterior Hypophysis. W. T. Salter, Arda Green and T. J. Putnam, Boston.—p. 74.

Improved Methods in Culture of Sterile Maggots for Surgical Use. W. Robinson, Washington, D. C.—p. 77.

Micromodification of Folin-Wu Blood Sugar Method Using Permanent Standards. H. Brown, Philadelphia.—p. 86.

Photo-Electric Drop Recorder. C. F. Graham and F. S. Randles, Albany, N. Y.—p. 90.

More Convenient Microprojection Apparatus. W. S. Hastings, Philadelphia.—p. 93.

Amidopyrine and Granulocytopenia.—Herz points out that the increase in the prevalence of granulocytopenia closely parallels the increase in the use of amidopyrine. The dangerous character of amidopyrine being established beyond any reasonable doubt, it should be strictly banned by the medical profession. When anodynes or antipyretics are indicated, acetanilid is a safe drug, which should be given in therapeutic doses, best combined with caffeine and potassium citrate. An alternative but less efficient drug would be acetphenetidin. By using the safer antipyretics, there is no doubt that greater efficiency will be obtained and granulocytopenia and other toxic phenomena now known to be caused by the dangerous pyrazolon group of drugs (amidopyrine and antipyrine) will be eliminated.

Effect of Dinitrophenol on Blood Cholesterol.—Grant and Schube administered alpha dinitrophenol to thirteen adult men of normal weight. The patients were given 5 grains (0.3 Gm.) of alpha dinitrophenol by mouth, daily, for a period of twenty days. The weight and blood cholesterol estimations were obtained before, during and after the administration of the chemical compound. The method of estimation of blood cholesterol was that devised by Schube. In three subjects after the administration of the alpha dinitrophenol there were definite gains of 5, 12 and 7 pounds (2.3, 5.5 and 3.2 Kg.), respectively. The largest definite loss of weight was 4 pounds (2 Kg.) in each of two subjects. In the remainder of the

cases, although the weight fluctuated in some instances, it remained essentially at its original level. The blood cholesterol in each of these cases, irrespective of alterations in the weight, showed a deviation from normal. This deviation was usually in a positive direction. The range of this deviation was not the same for all cases. In some the blood cholesterol, after a preliminary rise, dropped below "normal" before stabilizing itself within its original range. The largest positive change was 155 mg. and the smallest 13 mg. Of the group, four showed an increase in blood cholesterol of 100 mg. or more, seven had values of from 33 to 100 mg., and two had values of 33 mg. or less. The largest rise occurred on the first day in five cases, on the third day in four cases and on the thirteenth day in three cases. The largest negative change was -82 mg. and the smallest was -3 mg. The largest negative values occurred on the sixth day in four cases, on the thirteenth day in one case and on the twentieth day in five cases. The largest average positive change was 66 mg. and the largest average negative change was -38 mg.

The Reducing Substance of the Anterior Hypophysis.—Salter and his co-workers describe a method for quantitating the reducing power of the tissue of the anterior lobe of the hypophysis. Active reduction may be produced by extracts devoid of hemoglobin. The reducing substance tends to remain with the globulin fraction, which usually also contains the growth-promoting hormone, but the two do not appear to run parallel. Extracts containing the growth, thyrotropic, suprarenalotropic and maturity hormones, respectively, supplied by Collip, contained no more than traces of reducing substance. The method used for studying the activity of various preparations was based on Ahlgren's technic. The procedure consisted in determining the time required to bleach a standard amount of methylene blue contained in an evacuated Thunberg tube under arbitrarily selected conditions.

Journal of Pediatrics, St. Louis

5: 433-572 (Oct.) 1934

- Acute Infectious Croup: General Study of Acute Obstructive Infections of Larynx, Trachea and Bronchi with Analysis of Seven Hundred and Twenty Seven Cases. A. H. Neffson and S. M. Wishik, New York—p. 433
- *Protective Inoculation Against Tuberculosis in Infants by Use of Heat-Killed Human Tubercle Bacilli. T. C. Goodwin and T. F. Schwenker, Baltimore—p. 475
- Congenital Ichthyosis. G. Richarda Williamson, New Orleans—p. 484
- Congenital Cyst of the Larynx. V. E. Fischer, New York—p. 491
- Insulin: Its Use in Nondiabetic Children. R. A. Higgins and Elvira O. Ostlund, New York—p. 495
- *Active Immunization Against Scarlet Fever by Nasal Route. E. Friedman, A. L. Esserman and M. H. Black, Denver—p. 504
- *Lyzed Gonococci in Treatment of Gonococcal Cervicovaginitis Preliminary Report. M. L. Blatt, R. D. Herrold, S. J. Hoffman and M. Schneider, Chicago—p. 511
- Inguinal Hernias in Premature Infants. A. C. Rambar and S. L. Goldberg, Chicago—p. 513
- Rat Bite Fever: Report of Three Cases with Review of Literature. S. D. Edelman and G. B. Haber, Columbus, Ohio—p. 520
- Scarlet Fever Prevention by Immunization. E. S. Platou, Minneapolis—p. 531

Inoculation with Heat-Killed Tubercle Bacilli.—Goodwin and Schwenker inoculated intramuscularly seventy-three infants with heat-killed virulent human tubercle bacilli. In the inoculated group of fifty children observed for more than one year there was one death from tuberculosis. The tuberculin test becomes positive in from three to thirteen weeks after the injection. Demonstrable allergy developed in seventy-two of the seventy-three children inoculated. When the tuberculin reaction is beginning to become positive, the maximal response to the Mantoux test is observed at the end of twenty-four hours. Some days later the typical tuberculin reaction appears. In nine cases sterile cold abscesses developed at the site of inoculation. Lymphadenitis occurred rarely and the abscesses all healed, leaving small depressed scars. The authors believe that the inoculated children received some degree of protection from tuberculosis and that the method is a hopeful one and that it is much less open to criticism than the injection of attenuated living organisms. The use of the vaccine should not be widespread until many more children are inoculated under the most careful supervision.

Scarlet Fever Immunization by Nasal Route.—Friedman and his associates instilled toxin into the nasal passages

in the immunization against scarlet fever in two groups of children aged from 3 to 17 years. The attempt was completely successful in 60 per cent and 71 per cent of the children, respectively, and partial immunity was conferred in a considerable proportion of the rest of the group. The inoculation was not attended by any serious local or constitutional effects. The authors maintain that active immunization against scarlet fever should be practiced as widely as is diphtheria immunization. Until the prevailing method of immunization has been so modified as to eliminate unpleasant and severe reactions and the necessity for a large number of hypodermic injections, they recommend the intranasal instillation of toxin. This method is clean, painless and free from serious local and constitutional untoward effects and has proved successful in a considerable number of cases. The percentage of successful inoculations can be definitely enhanced by the administration of a sixth and even a seventh weekly instillation in those still positive at the conclusion of the fifth inoculation. For children less than 3 years of age they recommend, provisionally, a total of 115,000, and in those more than 3,202,000 skin test doses.

Lyzed Gonococci in Treatment of Gonococcal Cervicovaginitis.—Blatt and his associates used an antigen in the treatment of gonococcal cervicovaginitis that was prepared by the induction of complete lysis of gonococci in young broth cultures through specific bacteriophage action. This product seemed distinctly less toxic than the older broth cultures that were permitted spontaneously to autolyze partially. The clinical results with the product seemed definitely more favorable than those obtained by any previous biochemical treatment that they have used. The bacteriophage lyzed gonococcus antigen did not produce disagreeable local or general reactions. Nine of eleven patients treated have remained clinically and bacteriologically cured for an average period of five months, while a control group not so treated had recurrences in every instance.

Laryngoscope, St. Louis

44: 765-846 (Oct.) 1934

- Tonsil Surgery: I. Hemorrhage from Pharyngeal and Peritonsillar Abscess. S. Salinger, Chicago—p. 765
- Id. II. Progress in Tonsil Surgery, Illustrated by Slides and Motion Pictures, with Background of Twenty-Five Thousand Cases. R. H. Fowler, New York—p. 769
- Id. III. Results of Tonsillectomy in Private Practice. M. H. Bass, New York—p. 780
- Id. IV. Personal Observations on After Effects of Tonsillectomy. H. H. Mason, New York—p. 784
- Id. V. Practical Consideration of Nasal Accessory Sinuses in Children. W. Mithoefer, Cincinnati—p. 789
- Stripping of Vocal Cords. J. M. Lore, New York—p. 803
- Arrested Asthma and Hay Fever. Report of Case with Constitutional Reaction from Intradermal Test with Mustard. H. H. Gelfand, New York—p. 817
- Further Observations on Case of Plasmacytoma of Nasal Cavity. Case of Nasal Plasmacytoma and Carcinoma of Stomach. H. Rosenwasser, New York—p. 826
- Nupercaine as Local Anesthetic in Rhinolaryngology. E. F. Egan, Brooklyn—p. 829
- Tracheostomization for Pulmonary Catheterization. Additional Approach for Direct Intrapulmonary Therapy. M. J. Mandelbaum, New York—p. 840

Medical Bull. of Veteran's Adm., Washington, D. C.

10: 265-370 (April) 1934

- Tubereulin: Its Preparation and Use in Treatment and Diagnosis of Tuberculosis. L. U. Gardner and E. R. Baldwin—p. 265
- *Lumbar Ganglionectomy and Ramisectomy. Method of Retroperitoneal Approach. G. E. Pfeiffer—p. 279
- Chronic Arthritis. Clinical Analysis of Three Hundred and Fifty Cases. M. Wetherby—p. 282
- Transmission of Malaria in Localities Assumed to Be Nonmalarial. L. C. Smith—p. 298
- Treatment of Tuberculous Empyema Complicating Collapse of Lung. H. P. Bacon—p. 302
- Differentiation of Chronic Phthisis and Pulmonary Syphilis. E. S. Jones—p. 305
- Results of Extensive Treatment of General Paralysis of the Insane. C. L. Carlisle and R. T. O'Neil—p. 309
- Preparation of Gold Solution. A. O. Hartinger—p. 337

Lumbar Ganglionectomy and Ramisectomy.—Pfeiffer describes a retroperitoneal operative approach to the lumbar sympathetics, based on its use in thirty-three cases. The procedure offers a fairly direct route to the sympathetic trunk on either side of the lumbar spine, is comparatively simple and

enables a firm reconstruction during closure. Severance of the terminal nerve fibers along the outer border of the rectus on either side has not been followed by paralysis of the rectus muscles in the regions supplied. The procedure has been developed and modified from various sources, including previously described retroperitoneal approaches to the ureters. The use of a subarachnoid block associated with a moderate Trendelenburg position and tilting of the pelvis has been found to aid greatly in the procedure of lumbar sympathetic ganglionectomy, ramisection and trunk resection.

New York State Journal of Medicine, New York

34: 899-944 (Nov. 1) 1934

Acneform Eruptions Remarks on Acne Vulgaris and Its Pathogenesis Marion B Sulzberger, A. Rostenberg Jr and J J Sher, New York —p 899

Further Comments on Head Injury. Postconcussion Syndrome N. Savitsky, New York —p 909

Serum Sickness Clinical and Experimental Study Preliminary Report J. R. Wilson, T. C. Wyatt, J. Bennett, O. D. Chapman and C. Knowlton, Syracuse —p 915

Physical Therapy in General Practice H. J. Harris, Westport —p 918

Clinical Significance of Plasma Proteins W. S. McCann, Rochester —p 923

Radiology, Syracuse, N. Y.

23: 391-520 (Oct.) 1934

Chronic Nontuberculous Inflammation of the Lung W. W. Watkins, Phoenix, Ariz —p 391

Dilatation of Left Atrium to Right J. C. Ruddock, Los Angeles —p 397

Air Density Corrections for Temperature and Pressure Applied to X-Ray Ionization Chambers L. S. Taylor and G. Singer, Washington, D. C. —p 404

The Redundant Duodenum Roentgenologic Study M. Feldman, Baltimore —p 410

The Relations of the Radiologist and the Law I. S. Trostler, Chicago —p 414

Multiple Myeloma D. E. Ehrlich, New York —p 418

Clinical Value of Puncture Biopsies M. Friedman, New York —p 429

*Processing X-Ray Films at High Temperatures J. W. Farthing, Philadelphia —p 438

Effect of Roentgen Irradiation of Entire Animal on Phosphatase Activity and Electrolyte Content of Its Water Extract W. E. Wilkins and E. M. Regen, Nashville, Tenn. —p 443

Organization of Cancer Campaign in the United States of America A. Soiland, Los Angeles —p 446

*Roentgen Sign for Saccular Aneurysm of Thoracic Aorta Preliminary Report E. Burvill Holmes, Conshohocken, Pa. —p 449

Roentgenologic Method of Examination of Lymphatic System in Man and Animals A. Zolotukhin, Leningrad, U. S. S. R. —p 455

Study of Effect of Irradiation on Lumbar Sympathetic Ganglions in Rats J. Q. Griffith Jr. and E. P. Pendergrass, Philadelphia —p 463

Radiation Therapy in Carcinoma of Bronchus S. M. Baum, New York —p 466

Treatment of Cancer of Mouth by Surface and Interstitial Irradiation G. E. Pfahler, Philadelphia —p 472

Present Methods of Treating Neck Metastases by Radiation at the State Institute for Study of Malignant Diseases at Buffalo, New York B. T. Simpson, Buffalo —p 476

Diverticulum of Duodenum L. G. Glickman, Milwaukee —p 479

Possible Development in Roentgen Therapy Transformation of Methyl Transmitted into Absorbable Roentgen Energy H. A. Jarre and R. F. James, Detroit. —p 483.

*Rate of Recuperation of Human Skin Following Irradiation Preliminary Report J. J. Duffy and A. N. Arneson, New York, and E. L. Voke, Akron, Ohio —p 486

Roentgen Aspect of Gastric Ulcer Therapy N. S. Zeitlin, Chicago —p 491.

Processing Roentgenograms at High Temperatures.—

Farthing stresses the point that the temperature in processing does not have to be low, but that it must be constant. All baths, including wash water, should be within a few degrees of the same temperature. Sodium sulphate preserves the emulsion only so long as it is in contact with it, the action being purely a temporary physicochemical one. Formaldehyde, the perfect hardener, cannot be used before or during development on account of the tendency to produce chemical fog. It cannot be added to an acid fixing bath, as it causes a heavy white precipitate. When a neutral fixing bath is employed, an acid short stop must be placed between the fixing bath and the developer, or yellow stains will appear on the film. If they do occur, the film should be left in the short stop longer, the short stop should be renewed or more acetic acid should be added. Formaldehyde evaporates; so, if proper hardening does not take place, more formaldehyde should be added to the fixing bath or the entire bath should be renewed. Generalized brownish yellow stains on the films may be caused by iron salts in

the water with which the solutions are prepared or by iron dissolved out from the cracks in the enamel of trays, regardless of the developing solutions employed. This iron staining tends to occur a little more readily at higher temperatures. Formaldehyde possesses a pungent odor and is rather irritating to the mucous membranes but it is not considered harmful. If it is used in tanks, the odor is hardly noticeable.

Roentgen Sign for Saccular Aneurysm of Aorta.—Excluding the dissecting, true, false and circoid, Burvill-Holmes classes all aneurysms as saccular. Fusiform dynamic dilations often associated with marked tortuosity are not fusiform aneurysms. In virtually all cases a dorsoventral roentgenogram of the chest rarely misses the diagnosis, with the exception of those aneurysms which involve the proximal ascending or distal descending branches or in the rare cases in which the aneurysms are so small and so situated that they could be and are overlooked by any method of examination. For further refinements in diagnosis, in order to determine which portion of the branch or branches is involved, roentgenograms are made in the right and left anterior oblique and sagittal projections. The latter are imperative if any erosion of the vertebrae is to be detected, such being usually the case when the sac is large and projects dorsad. Deviation of the esophagus, while not always present, is usual, but similar displacement can and often does occur. To determine this displacement it is the author's custom to administer a thick barium-buttermilk paste. Aneurysms almost always cast a markedly dense, homogeneous shadow. In contradistinction, fusiform dynamic dilations cast a shadow much less dense because the laminated clot is absent. In all aneurysms except those mentioned previously there is always a definite angulation between the outer limit of the sac wall and the left border of the heart. This angulation is not present in cases of tumor and the border of the heart can be traced from its apex to the aortic arch. The author does not wish to convey the idea that this angle will be present in every case or that, if present, it is infallible for a diagnosis of aneurysm. There are exceptions to all rules. It is conceivable that a large upper mediastinal tumor could extend outward and downward on the left side, obscuring the left border of the cardiac shadow, and that its upper border might form an angle with the latter. An error, if it is made, will lie largely in mistaking a new growth for an aneurysm rather than the reverse.

Recuperation of Human Skin After Irradiation.—Duffy and his associates studied tissue recuperation by determining the quantity of radiation necessary to produce equal skin reactions in single and divided doses of 200 kilovolts of x-rays filtered by 0.5 mm. of copper and 2 mm. of aluminum, the threshold erythema being used as a standard reaction for comparison. The threshold erythema dose for single exposures was determined by sixty-five tests. The amount of radiation delivered to these patients varied from 400 to 550 roentgens. Of the fourteen patients who received 500 roentgens, 72 per cent showed a positive skin reaction. The incidence of positive reactions was the same for the seven patients who received 525 roentgens but was increased to 94 per cent in the seventeen patients who received 550 roentgens. Therefore, since a threshold erythema dose represents an amount of radiation that will produce a positive skin reaction in 80 per cent of persons receiving the exposure, this dose must be between 500 and 550 roentgens when administered in the manner described. Five hundred and twenty-five roentgens may be considered within the limits of experimental error of the threshold erythema dose for single exposures of radiation. In determining the threshold erythema dose for divided doses, two exposures of equal amounts of radiation were given at intervals of twenty-four and forty-eight hours. Of the thirty-five tests to determine the threshold erythema dose for two exposures of equal amounts of radiation given forty-eight hours apart, fourteen patients received two exposures of 400 roentgens each, and 72 per cent of these showed positive skin reactions. Among the eight patients to whom 425 roentgens were delivered twice, 88 per cent were positive, and the nine patients who received two exposures of 450 roentgens developed a visible reaction in the irradiated skin. Little difference was found in the amount of radiation required to produce a threshold erythema by two equal doses given twenty-four hours apart and those given at an interval of forty-eight hours.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

51: 155-204 (Autumn) 1934

- The Place of Surgery in Hyperthyroidism. T. P. Dunhill.—p. 155.
Medical Practice in Palestine. H. J. Orr-Ewing.—p. 163.
Clinical Importance of Intervertebral Disks, with Especial Reference to Nuclear Prolapses. G. B. Bush.—p. 173.

British Journal of Experimental Pathology, London

15: 287-320 (Oct.) 1934

- Cancer of Skin and Increase in Incidence of Primary Tumors of Lung in Mice Exposed to Dust Obtained from Tarred Roads. J. A. Campbell.—p. 287.
Routine Preparation of Scarlet Fever Toxin of High Value. R. A. O. O'Meara.—p. 295.
*Type Specific and Group Specific Serums Against Streptococci. H. Loewenthal.—p. 298.
Determination of Blood Urea. G. L. Peskett.—p. 306.
Experimental Production of Mumps in Monkeys. G. M. Findlay and L. P. Clarke.—p. 309.
*Elementary Bodies of Zoster and Their Serologic Relationship to Those of Varicella. C. R. Amies.—p. 314.

Specific Serums Against Streptococci.—Loewenthal shows that strains of hemolytic streptococci may exhibit different forms of colonies, which differ widely in their serologic reactions. The N form is highly specific, as shown by agglutination with absorbed antiserum and by protection tests with mice. The protective value of antiserum therefore is limited to the homologous form. There are two less specific O forms; one is capsulated. Its agglutination, precipitation and capsular swelling reactions correspond to the carbohydrate nature of its capsular substance. Preparation of highly efficient antiserum is possible. All the capsulated forms seem to belong to one serologic type. The other one, the noncapsulated O form, is more frequent. Agglutination as well as protection tests indicate that there are several serologic types among this form. Cross protection can be obtained between organisms of the same type. Both O and N forms can be virulent and both forms may occur in the primary culture from disease. The prospect of successful serum therapy against the O form seems promising. The author explains the difference in mode of action of serums against capsulated and noncapsulated forms in that the antibodies of serums against capsulated strains attack the bacteria themselves and render them harmless by neutralization of their capsules, the antibodies of serums against noncapsulated streptococci cannot fulfil any such function and their mode of action can only be guessed. The serum has to be given to animals some twenty-four hours before the infecting dose. This period may be required for its thorough distribution throughout the body and its effect may be due to some protective action on the body cells and against the bacterial toxins. The protection test with mice is not a true index of the therapeutic value of these serums. Serums that have only a prophylactic effect in mice, which succumb rapidly, may show a definite curative effect in human septicemia.

Elementary Bodies of Zoster and Their Serologic Relation to Varicella.—The results of the investigations of Amies substantiate clearly Paschen's contention that elementary bodies occur in zoster vesicle fluid. It has been shown further that pure suspensions of these bodies are agglutinated specifically by zoster convalescent serums. The lack of a susceptible laboratory animal has made it impossible to employ other methods, such as high speed centrifugation of virus filtrates or the tissue culture technic, by means of which the etiologic importance of the vaccinia elementary body has been confirmed. The evidence here presented does at least suggest that the zoster elementary body is the etiologic agent of zoster. With regard to the relation of zoster and varicella, it is evident that cross agglutination tests have not given such uniform results as those obtained with the complement fixation technic. In spite, however, of the low proportion of successful cross agglutination tests, the author believes that the high degree of specificity of the reaction permits one to attach significance to the positive results obtained. The experiments carried out in his laboratory with suspensions of variola and vaccinia bodies and the corresponding antisera showed an almost complete

lack of cross agglutination (Amies, 1932). Further work on this question has shown, however, that the differences noted are quantitative rather than qualitative, since monkeys hyperimmunized with human variola virus do eventually develop antivaccinal agglutinins and, conversely, hyperimmune antivaccinal serums obtained from rabbits will agglutinate variola elementary body suspensions. The failure to obtain cross agglutination in some of the present series of experiments may perhaps be explained in the same manner. Craigie has demonstrated that crude suspensions of vaccinia virus contain a non-particulate Seitz-filtrable substance in addition to the vaccinia elementary bodies, and that it is this soluble antigen that is responsible for the vaccinia flocculation (precipitin) reaction. This substance is apparently a product of the elementary bodies themselves and is probably essentially the same as the heat stable precipitating substance isolated from autolysates of neurovaccinia rabbit testicle by Wilson Smith. It seems not unlikely that a similar nonparticulate substance may be present in zoster and varicella vesicle fluid and that complement fixation reactions with such fluids depend more on the soluble substance than on the presence of the intact bodies themselves.

British Medical Journal, London

2: 665-706 (Oct. 13) 1934

- *Clinical Importance of Achlorhydria. A. F. Hurst.—p. 665.
Acute and Chronic Sprains. W. R. Bristow.—p. 669.
*Pathology and Treatment of Sprains. M. Smart.—p. 673.
Aseptic In Its Relation to Keratin Tissues. S. Smith and E. B. Hendry.—p. 675.
Fatal Perforation of Cecum in a Case of Sprue. G. C. Low and N. H. Fairley.—p. 678.

Achlorhydria.—Hurst states that without gastritis there is no achlorhydria but that gastritis does not cause achlorhydria unless the patient is predisposed by having the hyposthenic gastric constitution. Gastritis in the presence of the hypersthenic gastric constitution may lead to duodenal ulcer and gastric ulcer, and a gastric ulcer may become malignant, but achlorhydria does not develop. It is the conjunction of the apparently trivial causes of gastritis with the hyposthenic gastric constitution which leads to achlorhydria, and the conjunction of these with the constitutional predisposition to cancer which leads to carcinoma of the stomach. It is gastritis which causes achlorhydria, and gastritis, not achlorhydria, which causes Addison's anemia and subacute combined degeneration of the cord and predisposes to carcinoma of the stomach. The prophylaxis of gastritis is the prophylaxis of these diseases. One may therefore look forward to the time when the prevention of gastritis, and, when prevention fails, its early recognition and adequate treatment, will lead to the disappearance of cancer of the stomach.

Pathology and Treatment of Sprains.—Smart summarizes as follows the effects of the treatment of injured muscles and joints by correct electrical muscle stimulation, which produces graduated and controlled contractions and relaxation: 1. Muscle elasticity, irritability, contractility and tonicity are restored rapidly to normal. 2. A great increase of blood to the muscles and to the neighboring tissues is produced, with all the attendant beneficial consequences. 3. Waste tissue products are rapidly cleared away and stagnation of lymph, with all its serious sequelae, is prevented. 4. A large supply of oxygen and nourishment is brought to the damaged part. 5. Rapid absorption of fluid and extravasated blood is promoted actively. 6. Beneficial chemical and physical changes following muscle activity take place. 7. The movements of muscles and tendons do not allow organization of lymph between their surfaces, and adhesions are thus prevented. 8. As the movements prevent stagnation of lymph in the areolar tissue in the joint interspaces, the danger of the areolar tissue losing its suppleness, pliability and flexibility is diminished. 9. If, in later stages, adhesions have formed, the adherent surfaces are gently but effectively torn apart, by causing increasingly powerful contractions of the muscles separately. 10. Muscles are prevented from losing their tone and from wasting; muscles already wasted increase in bulk. A recently injured and painful muscle can still be made to contract and relax and the degree of the contractions and relaxations can be so controlled that the origin and insertion of the muscle need not be approximated until desired; conse-

quently, the beneficial physiologic changes called into activity by muscle action are produced with the minimal amount of strain of its fibers, and the movements of the injured joint as a whole can be kept within minimal range. If treatment is based on these principles, no uncomplicated acute sprain should become a chronic one.

Journal of Tropical Medicine and Hygiene, London

37: 273-288 (Sept. 15) 1934

Can Yellow Fever Spread into Asia? Essay on Ecology of Mosquito-Borne Disease. S. F. Dudley.—p. 273.

Histoplasma Capsulatum Darling, Agent of "Histoplasmosis": Systematic Position and Characteristics. R. Ciferri and P. Redaelli.—p. 278.

Gilchristia Dermatitis (Gilchrist et Stokes) Cif. et Red., Causative Agent of American Gilchrist Disease (Dermatitis Verrucosa). P. Redaelli and R. Ciferri.—p. 280.

37: 289-304 (Oct. 1) 1934

*Chemistry of Malarial Serum, with Reference to Factors Concerned in Melanoprecipitation Test. E. D. W. Greig, E. B. Hendry and C. E. van Rooyen.—p. 289.

Pathology and Complications of Ascariasis. R. Girges.—p. 296.

Chemistry of Malarial Serum and Melanoprecipitation Test.—The experiments of Greig and his co-workers, designed to find the cause of the reaction and the nature of the precipitated material, show that when normal serum is incubated in various dilutions with distilled water a white gelatinous precipitate appears in the majority of cases. This is probably the same as the flocculation that occurs in Henry's reaction. The reaction has no obvious relationship to the concentrations of albumin, total globulin, cholesterol or chloride ion in the serum. Evidence has been given that the precipitate consists of one of the globulin fractions, probably euglobulin, and that the main factor in the reaction is the precipitation of this particular protein, owing to its occurrence in excessive amount in malaria. There are almost certainly other factors concerned. The theory that the increase in euglobulin is the main factor is supported by the observations of Lloyd and Paul that the euglobulin is increased in serums from cases of malaria or kala-azar. Melanin may be replaced by a variety of other colored substances, but it has the advantage of giving a sharp reaction and thus enables the reading of the titer to be made without any difficulty. Its use is therefore still advocated for the reaction. The melanin acts only as an indicator and the active principles in the so-called antigen are the concentration of sodium chloride and the pH . These are the factors that prevent the precipitate coming down even with a normal serum and therefore confine the reaction to those serums in which there is a far greater tendency toward precipitation; i. e., in malaria and in kala-azar. It has been confirmed that the reaction is positive in kala-azar, a condition in which the euglobulin is known to be elevated. However, since the euglobulin is also high in syphilis, in which Henry's reaction is negative, the phenomenon cannot be explained on the grounds of an increase in euglobulin alone. It is suggested that protein-lipoid complexes may enter into the question.

Lancet, London

2: 795-854 (Oct. 13) 1934

Medicine and Morals. Horder.—p. 795.

Rational Assessment of Renal Damage. C. L. Cope.—p. 799.

Simmonds's Syndrome: Case. R. S. Aitken and Dorothy S. Russell.—p. 802.

Id. A. B. Bratton and A. B. Field.—p. 806.

Erythremia with Migraine, Gout and Intracardiac Thrombosis. F. P. Weber.—p. 808.

*Trigonal Loop Traction in Suprapubic Prostatectomy: New Technic. N. Lumb.—p. 809.

Trigonal Loop Traction in Suprapubic Prostatectomy.

—Lumb has evolved a technic of suprapubic prostatectomy that overcomes successfully the difficulty encountered in placing Harris's posterior suture and ensures a firm hold pending union between the edges of the trigon and urethra and can be carried out in every case. A flap of trigonal tissue is drawn down into the prostatic cavity and retained in position by means of a silk traction-loop traversing the urethra. Healing takes place quickly by granulation and the objective of the Harris operation is achieved without the uncertainty occasioned by a suture that may fail to hold.

Medical Journal of Australia, Sydney

2: 373-406 (Sept. 22) 1934

Venom Yields of Common Australian Poisonous Snakes in Captivity.

Mavis Freeman and C. H. Kellaway.—p. 373.

Relations Between Size and State of Nutrition of Mothers, Properties of Their Milk and Weight of Their Infants. II. S. H. Wardlaw and E. E. P. Dart.—p. 377.

Treatment of Ruptured Tubal Gestation. A. R. H. Duggan.—p. 380.

Rheumatic Heart Lesions in Three Thousand Australian Postmortem Examinations. J. B. Cleland.—p. 382.

Conservative Treatment of Facial Paralysis. N. D. Royle.—p. 385.

Medical Press and Circular, London

189: 295-312 (Oct. 3) 1934

*Clinical Value of Mantoux Test in Childhood. W. F. Gaisford.—p. 303.

The Leprosy Situation in England. R. G. Cochrane.—p. 306.

Spinal Analgesia with Percaine. W. H. Jones.—p. 307.

Clinical Value of Mantoux Test in Childhood.—Gaisford describes the method of performing the Mantoux test and advocates its much more extensive use among children on the grounds that it is simple to perform and yields results which, intelligently interpreted, are in many cases truer than either clinical examination or roentgenograms. He states that at some time or other during the preschool or school period of almost any child's life some signs or symptoms suggestive of tuberculous disease or infection may be encountered. Then the simple and efficacious Mantoux test is of the greatest value, particularly in its ability to exclude definitely the presence of tuberculosis in any given case. Despite the improvement in nutrition and hygiene, tuberculosis is still a common disease in childhood and is often extremely difficult to diagnose clinically. The Mantoux test is particularly applicable in chronic cervical adenitis, chronic coughs, chronic diarrhea, loss of weight and limping. The foregoing are but a few of the conditions in which the test is found to be valuable. In the majority of cases it is the negative reaction that is stressed, but in infants and young children the positive may be just as valuable.

Tubercle, London

10: 1-48 (Oct.) 1934

*Induced Deposition of Calcium in Lung Tissue: Experimental Study. R. A. Hunter and D. Bell.—p. 1.

Clinical Interest in Tuberculosis Dispensary: Cases. H. M. Williams.—p. 17.

*Relation Between Sanatorium Facilities and Total Death Rate from Tuberculosis in Canada. Madge Thurlow Macklin.—p. 22.

Induced Deposition of Calcium in Lung Tissue.—Hunter and Bell describe a gelatin acriflavine medium the injection of which is free from toxic or deleterious effects in animals. It appears that a hyaline change is an essential and preliminary stage in the process of calcification in lung tissue. A hyaline change, calcification and fibrosis can be induced in a short time by the local action of the medium in the pleural and pulmonary tissues. These processes are effected by intrapleural or intrapulmonary injections. The intrapulmonary injection of this medium is a comparatively safe procedure in the guinea-pig and rabbit, even in high dosage. The action of the medium is limited to the area injected and to its immediate neighborhood. The fact that in their experiments they have not succeeded in prolonging life the authors explain is not material in assessing results, because of the acuteness of the tuberculous process in these animals. As a result of their work they cannot but believe that the application of this intrapulmonary treatment to man would be of marked benefit in combating chronic pulmonary tuberculosis.

Death Rate from Tuberculosis in Canada.—The study of Macklin shows that there is a definite relation between the total death rate from tuberculosis in any community and its sanatorium accommodation. The communities with the greater hospital facilities for caring for tuberculous patients are the ones with the lowest death rates. Although other factors, such as climate and the susceptibility of the population, are shown to have a definite effect on the tuberculosis death rate, the main factor in lowering it is the degree to which the tuberculous patients can be removed from the community. Sanatoriums prevent the spread of infection through lowering the chances of contact between healthy and infected persons. The fact that Quebec has lowered its female death rate much less than have some of the other provinces is probably due not only

to lessened sanatorium treatment but to the larger families which the women of Quebec have. The advisability of continuing the upkeep of the sanatorium has been questioned. This study leads to the conclusion that the expense is justifiable, since it pays dividends in general public health.

Journal of Oriental Medicine, South Manchuria

21: 25-38 (Sept.) 1934

- Species and Distribution of Mice in Mukden and Hwai-te: Studies of Animals Connected with Carrying of Plague. K. Urabe.—p. 25.
- Pathologic and Histologic Study of Nerve Center in Morphism: Experiment with Cats. A. Hayashi.—p. 27.
- Malformed Twin Fetus Presenting Appearance of Mummified Degeneration and Missed Abortion. S. Hayashi.—p. 29.
- *Studies of Genesis of Leukopenia in Typhoid Fever. T. Hashimoto.—p. 30.
- Statistical Study of Tuberculous Meningitis in Dairen. Y. Matsunra.—p. 31.
- Synectomia Malignum. T. Takaichi.—p. 32.
- Effect of Local Cooling and Warming of Skin and of Temporary Obstruction of Blood Flow of Cooled or Warmed Part of the Body on Sweat Secretion in Man. S. Nishibori.—p. 33.
- Influence of Intravenous Injections of Hypertonic and Hypotonic Solutions on Ability to Perspire in Man. S. Nishibori.—p. 35.
- Study on History of Bacteria Artificially Introduced into Body and Factors of Infection: Effect of Cooling of Body on Colibacillary Infection. N. Nishikawa.—p. 36.
- Mycologic Studies on Dermatomycosis in Manchukuo. T. Terai.—p. 37.
- Spindle Celled Sarcoma of Abdominal Wall: Rare Case. T. Yoshitoshii.—p. 38.

Genesis of Leukopenia in Typhoid.—Hashimoto, wishing to ascertain that although thermolabile extracellular toxin (refined toxin) is weaker in pathogenic action than thermostable endotoxin (nucleoprotein) and that it acts more effectively on the blood picture, separated the two toxins by following Yato's method. These he injected into rabbits. He observed that a slight pathologic change took place only in the bone marrow, which seemed to be the sole proof of the cause of leukopenia. He next put the blood and leukocytes of the rabbits into test tubes and added the toxins to them so that they came in direct contact with the blood or leukocytes, examined the leukocidin by means of vital staining and the bioscopic method, and discovered that refined toxin contained far more poisonous matter than nucleoprotein. He thus ascertained the fact that typhoid toxin, especially refined toxin, acts directly on the leukocytes in the circulating blood and causes them to degenerate and die. This, he believes, has a bearing on leukopenia as well as the incomplete function of the bone marrow, which has been considered to be the sole cause of leukopenia in typhoid.

Paris Médical

2: 241-276 (Oct. 6) 1934

- Neurology in 1934: Annual Review. A. Baudouin and H. Schaeffer.—p. 241.
- *Vestibular Disorders and Intracranial Hypertension. J.-A. Barré.—p. 257.
- Some Cases of Progressive and Curable Multiple Paralysis: Subacute Poliomyelitis Probably Due to Neurotropic Virus. R. Garcin and G. Renard.—p. 263.
- Diffuse Cerebrospinal Syphilis: Guillain-Thaon Syndrome. P. Nayrac.—p. 273.
- Vestibular Disorders and Intracranial Hypertension.**—Barré discusses the vestibular reactions of thirty patients personally observed. Spontaneous subjective or objective vestibular disturbances (vertigo, difficult equilibration, spontaneous nystagmus and so on) were observed in fourteen of the thirty. These signs can often give a false lead to attempted localization of the causative tumor. With the cold caloric test the most frequent reaction was hyperexcitability, next normal excitability and finally hypo-excitability. In general the increased reflex action belongs especially to the intracranial hypertensions of recent origin and hypo-excitability to the old hypertensions. In the cases in which hypo-excitability to the warm caloric test was found there was almost always a similar hypo-excitability to cold. This parallelism, which does not occur in some other vestibular disorders, may therefore have some practical value. Rotatory nystagmus was of normal duration in more than two thirds of the patients. It was rarely increased and more rarely diminished in duration. Electrical excitability remained normal or nearly so in all instances. It thus seems to the author that the caloric excitability is often due to the intracranial hypertension alone, and these tests are hence often of little value in localizing the causative tumor.

Schweizerische medizinische Wochenschrift, Basel

64: 933-956 (Oct. 13) 1934

- Recent Results of Research on Digitalis. E. Liebmman.—p. 933.
- Studies on Respiratory Movements. A. Jaquet.—p. 936.
- *Respiratory Therapy in Pulmonary Tuberculosis. L. Hofbauer.—p. 943.
- *Resorption and Elimination of Arsenic and Its Distribution in Organism. J. Leibowitz.—p. 947.
- Genital Hemorrhages of Newly Born Female Infants. Lévy-Du Pan.—p. 949.

Respiratory Therapy in Pulmonary Tuberculosis.—Hofbauer says that the predisposition to tuberculous infection is greatest in portions of the lung hardly at all utilized during ordinary breathing. Exclusive mouth breathing results in a loss of tonus of the excluded respiratory muscles, the diaphragm and the muscles of the abdominal wall. In case of greater respiratory requirements, respiration changes in that the auxiliary expiratory forces, the muscles of the abdominal walls, become active and in turn stimulate the diaphragm to improved inspiratory movements. The author discusses the effects of these respiratory movements and shows their value in the treatment of tuberculosis by improving the circulation. He reproduces roentgenograms that illustrate how exudates disappear following several weeks of systematic respiratory exercises. This process of resorption is important because every tuberculous focus contains a large amount of autotuberculin and work dyspnea leads to an increased resorption of these toxic products, a process that can be compared to a tuberculin injection. That the gradually increasing resorption of this substance may exert a therapeutic influence can hardly be doubted, for the production of antibodies is stimulated by the resorption. It is essential that the respiratory autotuberculinization is increased only gradually and with careful observation of the reactions. The author considers respiratory treatment of patients with pulmonary tuberculosis advisable when, as is so frequently the case, there exists an emphysema in the nontuberculous portions of the lung. Patients who have received operative treatment on account of pulmonary tuberculosis frequently develop hyperextension of the "healthy" lung and displacement of the heart. These manifestations are caused by incorrect respiratory activities, and suitable changes in the respiration will improve the condition. The method of the respiratory therapy must be individualized, but in all cases the respiratory passages should be protected as much as possible. The author stresses the exclusive use of the nose for inspiration as well as for expiration, while speaking should be curtailed as much as possible. The second important point is the training in "respiratory unburdening." The patient must learn to inhale as little as possible but to exhale as much as possible by utilizing the expiratory muscles. In unilateral involvement of the pulmonary apex or hilus and in the presence of pleural exudates or of indurations, the respiratory action of the diaphragm must be stimulated by putting the patient in certain positions. Slight changes, which at first appear to be indurations, occasionally disappear following the postural and respiratory exercises. The toxic symptoms of tuberculosis—fever, sweating, lack of appetite and loss of weight—are favorably influenced by the respiratory therapy.

Resorption and Elimination of Arsenic.—Leibowitz states that arsenic intoxications are frequently not recognized during life because of the similarity of their symptoms to other disturbances. But even the necropsy does not always bring clarity, because the typical changes in the large organs are convincing only if the examination is made shortly after death, and even then the changes may be mistaken for those of cholera or of certain meat poisonings. However, there remains the reliable chemical analysis. But in forensic medicine the question of the mode of poisoning may have to be answered. The differentiation of acute arsenic poisoning with a large dose that causes death within a comparatively short time and chronic poisoning is generally easy. Only a separate examination of the different organs is necessary. In acute arsenic poisoning (with the exception of the rare cerebral, paralytic form) death follows quickly because of destruction of tissues in the gastro-intestinal tract and before large quantities of the arsenic have reached the blood stream and other organs. In the case of slow poisoning, however, certain organs act as depots for the arsenic, particularly the hair, the long tubular bones and the central nervous system. The author reviews the various studies on the storage and the

elimination of arsenic in chronic poisoning and then describes experiments on rabbits carried out by himself and a collaborator. He found that the organism of the rabbit eliminates the largest amount of the arsenic soon after its intake. His collaborator observed that rabbits which died several days after the administration of the last of several doses showed a similar distribution of arsenic in the internal organs, as did rabbits that died after a single large dose. The only exception was the arsenic content of the pelt. Doses administered at long intervals did not result in a cumulation of arsenic in the organism; however, when two doses were given at short intervals there was a cumulation. The author thinks that the latter observation can be explained on the basis of the rapid elimination of the largest amount of arsenic soon after its intake.

Policlinico, Rome

41: 515-578 (Oct. 15) 1934 Surgical Section

- Rare Luxation of First Metacarpal Bone M. Canavero—p. 517
 *Clinical and Experimental Contribution to Value of Alcohol Therapy in Nontuberculous Suppurations of Lung R. Grasso—p. 526
 Histologic and Functional Modifications of Remaining Denervated Kidney After Unilateral Nephrectomy C. Maltese Le Roy—p. 538
 Study of Functional Capacity of Parathyroid Transplant B. Paggi—p. 554
 Fibroma of Anterior Abdominal Wall E. Repetto—p. 564

Alcohol Therapy in Nontuberculous Suppurations of Lung.—Grasso found that, when intravenous injections of alcohol were administered in large doses to healthy animals exposed to pulmonary complications through artificially produced anatomic conditions (simple tracheal fistula and tracheal fistula with introduction of micro-organisms into the bronchial tree), they were able to prevent such complications. Treatment was insufficient when, because of the tracheo-esophageal fistula, the pulmonary infection was more serious and involved. The author cites four cases presenting gangrenous pulmonary abscess in which daily intravenous injections of 2 cc. of a 33 per cent solution of alcohol were administered. No favorable results were obtained. The injections did not succeed in checking the progressive course of the disease or in influencing the expectoration and temperature. The stimulating action of this treatment on the cardiovascular tonus and the general condition of the patient should be studied also from the point of view of the pneumotropic properties of the alcohol and of its pronounced lymphagogue action. This mechanism of action is confirmed by experiences reported by the author in which thorium dioxide sol introduced into the bronchial tree and absorbed by the lung and not fixed in the reticulo-endothelial system of this organ disappeared rapidly in animals subjected to alcohol therapy. To explain this the author presupposes a more active blood and lymphatic circulation in the lungs of the animals treated. The secretory functions of the alveolar epithelium are stimulated, as proved by the fact that no trace of thorium was found in the parenchymatous organs and that a true absorption of this substance with passage into the circulation is thereby prevented. The author concludes that his negative results are not sufficient to disprove the efficacy of alcohol therapy in pulmonary diseases, if administered in the early stages and in strong doses.

Archivos de Medicina, Cirugia y Espec., Madrid

37: 1089-1116 (Oct. 6) 1934

- *Bilirubinemia in Syphilology. E. De Gregorio and E. Lopez Valiente—p. 1089
 *Acid-Base Equilibrium in Pregnancy. J. Botella Llusia—p. 1093
 Examination of Sympathetic Nervous System by Daniopolu Method in Schizophrenia N. Ancochea and C. Rodriguez Cuevillas—p. 1103

Bilirubinemia in Syphilology.—De Gregorio and Lopez Valiente say that an early diagnosis of hepatic insufficiency during arsenical treatment in syphilis is of importance in the prevention and the indications for treatment of arsenical jaundice, which may end in the development of acute atrophy of the liver. The authors, wishing to ascertain whether or not the changes in bilirubinemia run parallel to the intensification of arsenical treatment, made determinations of the bilirubinemia in a group of patients in various stages of syphilis. In one subgroup there was hyperbilirubinemia before the treatment, which fell to normal figures of bilirubinemia afterward. In the other subgroup there was normal bilirubinemia before the treatment, which changed to hyperbilirubinemia after the treat-

ment and returned to normal figures after the discontinuation of treatment. The results in the first subgroup seem to indicate that hepatic insufficiency and jaundice were due to the existence of hepatic syphilis, which was favorably modified by the treatment. Those in the second subgroup seem to indicate a toxic action of arsphenamine on the liver. The authors, however, were unable to give an exact interpretation to their results because of the lack of a fixed figure for normal bilirubinemia. They call attention to the advisability of establishing a figure for normal bilirubinemia that can be taken as a basis for the estimation of the liver function and changes of which should be interpreted as indicating liver insufficiency. They cite the advisability of ascertaining whether or not bilirubinemia increases in relation to the intensification of arsenical treatment and, if this is the case, what the figure is of the limit of tolerance of the organism to the drug which precedes the onset of arsenical jaundice. By fixing the limit of bilirubinemia, the development of arsenical jaundice could be prevented by the timely suppression of the drug as soon as the figures of bilirubinemia reach a warning value. In cases in which the variations of bilirubinemia point to syphilitic origin of the hepatic insufficiency and jaundice, the continuation of the treatment is indicated.

Acid-Base Equilibrium in Pregnancy.—Botella Llusia studied the acid-base equilibrium in normal pregnancy and in some of its toxicoses (hyperemesis of pregnancy, preeclampsia, eclampsia and other toxicoses). There is a slight but compensated acidosis in normal pregnancy, a noticeable although compensated acidosis in hyperemesis of pregnancy, preeclampsia and hemorrhagic toxemia, and a marked decompensated acidosis in eclampsia. In all cases the content of fixed acids in the blood and body fluids is increased and the alkali reserve is diminished. The differences are quantitative rather than qualitative. The organism tends to compensate the increased production of fixed acids. When it fails to neutralize them, actual acidosis develops, which gradually increases from figures observed in normal pregnancy to those which produce more or less grave toxicosis and even eclampsia.

Archiv für Verdauungs-Krankheiten, Berlin

56: 125-236 (Sept.) 1934

- Clinical Evaluation of Cellular Constituents of Stools and of Smears Taken from Intestinal Mucosa in Intestinal Diseases. H. Dibold—p. 125
 Albumin and Nitrogen Content in Duodenal Juice Johanna Krause—p. 141.
 Experimentally Produced Fermentative Dyspepsia Nanna Startz—p. 149
 *Immediate and Late Results in Treatment of Gastric and Duodenal Ulcers H. J. Frölich—p. 158
 Secretion of Gastric Juice in Skin Diseases M. Dobreff and P. Popchistoff—p. 179
 *Peristaltic and Antiperistaltic Gastro Intestinal Movements on Basis of Special Method of Examination H. Burger—p. 188
 Results of Low Protein Diet Continued for Twenty-Five Months B. Süsskind—p. 195

Results of Treatment of Gastric and Duodenal Ulcers.—Frölich compares the dietetic treatment and the treatment with the jejunal tube. He reaches the conclusion that the latter produces immediate relief and in especially selected, severe cases its early results are not unfavorable as is the case with the usual dietetic treatment. In gastric ulcers the treatment by the jejunal tube is superior to the dietetic treatment. Its effects are less favorable only in some types of duodenal ulcers, in kissing ulcers and in ulcers located directly behind the pylorus. It surpasses the dietetic treatment in the reliability of its action particularly in refractory and chronic ulcers and in ulcers developing in older persons. Up to about three and a half years, the after effects of the jejunal tube treatment are superior to those of the dietetic measures. The permanent results after the latter were favorable only in one third of the cases, while in the cases treated with the jejunal tube the permanent results were favorable in nearly one half of the total number. However, neither of the two methods promises favorable results beyond the fourth year. Factors such as the constitution and the age of the patient, the duration of the ulcer and its periodicity may influence the result of the treatment either favorably or unfavorably.

Examination for Peristalsis and Antiperistalsis.—Burger states that after many years of trial he succeeded in detecting the peristaltic and antiperistaltic movements by means of a simple method, which he designates as the "beat-touch" method. He places the middle finger of the left hand on the organ (stomach or intestine) that is to be examined and with the middle finger of the right hand he percusses while advancing slowly. In observations on the stomach he found that, when he began percussion on the upper part of the fundus, the peristaltic wave returns after six seconds as an antiperistaltic wave and also spreads farther to the pyloric antrum and again returns in the antiperistaltic form. The same applies to the waves that advance from the pyloric antrum to the pylorus. These waves return in the antiperistaltic form after six seconds. Thus it is possible to differentiate from fundus to pylorus four sections of peristalsis and antiperistalsis. At the pylorus, to which the wave movements of the stomach are transmitted, the peristalsis and antiperistalsis require twelve seconds. In addition to these longitudinal waves there exist (corresponding to the transverse muscle fibers) transverse wave movements that advance from the small toward the large curvature. These peristaltic movements likewise require six seconds for their antiperistaltic return. Then there are the peristaltic movements of the oblique fibers. The longitudinal folds on the small curvature (so-called Waldeyer's stomach route) as a rule cannot be felt on the normal, empty stomach. However, they may be felt in certain abnormal conditions, particularly in hyperacidity and in ulcer on the small curvature. The author further describes observations with his beat-touch method on the duodenum, the jejunum and the colon, and asserts that the peristaltic and antiperistaltic movements of the haustra can likewise be detected with his method. In the conclusion he emphasizes that his beat-touch method is valuable in the detection of gastric and duodenal ulcers, since the wave movements are abolished at the site of the ulcer. The same applies also to carcinoma and to gastroduodenal hemorrhages.

Beiträge zur Klinik der Tuberkulose, Berlin

85: 223-312 (Sept. 21) 1934. Partial Index

- Endothoracic Pleurolysis According to Jacobaeus. A. Sattler.—p. 223.
*Cerebral Embolism Following Pneumothorax and Oleothorax. C. Renner.—p. 226.
Studies on Development of Carcinoma in Tuberculous Cavern. C. Renner.—p. 231.
General Functional Pathogenesis of Tuberculosis. S. Bergel.—p. 237.
Acute Tuberculous Sepsis: Virulence of Tubercle Bacilli. L. Jakobowicz.—p. 247.
*Gas Diffusion in Artificial Pneumothorax. A. V. von Frisch and A. Schneiderbauer.—p. 256.
Hemotogenous Laryngeal Tuberculosis. K. Menzel.—p. 281.
*Value of Determination of Sedimentation Speed of Erythrocytes in Diagnosis and Prognosis of Pulmonary Tuberculosis. G. Thiele.—p. 302.

Cerebral Embolism Following Pneumothorax and Oleothorax.—Renner gives the clinical histories of two patients, one of whom was treated with pneumothorax and one with oleothorax. Both patients died and the necropsies revealed that in the first one death was caused by cerebral hemorrhage resulting from an air embolus and in the second one by a fat embolus in the brain. In addition to these two fatal cases that were observed in more than 10,000 pneumothorax fillings, three cases were found in which similar complications developed, but these three did not terminate fatally.

Gas Diffusion in Artificial Pneumothorax.—Von Frisch and Schneiderbauer point out that, on the basis of numerous investigations on the composition of the pneumothorax gases, it may now be assumed that, independent of the type of the gas or the gas mixtures that are introduced, a constant ratio of the various gases is established in the pleural space. Di Pietro, one of the first students of this problem, found that the gas mixture consisted of approximately 6 per cent oxygen, 5 per cent carbon dioxide and 89 per cent nitrogen. The authors investigated the processes of gas exchange in artificial pneumothorax by means of metabolic studies. They reasoned that, if oxygen is used for the filling of a pneumothorax, the oxygen will be used for the maintenance of the necessary oxidation processes of the organism, in that the oxygen either enters into the alveolar air by diffusion or becomes resorbed by the tissues of the parietal pleura. If this assumption is correct, a reduction in the absorp-

tion of oxygen from the inspired air ought to be demonstrable following insufflation of oxygen into the pleural cavity. The authors determined the basal metabolism, then introduced oxygen and after that tested the basal metabolism once more. Experiments were made also with carbon dioxide, nitrogen and hydrogen. On the basis of gas analytic studies on patients with pneumothorax and on animals, the authors reach the following conclusions: After insufflation of air or of oxygen, the basal metabolism is not changed, but, after carbon dioxide insufflation, the average increase in the basal metabolic rate is 30 per cent. Inhalation of pure oxygen as well as of an oxygen-carbon dioxide mixture results in a concentration of those two gases in the pneumothorax gas. This concentration is lacking, however, in case of induration of the pulmonary pleura. In case of inhalation of a gas mixture of 70 per cent hydrogen and 30 per cent oxygen, the passage of hydrogen into the pleural cavity can be demonstrated. The demonstration of the passage of gases from the pneumothorax into the alveolar air failed in human subjects, apparently on account of the great attenuation. In animal experiments, however, it was possible to demonstrate the diffusion of hydrogen from the pneumothorax into the alveolar air. Comparative studies on dogs, in which pneumothorax or pneumoperitoneum was induced by means of nitrogen, oxygen and carbon dioxide, showed essential differences in the rapidity of resorption and of contradiffusion.

Sedimentation Speed in Pulmonary Tuberculosis.—Thiele reports the results of the sedimentation tests on 5,145 patients with tuberculosis that required treatment. It was found that among the patients with cirrhotic tuberculosis 85 per cent had a normal sedimentation speed, and among those with cirrhotic-productive tuberculosis, 68.3 per cent. The incidence of a normal sedimentation speed among the patients with productive tuberculosis was 42.3 per cent, and among those with cirrhotic cavernous tuberculosis, 47 per cent. In all other forms of tuberculosis the sedimentation speed was more or less accelerated. Of those with open tuberculosis, 25 per cent had a normal sedimentation speed. The treatment in the sanatorium produced a decrease to normal values of sedimentation only in a rather small percentage of patients. In 600 patients with all forms of tuberculosis the relation between the sedimentation speed and the outcome of the disease process was investigated. These observations covered a period of two years and three months. It was found that the sedimentation speed of the erythrocytes was closely related to the prognosis. Of the patients with a sedimentation speed of more than 51 mm. (one hour), 75 per cent died within twenty-seven months; of those with a sedimentation speed between 21 and 30 mm., 20 per cent, and of those whose sedimentation speed varied between 11 and 20 mm., 16 per cent. The tuberculosis took a favorable course in those patients in whom the sedimentation speed went back to normal values. This factor was of especial significance for the surgical treatment. Nearly all patients whose sedimentation speed decreased to normal values following surgical treatment were cured.

Frankfurter Zeitschrift für Pathologie, Munich

47: 159-312 (Oct. 2) 1934. Partial Index

- Carcinomatous Degeneration of Papilloma of Lateral Ventricle. V. Faber.—p. 168.
Giant Cells in Chronic Mastitis. V. Faber and Magda Rottenstein.—p. 173.
Juvenile Gangrene (Thrombo-Angiitis Obliterans). M. Fossel.—p. 181.
*Tuberculosis and Age. H. H. Kalbfleisch.—p. 231.
*Genesis of Multiple Small Areas of Softening in Brain, and Contribution to Genesis of Angina Pectoris. E. Löffler.—p. 239.
Bone Formation in Lung and Trachea. K. Hiebaum.—p. 249.
Congenital Bronchiectases. S. Scheidegger.—p. 276.

Tuberculosis and Age.—Kalbfleisch asserts that the primary infection of the lung predominates in nurslings, while the intestinal primary infection is still of small importance but becomes more prominent in older children. The glandular component of the primary lesion, that is, the involvement of the lymphatic glands, is characteristic for the tuberculosis of childhood. During the age of puberty the incidence of tuberculosis increases greatly. The forms of tuberculosis that develop during this period of life approach more closely the phthisis of adults, that form in which a cavern develops in the apical region, particularly in the posterior third, and which is characterized by

bronchogenic, lymphogenic and hematogenic metastases in the lung. However, the main symptom is the predominance of productive processes and the slight involvement of the thoracic lymph nodes. The endogenic lymphoglandular reinfection (Ghon) occurs in persons at the end of puberty, but even more frequently during later periods of life. Generalized tuberculosis is not frequent in adults and in the aged but it occurs occasionally and is usually a sequel of chronic cavernous pulmonary phthisis. In senile persons it generally assumes the form of miliary tuberculosis or of serous tuberculosis. The involvement of the larynx is somewhat less frequent in the aged than in younger persons, but involvement of the intestine has approximately the same incidence in the two groups. The author emphasizes the great importance of protecting the nursing against tuberculosis by removing him from a tuberculous environment or by removing persons with tuberculosis from the environment of the nursing. He states that especial attention should be given to the grandparents, whose tuberculous infection may be overlooked, but presents nevertheless a source of danger for the nursing.

Foam Thrombosis in Genesis of Cerebral Malacia and Angina Pectoris.—Löffler shows that, in severe atherosclerosis of the cerebral arteries, arterioles and capillaries, the lumen of these vessels is generally dilated while the walls are rather rigid. If the blood pressure decreases suddenly (blood pressure fluctuations in hypertension), the insufficient regulatory capacity of these vessels results in a liberation of gas from the arterial blood, and a mixture of gas and blood obstructs the capillaries. This process, which is designated foam thrombosis or foam embolism, is the cause of symmetrical areas of softening in the brain. It is assumed that, in atherosclerosis of the coronary arteries, foam thrombosis and foam embolism are the cause of the attacks of angina pectoris.

Medizinische Klinik, Berlin

30: 1349-1380 (Oct. 12) 1934. Partial Index

Spondylitis (Spondylolysis) Deformans. H. Burekhardt.—p. 1349.

Cysticerci in Human Subjects. R. D. Velten.—p. 1356.

Aneurysmatic Elongation of Heart. G. W. Parade.—p. 1357.

Electrocardiogram of Attack of Angina Pectoris. M. Winternitz.—p. 1359.

*Treatment of Exudative Pericarditis. K. Hitzengerber.—p. 1362.

Albuminuria During Childhood. A. Vollbrandt.—p. 1363.

*Dietetic and Medicinal Treatment of Exogenic Obesity. G. Arany.—p. 1363.

Treatment of Exudative Pericarditis.—Hitzengerber points out that the evacuation of a chronic pericarditic exudate by means of puncture involves considerable danger, in that the rapid change in pressure disturbs the cardiac function and may result in complete failure of the heart action. In acute pericarditis there is no such danger, for in acute cases large exudates have been evacuated without resulting in cardiac complications. When he decided to treat a chronic pericardial exudate by the daily withdrawal of small quantities, the author discovered that even a chronic exudate may be evacuated without danger. The patient under treatment tolerated well a withdrawal of about 40 cc. of the exudate. On the next day it was found that the pericardial exudate had become much smaller, but in addition to it there now existed a pleural exudate. The pleura had been punctured and a communication had been established between the pericardium and the pleural space. The exudate was aspirated from the pleural space and three weeks later the pericardial exudate was completely removed by another pericardial puncture. The discharge of the pericardial exudate into the pleural space proved successful in two other cases, and on the basis of these observations the author recommends the puncture of the pericardium through the pleura (from the back). After the pericardial exudate has reached the pleural space it becomes absorbed or may be removed by puncture. There is no danger of pleurisy. Before resorting to pleural drainage of the pericardial exudate, it should be determined by a test puncture whether the exudate is free from pus, to avoid production of an empyema in the pleura.

Treatment of Exogenic Obesity.—Arany stresses three points: (1) the limitation of the intake of calories by restriction of the diet, (2) the increase in the oxidation by greater muscular activity and (3) the regulation of the water exchange by promoting the diuresis. In addition to limiting the calory

intake to from 20 to 30 per cent below the requirements computed on the basis of the body weight, the metabolic rate and the mode of life, it is necessary to restrict the intake of proteins and substitute foods of low caloric values and with much roughage. Increased oxidation is obtained by more muscular exertion, but the increase should be gradual and circulation, heart and lungs should be watched. If the muscular action cannot be adequately increased, medication with a phosphoric acid preparation may be resorted to. Since obesity is usually accompanied by water retention, a correction of the water exchange is necessary. This is accomplished by limitation of the fluid intake, by hydrotherapeutic measures, such as sweat cures, and by increasing the diuresis. The author increased the diuresis by intragluteal injections of a mercury preparation at intervals of from three to four days. The total number of injections was from three to four. Constipation, which exists occasionally, should be counteracted by mild purgatives. Carlsbad salt is helpful, because it also increases the diuresis.

Münchener medizinische Wochenschrift, Munich

81: 1567-1602 (Oct. 2) 1934. Partial Index -

Epilepsy and Related Conditions During Childhood. E. Moro.—p. 1567.

Abdominal Typhoid. H. Dörfler.—p. 1570.

Fruit and Water. W. Heupke.—p. 1572.

*Are There Anaerobic Strains of Diphtheria Bacilli in "Malignant Diphtheria?" W. Kollath.—p. 1577.

Late Stuttering. J. S. Galant.—p. 1578.

Principles of Estimation of Moors and of Therapeutic Muds. Stockfisch and W. Benade.—p. 1580.

Anaerobic Strains of Diphtheria Bacilli in "Malignant Diphtheria."—Kollath calls attention to the fact that it is still unknown why even the largest doses of serum do not effect a cure in malignant diphtheria. He thinks that the failure of the antitoxin indicates a component the nature of which is as yet unknown, and he points out that the oral feter, which is characteristic for malignant diphtheria, is as a rule indicative of anaerobic bacterial disintegration. Since the genuine diphtheria bacilli, in contradistinction to the pseudodiphtheria bacilli, may be grown under anaerobic conditions and thus have the capacity for anaerobiosis, the question could be asked whether strains of anaerobic diphtheria bacilli do not occur in some cases of malignant diphtheria. These anaerobic strains would differ from the aerobic strains in that they do not form a toxin that can be neutralized by antitoxin, but rather a different, still unknown irritant; for true diphtheria toxin develops only in the presence of sufficient amounts of oxygen and not under anaerobic conditions. The author states that two and one-half years ago he observed four cases of malignant diphtheria in which the aerobic culture failed during the first few days, but anaerobic culture yielded genuine diphtheria bacilli in from fourteen to eighteen hours. During the later stages of the disease the aerobic culture likewise yielded diphtheria bacilli. Since the observation of these cases the author has searched for similar ones but has not found any. However, a recent report by Doskočil in a Czech journal describes twelve cases of malignant diphtheria in which the anaerobic culture of diphtheria bacilli succeeded.

Zeitschrift f. Hygiene und Infektionskr., Berlin

116: 315-416 (Sept. 22) 1934

*Serologic Diagnosis of Brucella Abortus Infection in Man. R. H. Laun and E. Heide.—p. 315.

Staining of Bacteria by Potassium Permanganate and Simple Staining of Spores. F. Sander.—p. 335.

Comparison of Clauberg's Culture Medium for Diphtheria Bacillus with That of Löffler. M. Waldhecker.—p. 337.

Mode of Action of Dyes Used in Chemotherapy. V. Fischl and E. Singer.—p. 348.

Actions of Medicines in Vitro. E. Singer and V. Fischl.—p. 356.

Bacteriologic Diagnosis of Diphtheria. M. Brückner.—p. 361.

Serologic and Cultural Variation of Paratyphoid B Bacillus and Bacillus Typhi-Murium. F. Kauffmann.—p. 368.

Bactericidal Action of Several Colloidal Solutions and Their Hygienic Significance. M. Prica.—p. 385.

Renewed Increase in Psittacosis. J. Forner and R. Pfaffenberg.—p. 397.

Serologic Diagnosis of Brucella Abortus Infection.—Laun and Heide call attention to the fact that Brucella abortus infection does not present a uniform symptomatology and that the term undulant fever is unsuitable. The positive outcome of the Widal and the complement fixation tests, or the positivity of either of these tests, is proof of the existence of a Brucella

abortus infection. It is advisable to add 2 per cent of glycerin to the agar pH 7.2 of the *Brucella abortus* cultures that are used for the Widal test. An addition of 0.2 per cent of solution of formaldehyde to the *Brucella abortus* suspension does not impair the Widal reaction. The authors obtained excellent results with a *Brucella abortus* suspension of great density, which contained twelve strains from human subjects and from animals, and to which a 0.2 per cent solution of formaldehyde had been added. Even after twelve months there were no changes in efficacy. The result of the Widal test can be read after two hours' storage in the incubator (37 C.). A further storage of the test material for twenty-two hours, either at room temperature or at incubator temperature, is without influence on the results. Agglutination of *Brucella abortus* by the serum of the patient is to be considered positive even if it occurs at only slight attenuation. A coagglutination of typhoid, paratyphoid and proteus bacteria was not observed. The Widal reaction revealed no differences between human and animal strains of *Brucella abortus* and between the serums from man and animals. Fluctuations in the stability of the colloids of human serums, as for instance during pregnancy, may be a source of error in the Widal test for *Brucella abortus*. If the complement fixation test is made with a 5 per cent suspension of sheep's corpuscles, varying doses of amboceptor and of complement should be employed, the value of which should always be determined on the day on which the experiment is made. The *Brucella abortus* extract should be studied for its efficacy at intervals of three months. All dilutes should be made with a sterile 0.85 per cent solution of sodium chloride. The positive outcome of the complement fixation reaction in a serum dilute of 1:62.5 (quantity of serum 0.02 cc.) proves the existence of a *Brucella abortus* infection. The agglutinin formation commences sooner than the formation of the antibodies that inhibit the hemolysis, but it also disappears sooner. The complement fixation phenomenon persists considerably longer.

Zeitschrift für klinische Medizin, Berlin

127: 243-370 (Sept. 18) 1934. Partial Index

- Observations on Function of Musculature and Biliary Colic of Discharging Urinary Passages: Treatment. W. Marn.—p. 243.
Pulsus Alternans Minimus. O. Spühler.—p. 268.
Action of Insulin on Lactic Acid Content of Blood. J. Friesz and E. Mohos.—p. 281.
"Antihemolytic" Action of Liver Extracts. E. Rosenthal and J. Patai.—p. 284.
*Relation Between Disintegration of Erythrocytes and Bilirubin Content of Blood in Inoculation Malaria. J. Végh and L. Stanojević.—p. 286.
Clinical Aspects of Basophil Adenoma (Cushing). F. S. P. van Buchem.—p. 292.
Absence of Electrocardiographic Changes in Pathologic Myocardium. P. Radnai.—p. 304.
*Capillaroscopic Studies in Allergic Diseases. L. Hantschmann and F. Steiner.—p. 315.
*Diagnostic Utilization of Disintegration of Leukocytes. G. Nagy.—p. 319.

Disintegration of Erythrocytes and Bilirubin in Malariotherapy.—Végh and Stanojević studied the connection between the disintegration of erythrocytes and the bilirubin content of the blood in twenty-one patients who had been inoculated with malaria but of whom only twelve developed fever attacks. In all except one of these patients the number of erythrocytes and the hemoglobin content decreased, while the bilirubin content increased, but decrease on the one hand and increase on the other did not run parallel; that is, there was no quantitative relation between the transformation of hematin or hemoglobin on the one hand and the increase in bilirubin on the other. It was observed also that the increase in the bilirubin content is rapid, while its elimination is slow. From these observations it may be concluded that some of the factors involved in these processes are still unknown.

Capillaroscopic Studies in Allergic Diseases.—Hantschmann and Steiner made capillaroscopic studies on persons with and without allergy. The incidence of atypical capillaroscopic pictures was much greater in patients with allergy than in those who were free from it. In persons without vascular disturbances the capillary pictures were normal in 66 per cent, slightly atypical in 27 per cent and greatly atypical in 7 per cent. Of the patients with allergy, only 20 per cent had normal capillary pictures, 43 per cent had slightly atypical pictures and 37 per cent had greatly atypical pictures.

Diagnostic Utilization of Disintegration of Leukocytes.—Nagy points out that the leukocytes with neutrophil granules disintegrate most rapidly but that there is a difference in the resistance to disintegration in the cells with toxic granules and in cells from the normal blood. He proved this by the following experiment: Several cubic centimeters of blood is withdrawn from the median vein (in 3 per cent citrate solution $\frac{1}{10}$) and is left to stand at room temperature. After an hour, several smears are prepared from the upper layer of the column of sediment and are stained according to May-Gruenwald-Giemsa. If the blood is normal, the leukocytes are nearly all normal, except that in some instances the marginal ones show slight changes. However, if the blood is from a patient having an infectious disease, hardly a single intact leukocyte can be found. The neutrophils are full of vacuoles and other signs of disintegration. Many of the monocytes show the same changes, while the lymphocytes retain their shape for a comparatively long period. The early disintegration is probably due to toxic granules. In spite of the fact that several authors deny the pathognomonic significance of the toxic granulations, because it is too greatly under the influence of the unevenness in staining and because it occurs irregularly and late or not at all, the author ascribes to it considerable diagnostic significance. He stresses that his method easily masters the technical difficulties and avoids the confusions that may result from individual estimation.

Zentralblatt für Gynäkologie, Leipzig

58: 2353-2400 (Oct. 6) 1934

- Production of Pregnancy by Means of Hormones in Hibernating Bats. P. Caffier.—p. 2354.
*Pathologic-Anatomic Foundations of Increased Function of Posterior Lobe of Hypophysis in Eclampsia and Nephropathy of Pregnant Women. K. J. Anselmino and F. Hoffmann.—p. 2363.
Therapeutic Experiments with Hormone of Anterior Lobe of Hypophysis in Cancer of Uterus. L. Kriesch and K. Vietorisz.—p. 2370.
*Local Hormone Therapy of Ovarian Insufficiency (Intra-Ovarian Injection of Ovarian Extract). C. Stanca.—p. 2373.
Treatment of Inoperable Ovarian Carcinoma by Coutard's Method of Roentgen Irradiation. A. Gengenbach.—p. 2377.
Observations on One Thousand Cases of Ovarian Cystoma. M. Randazzo.—p. 2381.

Posterior Lobe of Hypophysis, Eclampsia, and Nephropathy.—Anselmino and Hoffmann call attention to several former reports in which they attempted to prove that an increase in the hormone production of the posterior lobe of the hypophysis plays a part in the development of nephropathy and eclampsia in pregnant women, and then they review the histologic changes in the posterior lobe of the hypophysis of patients with eclampsia, which were recently described by Cushing. That author observed heavy infiltrations of basophilic cells in the posterior lobe, some of which had an adenoma-like character, and in the clefts of the tissue he observed large quantities of the secretory product of these cells. He considers these changes an indication of increased functional activity of the cells that produce the hormones of the posterior lobe of the hypophysis, and thus they present the anatomopathologic basis for the presence of the antidiuretic and pressor components of the posterior hypophyseal hormone in the blood of these patients, which had been demonstrated by the authors. They discuss the relations of eclampsia and nephropathy to that form of contracted kidney to which Volhard applies the term of pale hypertension and then call attention to the coincidence of occurrence of vasopressor and antidiuretic substances in the blood and urine and to the coincidence of histologic changes in the hypophysis in the two disturbances.

Local Hormone Therapy of Ovarian Insufficiency.—Stanca gives the history of a woman, aged 19, who had never menstruated and who, since the age of 16, had repeated epileptic attacks. The amenorrhea as well as the epilepsy proved refractory to all treatments. Pains in the region of the cecum, which were suspected to be caused by adhesions developing after an appendectomy, and a desire to inspect the internal genital organs, led to a laparotomy. The adhesions on the cecum were separated and 1 cc. of ovarian extract was injected into each of the ovaries. The postoperative course was uneventful, and twelve days later menstruation set in for the first time. But just as surprising as the menstruation was the complete cessation of the epileptic attacks. The menstruation occurred regu-

larly for three successive months, but after that it ceased again; however, the epileptic attacks did not recur. A number of months later, although the patient did not menstruate any more, she became pregnant. The pregnancy terminated in a normal birth and the woman had no further attacks of epilepsy. The period of observation since the intra-ovarian injection is now two and one-half years and the author assumes a complete cure of the epilepsy. In trying to explain this effect on the epilepsy he cites reports that indicate a connection between menstruation and epilepsy. Because the woman became pregnant in the absence of menstruation, he assumes a disturbance in the anterior lobe of the hypophysis. He thinks that, although he has only two positive observations on the efficacy of intra-ovarian injection of ovarian extract in amenorrhea, he is nevertheless justified in pointing out in which cases this measure should not be resorted to. He considers the intra-ovarian injection of ovarian extract inadvisable in amenorrheas caused by aplasia, infantilism or hypoplasia of the uterus or by jacksonian epilepsy, diabetes, malaria or tuberculosis, but he hopes that his method will be tried in suitable cases.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Sept. 15 (No. 17) pp. 1233-1312. Partial Index

*Symptoms, Diagnosis and Pathologic Anatomy of Primary Carcinoma of Lungs. F. F. Playd.—p. 1235.

Agranulocytic Angina. V. P. Khrakovskaya-Chernyak.—p. 1248.

*Treatment of Edema and of Ascites with Large Doses of Calcium Chloride. T. Z. Gurevich.—p. 1252.

Epidemic Diseases of Central Nervous System. I. A. Dobreytser.—p. 1253.

Prophylaxis of Measles with Citrated Blood of Parents. G. A. Alshwang and E. E. Katsman.—p. 1293.

Determination of Virulence of Diphtheria Bacillus in Vitro. G. Kalina and Anna Margo.—p. 1298.

Primary Carcinoma of Lungs.—The incidence of primary carcinoma of lungs in the Soviet Union has risen in the last two decades to as high as 11.18 per cent of all carcinomas. Playd studied sixty cases of this disease confirmed at necropsy. He concludes that a definite diagnosis can be made by finding the cellular elements of the neoplasm in the sputum, in the pleural exudate, in the puncture of the neoplasm, or from a biopsy. Among the more valuable clinical signs the author mentions (1) early and repeated blood spitting, (2) signs of compression of the neighboring organs, such as dyspnea, hoarseness, aphonia and dysphagia, and (3) involvement of the regional lymph nodes, particularly of the supraclavicular and infraclavicular groups. Percussion and auscultatory signs are variable depending on the localization, the size and the relation of the tumor to the large bronchi, as well as on the accompanying alterations, such as pneumonitis, atelectasis and bronchiectasis. Muffled breath sounds in the beginning, together with a rapid increase in the area of dullness, are suggestive of a growing tumor. Metastases are common, principally to the liver and the central nervous system, causing dyspepsia, ascites and paralyzes. Pleural exudate was present in one third of the cases but presented nothing characteristic. Combination with active pulmonary tuberculosis was extremely rare. Tubercle bacilli were found in only one case. Cough was present in 80 per cent. Neither cough nor sputum was characteristic in any sense. Twenty per cent of the patients had night sweats. The temperature was normal in 50 per cent, was frequently subnormal and, at times, raised and hectic. Localization of pain was inconstant and not typical. The blood picture presented a hyperleukocytosis, neutrophilia and lymphopenia, more rarely erythropenia, hemoglobinemia and monocytosis, and never eosinophilia. Serum reactions are not characteristic. The roentgenologic examination is of the greatest value and was responsible for a high percentage of correct diagnoses. The increasing frequency of the disease, as well as the therapeutic possibilities in its early stages, suggests that it be treated as a social problem in specially created institutions.

Treatment of Edema and Ascites with Large Doses of Calcium Chloride.—Gurevich reports the effect of large doses of calcium chloride on edemas due to various causes. His observations were made in fifteen cases in which the usual diuretics were not effective. The patients were on a salt-free diet and limited water intake. He concludes that calcium chloride is a powerful diuretic. Daily doses of from 10 to 30 Gm. did not give rise to any untoward symptoms. In four

patients there developed nausea and anorexia, but these symptoms disappeared on withdrawal of the drug and were not present when the exhibition of the drug was resumed a few days later. The diuretic effect becomes manifest only after a number of days, occasionally weeks. Calcium chloride is frequently capable of producing a diuresis when other diuretics have failed. Large doses may produce an exacerbation of a nephritic process while acting as a diuretic. The calcium chloride is effective when salt is eliminated from the diet.

Bibliotek for Læger, Copenhagen

126: 383-427 (Sept.) 1934

*Disturbances of Alimentary Tract as Result of Avitaminosis. E. Schjodt.—p. 383.

Disturbances of Alimentary Tract Resulting from Avitaminosis.—Schjodt sees a close connection between disturbances of the alimentary tract and avitaminoses. Avitaminoses may develop from gastro-intestinal disorders, but these disorders are an integral part of the symptom complex of avitaminoses. A vicious circle may thus occur. Writers on avitaminoses due to vitamin A, B₁, B₂ and C deficiency mention anorexia, vomiting, diarrhea, achlorhydria, stomatitis, gastro-intestinal atrophy and gastric ulcer as symptoms; most of them are found in all the avitaminoses mentioned, both in men and in animals, with atrophy most marked in lack of vitamin A, achlorhydria in lack of vitamin B and gastric ulcer in lack of vitamin C. The author says that in his experiments on rats on a diet without vitamins B₁ and B₂ a number of the symptoms appeared, but not atrophy or achlorhydria; there were also in the majority of cases peculiar capillary hemorrhages from the stomach or intestine, gastric hemorrhage occurring more often after vitamin B₂ deficiency and intestinal hemorrhage in vitamin B₂ deficiency. Most of the disorders appear as early symptoms in vitamin deficiency. As in northern countries the diet or, at all events, certain forms of diet are low in vitamins and since vitamin deficiency may directly cause gastro-intestinal disorders, diets richer in vitamins are recommended in such disorders in these countries.

Finska Läkaresällskapets Handlingar, Helsingfors

76: 769-858 (Sept.) 1934

Treatment of Rectal Prolapse. H. Bardy.—p. 769.

Remarks on Tuberculin Tests in Finnish Army. M. Savolin.—p. 776.

*Chronic Circumscribed Arachnitis. R. Gordin.—p. 791.

Chronic Circumscribed Arachnitis.—Gordin regards this disorder as a secondary ailment in processes with symptoms of meningism. The most common causes are infection and trauma; other causes are insolation, circulatory disturbances in the central nervous system and tumor in the nervous system. He says that arachnitis due to trauma occurs as a reactive process depending on alteration of blood vessels and hemorrhage and cannot actually be considered an inflammatory disturbance; it might perhaps be termed a "traumatic meningopathy." The symptomatology in chronic arachnitis on the whole agrees with that of tumor in the central nervous system. The arachnitis usually appears in a predominately cerebral or spinal form. Encephalography is helpful in the cerebral form and myelography in the spinal form. The periodic course of the disorder and the history of trauma or infection are also significant. Close observation of all details in the picture and course often allow correct diagnosis. Disturbances considered simply psychogenic after apparently slight traumas should receive greater attention. Treatment is operative, and the prognosis is relatively favorable. When intracerebral or intramedullary changes are present, the prognosis is less favorable. The operation should not be terminated too soon in uncertain cases, even with positive results in the arachnoid, as the arachnoidal changes might be due to an intramedullary or intracerebral tumor. Twelve cases, five of cerebral and seven of spinal form, are reported.

CORRECTION

Treatment of Verrucae by Bismuth Sodium Tartrate.—In the abstract of Shellow's paper in THE JOURNAL, November 24, page 1654, in the first line "15 per cent" should be replaced by 1.5 per cent.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 25

CHICAGO, ILLINOIS

DECEMBER 22, 1934

CARDIAC CONDITIONS INDICATING THERAPEUTIC ABORTION

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NEW YORK

Two very different sorts of criteria have been used as a basis for the management of patients with heart disease during pregnancy. Formerly the anatomic diagnosis was relied on almost exclusively, and the demonstration of a marked mitral stenosis or of a markedly enlarged heart was considered to be so serious a complication of pregnancy that interruption was often advised when these conditions were found. The prognosis was thought to depend on the character of the pathologic changes.

During the period between 1912 and 1919 the functional ability of the heart came to be better understood. It was realized that this was not definitely dependent on the character of the pathologic changes and that if a measurement of functional ability could be devised this would afford a better guide to the expected behavior of the heart during pregnancy. Sir James Mackenzie¹ in 1921 pointed out certain errors resulting from attempts to rely solely on the pathologic diagnosis. He tried to avoid these errors by combining with the pathologic diagnosis an estimation of what he called the "limitation of the field of response to effort" and with a search for "signs of approaching heart failure" such as "a slight increase in the respiratory rate" and "the appearance of persistent râles at the lung bases."

In 1922 I advocated dependence on an estimation of cardiac functional capacity derived from the patient's history of past and present disability, combined with the reaction to exercise at the time of observation. A series of cases that had been grouped and followed in this way was reported from the Lying-In Hospital of New York City.² After 1924 the functional classification that had been introduced by the New York Heart Association³ was used in the cardiac antepartum clinic of the Lying-In Hospital, for it was considered inadvisable to have one functional classification for cardiac patients who were pregnant and another for those who were not.

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Mackenzie, James: *Heart Disease and Pregnancy*, London, Oxford University Press, 1921.

2. Pardee, H. E. B.: *The Fitness for Pregnancy of Patients with Heart Disease*, J. A. M. A. 78: 1188 (April 22) 1922; *Pregnancy Complicating Heart Disease*, Am. J. M. Sc. 164: 847 (Dec.) 1922.

3. Committee on Cardiac Clinics of the New York Association for the Prevention and Relief of Heart Disease: *Requirements for an Ideal Cardiac Clinic and a System of Nomenclature of Heart Disease*, Boston M. & S. J. 189: 762 (Nov. 15) 1923.

The basis of this functional classification is the patient's history of her ability to perform the ordinary physical activity of her everyday life, without unusual shortness of breath or palpitation. The patient's statements as to her ability to exercise are combined with an observation of the pulse rate and the respiratory reaction after a rather strenuous test exercise performed in the presence of the physician. According to the results of this method, cardiac patients are divided into four categories as follows:

Class 1. Patients with heart disease who are able to undertake ordinary physical activity without discomfort, such as palpitation or dyspnea, and who perform the test exercise without unusual tachycardia or dyspnea.

Class 2 A. Patients whose ordinary activity is slightly limited because of the appearance of dyspnea, palpitation or fatigue, and who show somewhat excessive tachycardia and dyspnea after the test exercise.

Class 2 B. Patients whose activity is greatly limited because of the appearance of dyspnea or palpitation and who show marked tachycardia and dyspnea after the test exercise, or who are unable to complete it.

Class 3. Patients whose activity is so limited as to make them unable to walk about without dyspnea or palpitation and who are so evidently dyspneic after such slight efforts as getting into and out of bed or walking across the room as to make any other exercise test unnecessary.

This method of rating the functional capacity of cardiac patients may be applied to pregnant women if one bears in mind the fact that during pregnancy a certain degree of limitation of ordinary activities because of fatigue, dyspnea and palpitation is a normal feature.

The malaise of the early weeks and the size of the uterus after the fifth or sixth month impose handicaps on the cardiovascular system which result in a greater liability to the development of dyspnea or palpitation after effort at these times. One must compare the cardiac patient with a woman of similar physical habitus, the same stage of pregnancy and a similar degree of uterine enlargement.

Patients do not pass suddenly during pregnancy from the condition of class 1 or class 2 A to the condition of class 3. The trained observer will notice a transition into the class 2 B category before the severe failure of class 3 appears. It is at this time that proper cardiac treatment followed by proper obstetric management can do so much to save patients from going into severe failure. A patient in class 2 B can be successfully treated and is in no danger as long as she is cooperative and under competent cardiac supervision.

Reliance on this estimation of cardiac functional capacity seems to afford a better understanding of the

conditions preceding the appearance of severe cardiac failure during pregnancy and labor. Reports have been made of its application by physicians in this country and abroad with definite improvement in the ability to predict the clinical course.

It is possible⁴ for a woman with loud cardiac murmurs and considerable cardiac enlargement to go through pregnancy and labor without the development of severe failure, provided the cardiac functional ability places her in class 1. It has been learned that class 2 A patients are able to go through pregnancy and labor without developing serious symptoms, though they may occasionally show unusual dyspnea and tachycardia during labor. Class 2 B patients are in real danger from the strain of labor, but they may with careful supervision go through a successful pregnancy. If the labor is short, whether naturally so or aided in the second stage by a low forceps operation, most of these women may also pass through labor without cardiac overstrain. In the more severe cases, however, it is safer to deliver by cesarean section, for this operation seems to put less strain on the heart.

Results in Cases Treated from the Point of View of Cardiac Functional Capacity

	Class 1		Class 2 A		Class 2 B		Class 3	
	Total Died		Total Died		Total Died		Total Died	
Gilchrist, A. R.: Heart Disease in Pregnancy, Tr. Edinburgh Obst. Soc., 1930-1931, p. 121	13	0	26	0	45	2	11	0
Mellroy, L., and Rendel, O.: J. Obst. & Gynaec., Brit. Emp. 38:7 (spring) 1931 ..	58	0	95	0	63	1	10	3
MacLennan, H. R.: J. Obst. & Gynaec., Brit. Emp. 40: 251 (April) 1933.....	11	0	39	0	50	4	13	6
Pardee, H. E. B.: Am. J. Obst. & Gynec. 17:253 (Feb.) 1929	75	0	20	1	11	1	6	3
Total.....	157	0	180	1	169	8	40	16

The accompanying table illustrates the results in the 546 cases from the literature that have been followed from the point of view of cardiac functional capacity. The mortality in class 3 patients is 40 per cent; that in class 2 B patients is 4.7 per cent; in class 2 A patients it is 0.56 per cent and in class 1 it is zero. The mortality of the whole series of cases is 6.6 per cent.

From what has been said it is evident that therapeutic abortion will be indicated in cardiac patients only to avoid the likelihood of the severe grade of cardiac insufficiency seen in the patients of class 3, during the latter months of pregnancy or during labor. This danger is not present in the patients of class 1 or in those of class 2 A except as will be noted later. The danger is definite in those of class 2 B and is serious in those of class 3.

Most of the class 3 patients included in the table represent women who appeared at the hospital for the first time with severe cardiac failure, either in labor or in the later months of pregnancy. This dangerous situation will always arise in hospital practice but should not do so if patients can be properly followed from the beginning of pregnancy. With further experience in the management of patients of class 2 B it is likely

that the mortality will be greatly reduced. It must be emphasized that these reports represent the first efforts of the various observers to use this method. Further experience should certainly lower the mortality.

Patients who are found to be in class 2 A in the early months of pregnancy may be divided into two groups: those who were in this class before pregnancy and those who have been reduced to it from class 1 by the illness of the early months.

The latter patients improve as the malaise of the early months passes off, and they become class 1 patients again as they were before pregnancy. Patients who were in class 2 A before pregnancy should be under the close supervision of a competent cardiologist, even though experience shows that they are not likely to develop severe cardiac insufficiency. Occasionally during the seventh or eighth months of pregnancy, a bronchitis or some improper physical exertion such as a bout of house cleaning, a walk in a cold wind, or even a severe argument with a child or husband may temporarily reduce the patient to class 2 B, necessitating rest in bed and digitalis for a time to recover cardiac reserve. This is such a rare occurrence with patients in class 2 A that I feel that therapeutic abortion need not be considered for them unless one is certain that they will not cooperate properly as regards restriction of activity.

Patients presenting themselves before the fourth month in the condition described as class 2 B or class 3 are the ones for whom therapeutic abortion should be considered. It should never be performed, however, until after a proper course of treatment by rest and digitalis. Such patients are always improved by this, to some extent at least, and after improvement has progressed as far as it will and there has been no further improvement for two weeks, it is time to decide on the further management.

If the patient is now in class 2 A it will be possible for her to go through a supervised pregnancy, as has been outlined previously, provided she can avoid inadvisable efforts and will consent to delivery by cesarean section, should the cardiac reserve prove unequal to the additional demands at the seventh or eighth month and the patient again fall into class 2 B at that time. This course demands close cooperation between the patient, the physician and the obstetrician but has been successful on many occasions. I believe, however, that the safety of the mother in such a category demands a physician who is more familiar with the treatment of these cases than is the usual internist or practitioner. It demands one who has actually followed many cardiac patients through pregnancy.

If the patient after treatment in the early months is still rated as in class 2 B, the pregnancy should probably be interrupted, for the extra demands on the heart which will arise in the seventh or eighth month are likely to lead to class 3 cardiac insufficiency at that time, which is a more serious situation, both for treatment and for prognosis. If these patients cannot have the most expert advice, or if they are uncooperative and are not inclined to follow instructions as to the degree of activity allowed them, it is safer to terminate the pregnancy as soon as one has decided that two weeks of treatment has been followed by no further improvement of the cardiac function.

At this time the patient's condition will be better than it was before the treatment, and the risk of the operation will be decreased accordingly. If they can avail them-

4. Pardee, H. E. B.: Experiences in the Management of Pregnancy Complicated by Heart Disease, Am. J. Obst. & Gynec. 17:255 (Feb.) 1929.

selves of expert advice and will be able to follow it, avoiding the dangers of housework, shopping, arguments and other excesses, patients in class 2 B may often be carried safely through pregnancy to a delivery by cesarean operation. The one danger most difficult to guard against is that of a respiratory infection. A bronchitis puts a serious strain on a weakened heart and may be the cause of serious cardiac insufficiency.

Patients who have been in class 2 B throughout pregnancy and in whom more serious cardiac insufficiency develops in the sixth or seventh month usually respond fairly well to treatment by rest in bed and digitalis. No interference with pregnancy should be attempted until improvement has ceased for two weeks, and then their condition and their ability to lead a sheltered life until the child is viable must decide whether abortion is to be done immediately or whether the patient is to be carried through the next month or so to a cesarean delivery.

There are three complications of the cardiac picture that somewhat affect the prognosis and therefore modify the plan of management, which would be based solely on cardiac functional capacity as outlined. The most common of these is auricular fibrillation, and yet Carr and Hamilton⁵ found it only fourteen times in 500 cardiac patients at the Boston Lying-In Hospital.

A patient with auricular fibrillation is subject to a danger that does not affect other patients with the same degree of cardiac functional capacity. Thrombi seem especially liable to form in their hearts and the occurrence of emboli either in the lung or in the periphery is not at all infrequent in patients whose ventricular rate is not well controlled by digitalis, especially in patients who have the more marked grades of cardiac insufficiency that would place them in class 2 B or class 3. Because of these conditions a patient with auricular fibrillation in class 2 B runs a greater risk in going through labor and should never be allowed to do this. She should be allowed to proceed with pregnancy only if her heart rate can be kept to approximately normal by digitalis and if the exercise test does not cause great and prolonged tachycardia. Furthermore, one must be certain that she will take the digitalis regularly and will cooperate in observing the restrictions on her physical activity. If such a patient slips away from treatment for two or three months she is certain to reappear with serious cardiac insufficiency.

Patients in class 2 A with auricular fibrillation should be allowed to proceed with pregnancy only after the ability to control the heart rate with digitalis has been demonstrated and the patient's complete cooperation obtained. Though lapses in treatment may not be followed by such severe cardiac insufficiency as with class 2 B patients, yet there is some danger of emboli during pregnancy and after labor. If the rate reaction after exercise is excessive under proper digitalis dosage, then these patients also had better be saved the danger of labor by the use of cesarean delivery.

Congenital malformation of the heart is another rare condition in connection with pregnancy, occurring only twelve times in the 500 cases reported by Carr and Hamilton.⁵ It, too, seems to have a special significance in pregnancy, for the mortality in their twelve cases was 16 per cent (two cases) compared to a mortality

of 5.8 per cent in 472 cases with rheumatic heart disease. Unfortunately, they have not made a functional grouping of their cases, so that one does not know in what categories these twelve cases would have been found. They state, however, that in patients who have a congenital deformity allowing a right to left shunting of the blood, the typical symptoms of cardiac insufficiency may not develop but, without showing any disability before delivery, the patients may suddenly develop rapidity of the pulse and respiratory rates without venous congestion and die slowly or quickly of asphyxia or exhaustion. This occurred only after delivery by cesarean section or podalic version and not after delivery by more normal means. My personal experience has not included such observations, and further experience with the functional grouping is needed before it can be said in what type of patient with a congenital cardiac defect there is an indication for a therapeutic abortion.

The third special condition affecting the prognosis is the presence of bacterial endocarditis. This, too, is rare, being found in less than 1 per cent of cases. The maternal mortality is high, but, after all, the mortality of patients with this disease is so great that little danger can be added by pregnancy. Surprisingly enough, the fetal mortality in these cases is low, so that it would not seem that the presence of this condition need be considered an indication for abortion.

When a patient has a history of a previous abortion because of heart disease, the question must arise as to how much influence this event should have on the management of another pregnancy. One should ascertain as closely as possible the condition of the woman at the time the abortion was performed and decide whether cardiac insufficiency of class 2 B or class 3 grade was present. If so, there is danger of a recurrence; if not, the fact that an abortion was performed may be disregarded as a point in cardiac prognosis, for it has been performed so often in the past because of the presence of loud murmurs or of a large heart with quite adequate functional capacity.

If abortion is decided on, the type of operation to be selected will depend on the stage of the pregnancy, on whether it seems advisable to sterilize the patient at the same time and on whether her condition makes it safe to prolong the operation by the time necessary to do this.

In the first three months vaginal procedures do not seem to disturb the circulation greatly, but when pregnancy is to be interrupted in the fifth, sixth or seventh month, the heart will be less disturbed by an abdominal operation. Local anesthesia is often very satisfactory in patients who are temperamentally suitable, avoiding as it does the rapid breathing and consequent exertion associated with a general anesthetic. If a general anesthetic is used, special attention should be paid to the avoidance of cyanosis.

If the patient has developed such severe cardiac insufficiency as to indicate therapeutic abortion, even if the decision has not been made until the seventh month, it is unlikely that she will ever again be able to go through with a pregnancy. In these patients sterilization as well as abortion seems indicated unless the economic factor has been important in preventing the woman from having adequate rest during pregnancy. If with improved finances and better opportunity to rest she might have a child, sterilization had better be avoided. The pro-

5. Carr, F. B., and Hamilton, B. E.: Five Hundred Women with Serious Heart Diseases Followed Through Pregnancy and Delivery, *Am. J. Obst. & Gynec.* 26: 824 (Dec.) 1933.

longation of the operation due to the sterilization procedure should be safe enough in a patient of class 2 B but not in a patient of class 3.

SUMMARY

1. The occurrence of class 2 B cardiac insufficiency not improved by treatment in a patient during the fifth, sixth and seventh months of pregnancy is an indication for therapeutic abortion. An exception may be made (a) if the patient is anxious to have a child, (b) if she is able to have expert cardiac guidance during the remainder of the pregnancy, (c) if she is willing and financially able to cooperate with the physician as to restriction of activity and (d) if she is willing to be delivered by cesarean section before labor, should this become advisable.

2. The occurrence of 2 B cardiac insufficiency not improved by treatment in a patient during the first three months of pregnancy is an even more imperative indication for abortion, for the patient must face the possibility of more marked cardiac insufficiency at the sixth or seventh month and, also, the possibility of miscarriage. Exceptions to this rule are very rare.

3. Patients first appearing with class 3 cardiac insufficiency must be treated medically before the subsequent procedure is decided on. In no case should operative procedures be undertaken until after a proper course of medical treatment.

4. Patients having auricular fibrillation and certain ones with congenital cardiac malformation must be considered as running a greater risk than others in the same functional class.

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ABSTRACT OF DISCUSSION

DR. BURTON E. HAMILTON, Boston: I disagree with Dr. Pardee's emphasis on the importance of an effort test. There is no effort test that is a trustworthy estimate of the heart's functional ability. Many hundred cases with heart disease followed through pregnancy at the Boston Lying-in Hospital have taught the following simple facts: Unless a heart presents definite enlargement, a diastolic murmur, a loud systolic murmur usually with a thrill, or a dangerous disorder of the heart beat, it will not fail in pregnancy. Many neurasthenic patients, without these signs, give poor response to effort tests but never develop heart failure during pregnancy. Any case showing one of the foregoing signs of serious heart damage may show heart failure during pregnancy. Failure may develop suddenly. Strict regimens for these seriously damaged heart cases can make an extraordinary difference in the death rate. A natural death rate of at least 10 per cent can be reduced to 1 or 2 per cent. Therapeutic abortion is advised (1) when a patient has already failed and (2) when there is a complication in itself dangerous. These are simple, reasonable indications. No one has disputed them. With one of these indications, therapeutic interruption of pregnancy before the child was viable was done about fifty times in 550 cases in which there were severely damaged hearts. Nine of these showed complications, including auricular fibrillation, hypertension, nephritis and pulmonary tuberculosis. Heart failure had already been present in the others. The majority of these cases showed indications for interruption before pregnancy started. The majority of the women had had no adequate advice, some failed to follow advice, and a small number tried to follow advice but became pregnant despite it. A completely enlightened community would require few therapeutic abortions for cardiac indications. Are therapeutic abortions for cardiac reasons entirely avoidable? Very few patients who are under adequate control fail for the first time in the early months of pregnancy. When such a patient fails, this almost

never occurs before the sixth month. Then proper treatment of the failure usually does not necessitate sacrifice of the child. Rarely unforeseeable complications, such as severe pyelitis, may develop early in pregnancy in a cardiac case and require therapeutic abortion.

PHASES OF CARDIOVASCULAR AND RENAL DISEASE INDICATING ABORTION

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In meeting the just demand that the expectant mother be safeguarded from needless jeopardy to life and future health, the obstetrician and the internist have a common task. While the offices of the obstetrician are indispensable, those of the medical man, though less exigent, may play no small part. In their mutual attempts to lessen maternal mortality and morbidity during gestation, labor or the postpartum follow-up period, no procedure is so often debated as abortion—the termination of pregnancy before viability of the fetus has been attained. Among the conditions in which this question arises, none are more frequent and few require more discriminative judgment than those involving cardiovascular-renal conditions. Although modified by pregnancy, these are primarily medical and not surgical disorders. As studies advance the internist often recognizes in eclampsia, in the nephroses and nephritides of pregnancy and in the milder types of so-called toxemias old friends in disguise. In extensive follow-up work from year to year the course and end of the larger part of this group unfolds itself in the familiar forms of hypertensive cardiovascular disease or of true nephritis.

An understanding discussion of abortion in relation to disorders of this kind calls for classification, a separation into various clinical and pathologic types and a brief consideration of each, especially in their relation to pregnancy. Here one at once enters a realm in which opinion and debate prevail. For clinical purposes one can recognize two leading types of the diseases in question: (1) those primarily involving the secretory mechanism of the kidney (these may be subdivided into (a) the degenerative lesions or nephroses, and (b) the inflammatory lesions or nephritides) and (2) those primarily vascular in origin. The more detailed grouping under these headings is illustrated in table 1.

NEPHROSES AND ABORTION

Among the salient features of nephrosis are edema, abundant albuminuria, usually without blood and with relatively few casts, diminished urinary output, tendency to anemia and an inversion of the ordinary albumin-globulin ratio of the blood serum. Further, hypertension does not occur in the ordinary nephrosis. In the lipid form these symptoms are intensified, a general anasarca develops, there is a strikingly lowered basal metabolic rate little influenced by thyroid medication, and great susceptibility to infections especially pneumococci. The microscopic examination of the kidney shows all grades of cloudy swelling or parenchymatous degeneration, largely tubular in localization and without

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

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leukocytic infiltration or other changes characteristic of an acute inflammatory process and without notable damage to the vascular mechanism. In the lipid forms extensive infiltration of the renal parenchyma with fatty material is characteristic.

The etiology seems to be a toxin or a disturbance in circulation. Among the poisons which may provoke such renal degeneration are included those of the pyogenic cocci, the tubercle bacillus, and *Spirochaeta pallida* and such metallic agents as lead, arsenic and mercury. Among the vascular disturbances obstruction to the venous outflow from the kidney, as in chronic stasis, and alterations in volume and quality of arterial blood supplying the kidney may be etiologic factors. It is possible that a nephrosis never exists in a pure state but is always complicated either by a glomerulonephritis or by a disturbance in the renal circulation. Examples of the latter are the vascular obstruction which seems to be so important an element in certain toxemias of pregnancy, also the narrowing of the arterial stream bed as observed in advanced renal arteriosclerosis of any type.

So far as I can discover no example of pregnancy in a patient with true lipid nephrosis established before

TABLE 1.—*Classification of Cardiovascular-Renal Diseases*

A. The nephroses
1. Lipoid
2. Of pregnancy
3. Amyloid (acute or chronic)
4. Chemical
B. Glomerulonephritis (acute or chronic, with or without edema)
1. Focal
2. Embolic
3. Diffuse
C. Arteriosclerosis
1. Secondary to essential hypertension, general arteriolar and arterial sclerosis; probably includes "malignant hypertension"
2. Secondary to chronic glomerulonephritis
3. Primary arteriosclerosis, may include:
(a) An acute necrotizing form as "malignant hypertension"
(b) Chronic, decrescent or senile arteriosclerosis

conception is on record. In view of the fact that an amyloid nephrosis is the result of severe and long continued infection, such as tuberculosis, neglected syphilis and chronic sepsis, this complication of pregnancy must be rare indeed.

A nephrosis is a serious threat to the life of the fetus and to the security of the mother. If albuminuria is persistent and increasing and if any degree of edema is present, one is amply justified in emptying the uterus. If one waits until there is great diminution in the output of urine and a general anasarca the fetus is doomed and too often the mother as well. A history of nephrosis of the simple type need not bar further pregnancies nor need subsequent pregnancies be interrupted because of the history of the previous nephrosis—provided the signs of the disturbance vanished shortly after delivery and the patient showed no evidence of disease of the kidney in the interim between pregnancies.

Chemical nephroses occurring during pregnancy, the most frequent example of which is the kidney in corrosive mercuric chloride poisoning, may demand special management. Important factors are the degree and duration of the nephrosis and the stage of gestation. In a case of corrosive mercuric chloride poisoning of mild degree early in pregnancy, the regenerative capacity of the kidney might be sufficient to effect repair so that

the fetus would not be affected unfavorably. Occurring late in pregnancy a metallic nephrosis would almost surely lead to fetal death and greatly increase maternal hazards. In the acute phases of a chemical nephrosis a hands-off attitude is essential. Any addition to maternal burdens, such as induced abortion, is generally injudicious. With survival of the acute stage, persisting evidence of serious renal damage in the form of albuminuria, edema or hypertension suggests the need of ending a pregnancy almost sure to result in fetal death and in increased risk to maternal life and future health.

The so-called kidney of pregnancy, while it is a degenerative process and therefore falls into the group of nephroses, can hardly be dealt with on such a simple basis. While some milder forms may be pure nephroses, it is probable that most, if not all, have a vascular component which may be fundamental. The rôle of vascular spasm in the nephric disorders of pregnancy is one which is subscribed to by many component authorities. The association of hypertension with a majority of the examples of the degenerative kidney of pregnancy and the results of follow-up studies in revealing persistent vascular disease in large numbers of these patients make it clear that the general run of such cases cannot be judged primarily or exclusively as renal disorders but must be dealt with in their relation to the rest of the body, especially to the circulatory system. The relation of the so-called kidney of pregnancy to abortion will be discussed under a later heading.

NEPHRITIDES AND ABORTION

Scientific nomenclature should be strict. The term "nephritis" has been used loosely and too often in connection with conditions that have no suggestion of renal inflammation. It should be confined to the inflammatory processes in the kidney and their sequelae. At present it is the fashion to call these glomerulonephritis. The condition may be focal, embolic or diffuse; it may be acute or chronic and with or without edema. Its cause is infection, usually with the streptococcus, the initial focus most often being in the upper air passages, the tonsils, paranasal sinuses, pharynx or bronchi. At the onset, fever is usual. Albuminuria, usually of high degree, is constant. Hematuria is obligatory in the early stages. Hypertension is almost always present and occurs early, usually coincident with or shortly after the appearance of the albuminuria. An anemia of the secondary type is characteristic. There is a strong tendency to retention of nitrogen, to albuminuric retinitis, and eventually to uremia. In cases with enduring hypertension, sclerotic changes take place slowly or rapidly in the vascular tree. Clinically the end stage of nephritis can be differentiated with difficulty or not at all from the advanced stages of primary vascular disease with hypertension in which an unusual amount of nephrosclerosis has taken place. Often only careful records of the origin and course of the disease make the distinction clear. However, at the necropsy the pathologist separates these two conditions with assurance. Because of the difference in reaction to pregnancy of primary nephritis and primary vascular disease with hypertension, this separation is important.

Often nephritis is latent or so mild that its manifestations are intermittent and therefore may be undiscovered until the increased burden of pregnancy brings the process into the open. In this event albuminuria becomes marked and persists. Red blood cells

and casts appear in the urine. Lessened fluid output and edema follow quickly. Hypertension, while not necessarily present, is usual. Albuminuric retinitis, anemia, nitrogen retention, drowsiness and uremic convulsions may follow. These symptoms may occur in almost any combination or in any grade of severity. No medical complication of pregnancy offers a greater threat to the fetus. Placental infarction and separation, fetal death and spontaneous delivery, often of a macerated fetus, may be expected in about 60 per cent. To this ill prospect of a successful outcome of pregnancy is added the fact of a decline in the efficiency of the maternal kidney as a result of prolonging the pregnancy. Together these present a strong argument for abortion in cases of proved nephritis.

One may summarize the indications for abortion in nephritis as follows: If the disease is manifest at the time of conception, abortion should be done promptly. If the disorder has been latent and arises early in pregnancy, and if it is marked by a considerable albuminuria which tends to increase despite treatment, it is unlikely that pregnancy can succeed. In the interest of maternal welfare it should be terminated. If to albuminuria is added edema or hypertension, this action becomes obligatory. If the symptoms of nephritis do not appear until the second half of gestation, a somewhat different attitude is to be taken. One is confronted with the question whether or not the pregnancy can be carried to the period of viability. In such a situation much judgment and often not a little courage are required. If the nephritic symptoms are mild and do not progress rapidly, delay may be safe and the child may survive despite albuminuria, edema and hypertension. However, if the disturbance advances and if to these cardinal features are added serious visual disturbances, threatening blindness, advancing nitrogen retention, deviations from normal mentality, twitching, greatly exaggerated reflexes or convulsions, the uterus should be emptied promptly without regard for the fetus.

Of great practical importance is the procedure in subsequent pregnancies. Once a woman has exhibited a true nephritis in pregnancy, she is almost certain to show a similar process when reproduction is attempted again. The disturbance in a subsequent pregnancy is likely to appear earlier and is generally more severe and therefore prone to end even more disastrously for child and mother. Once the fact of nephritis has been established the safe reproductivity of the patient is at an end. Early abortion adds little to fetal mortality in cases of this kind and does much to promote maternal health and security.

CARDIOVASCULAR DISEASE AND ABORTION

Judging from the report of studies in the toxemias of pregnancy from many obstetric clinics, the distinction between primary cardiovascular disease or essential hypertension and nephritis is confined largely to the internist and as yet has been recognized by few obstetricians. The work of Mussey and his associates¹ in the Mayo Clinic is an exception to this rule. Since the work of Allbutt, Janeway and others, the differentiation of these two important conditions has become increasingly clear and in medical wards the habit of placing the label "nephritis" on every case showing hypertension no longer obtains. In considering cardiovascular-renal

disorders, exactness in the use of terms is called for in order to bring out the differences in etiology, in course, and in prognosis and treatment of primary nephritis and primary vascular disease, differences which should be understood in their relation to pregnancy because of their practical value as well as their theoretical interest. My conception of the distinguishing features of these two diseases is given in table 2. The differences set forth in table 2 bear on the problem of abortion.

The clinical features of nephritis in association with pregnancy have been described; in the end stages the clinical features of primary vascular disease of the kidney during gestation present a different picture. In essential hypertension the internist recognizes the typi-

TABLE 2.—Distinguishing Features of Nephritis and Vascular Disease

	Nephritis	Vascular Disease
Etiology	Infection, usually streptococci	Inherited vasomotor instability
Features of onset	Sudden fever, albuminuria, hematuria and edema, with or without hypertension	Insidious, vasomotor instability, exaggerated rise of blood pressure and pulse rate under stress
Albuminuria	Constant and early	Never at onset; develops later
Hematuria	Constant and early	Never, excepting late after nephrosclerosis develops
Casts	All kinds	Rare; few hyaline only
Amount of urine	Scanty	Normal or polyuria
Blood pressure	Not always high; if present constantly elevated	Intermittently high; very variable excepting in terminal stage when fixed high
Retinal picture	Albuminuric retinitis; exudate, edema, hemorrhages, sclerotic changes late	Vascular retinitis; spastic arteries; sclerotic changes secondary to hypertension; hemorrhages late; cotton wool patches
Blood	Anemia; nitrogen retention early	No anemia; often plethora; no nitrogen retention excepting terminal
Infection	Increased susceptibility	Resistant
Kidney involvement	Primary; inflammatory and degenerative	Secondary and late as result of vascular spasm or sclerosis; degenerative never inflammatory
Arterio-sclerosis	Secondary; often of rapid development	Secondary; often of slow development but may be rapid
Course	Relatively short	Relatively long
Cause of death	Uremia or infection	Apoplexy; cardiac failure; renal failure, 5% to 10%
Pathologic changes	Tubular and glomerular inflammation, with cellular increase, epithelial crescents and glomerular adhesions; vascular changes slight or absent, largely confined to kidney	changes in vessels and glomeruli; thickening of capillary walls; cellular increase slight or absent

cal background of inheritance and personality, the exaggerated sensitiveness and responsiveness to life as revealed in unusual vascular or hypertensive reaction to physical or mental stimuli. In the course of years the occasional hypertension becomes continuous, though still variable beyond the normal. The arterioles are spastic, later becoming sclerotic. This process selects mainly the arterioles of the retina, spleen, pancreas, heart, brain, liver, lung, voluntary muscles, mesentery and kidney. The regional involvement varies greatly in each case—a fact largely determining the cause of death. There is great resistance to infection and absence of anemia. Death is typically by cardiac failure or apoplexy. The course extends over years, varying from two years in the malignant cases to twenty-five years in the milder types. The latter may merge with the senile or decrescent form of arteriosclerosis, a variety in which the larger arteries are affected chiefly.

1. Mussey, R. D., and Keith, N. M.: Significance of Nephritis of Pregnancy. J. A. M. A. 91: 2044 (Dec. 29) 1928.

The relation of this process to the kidney is very important. In the early phases of the average case in which vascular spasm seems paramount the kidney is little affected. As renal arteriosclerosis takes place along with sclerosis in other parts of the vascular tree there is still little outward sign of renal damage. Only when arterial narrowing so reduces the blood supply of the kidney that the factor of safety is trespassed on does albuminuria occur from a secondary renal degeneration or nephrosis. Excepting in the hyperacute conditions such as eclampsia, this is a late feature and usually indicates a speedy breakdown somewhere in the vascular system. In only 5 per cent or at most 10 per cent of such cases is this in the kidney. Usually apoplexy or cardiac failure end the story. Clinical evidence of renal damage may be lacking altogether.

The result of a prolonged study of the medical disorders of gestation and an attempt to correlate many of these with general medical conditions is the opinion that the thread of this primary vascular disease runs through most if not all of the toxemias of pregnancy that are not strictly in the nephritic group. In eclampsia and preeclampsia arterial hypertension is the presenting symptom. From study of the retina and the capillaries much evidence can be had favoring arterial spasm as the essential basis of the renal and hepatic degeneration that may attend these disorders. Particularly impressive is the record of the follow up of patients who have suffered eclampsia, preeclampsia, or other forms of late toxemia not primarily nephritic in origin and which have been called such terms as recurring toxemia, nephritis, and substandard kidney. As so frequently happens, the obvious sequelae of their toxic pregnancy presented by patients of this kind are usually much more suggestive of primary cardiovascular disease than of nephritis. Corwin and I² pointed this out in the clinical study of 275 cases of toxemia of pregnancy from the Sloane Hospital for Women.

Recently Tillman and I³ reported 594 cases with a prolonged follow-up. Of the ninety deaths in this series, seventy-two, or 80 per cent, were from causes within the circulatory system or the kidney. Eleven necropsies were done. In these the pathologist confirmed the clinical opinion in reporting two types of cardiovascular-renal disease. The first group of four cases showed the changes characteristic of chronic glomerulonephritis; the second, including seven cases, showed those of hypertensive cardiovascular disease.

As studies have progressed, an increasing amount of data points to certain tentative conclusions. The eclampsias, preeclampsias and other forms of late toxemia marked by hypertension, with or without the late development of albuminuria and edema, mild or severe, with or without recurrence in subsequent pregnancies, in their clinical behavior and in their necropsy observations belong among or are allied to the primary cardiovascular disorders. To place the label "nephritis" or "substandard kidney" on these is to be lax in the use of terms or unaware of an important differentiation now quite generally made in medical wards and by that court of last resort, the pathologist.

The question of abortion in relation to these vascular types of toxemia will now be considered. If the disorder antedates conception one is confronted with the probability that in the second trimester the blood pressure will become increasingly elevated. This may be the sole disturbance for several weeks or until the systolic pressure reaches from 180 to 200, when suddenly an albuminuria of variable amount, a gain in weight, edema and a decline in renal output may occur with or without rapid progression to fetal death or to maternal convulsions with or without evidence of damage to the liver. In general, few women with a systolic pressure consistently above 140 or a diastolic pressure of 100 or over at the beginning of pregnancy escape some of these disturbing symptoms. The higher the blood pressure the greater is the risk. The general policy in cases of this kind when eagerness for offspring consents to place immediate maternal safety and subsequent maternal health in some jeopardy is to carry on until the systolic pressure rises above from 170 to 180 or the diastolic pressure above from 110 to 115, or until persistent albuminuria occurs. Early in pregnancy this situation demands prompt emptying of the uterus. If previous pregnancies have shown serious hypertension, one should view seriously cases with a systolic blood pressure constantly above from 150 to 160 or a diastolic pressure above from 100 to 110 in the first trimester.

In women showing rise of blood pressure after conception the attitude varies with the period of gestation in which the rise takes place and with its rate of progress. It is to be kept in mind that the majority of the toxemias fall into this group in which hypertension is the initial and at times the only disturbance; appearing well after conception, with slow progress and without other features, until the blood pressure reaches high figures, usually about from 170 to 180 systolic. At this point development is quite rapid. The picture of a nephrosis may unfold itself in albuminuria, in diminished urinary output and edema, or in evidence of hepatic degeneration by epigastric pain and tenderness, perhaps with jaundice, or the picture of eclampsia may be presented. It is true that nephrosis in pregnancy or examples of eclampsia occur without the initial hypertension. However, these are among the rarities and need not disturb the procedure to be outlined in the average case.

The events described may take place in rapid sequence. In this case there should be little delay in emptying the uterus, particularly if there is unsatisfactory response to treatment. In the acute forms one may be taken unawares and advanced symptoms present themselves without previous opportunity to come to a decision. In acute eclampsia or in cases with a great decline in urinary output and marked edema, it is often well to allow nature to take its course. This is usually death of the fetus and its expulsion promptly or after a delay. The ending of intra-uterine life marks the end of the progress of toxic symptoms. If this occurs spontaneously, the mother is spared the added strain and risk of intervention.

In the larger group the progress is slow and decision can be made in a more leisurely fashion. If hypertension begins in the first trimester and is progressive, the pregnancy is usually doomed to failure in proportion to the early appearance and the rate of progression of the circulatory disorder. Blood pressures persistently

2. Corwin, Jean, and Herrick, W. W.: Toxemias of Pregnancy in Relation to Chronic Cardiovascular and Renal Disease, *Am. J. Obst. & Gynec.* 14: 783 (Dec.) 1927.

3. Herrick, W. W., and Tillman, A. J. B.: Clinical and Necropsy Findings in Cases of Toxemia of Pregnancy with Prolonged Follow-Up: Their Relation to Cardiovascular and Renal Disease, read before the Association of American Physicians, Atlantic City, N. J., May 2, 1934.

above 150 systolic and 105 diastolic, especially if progressive, are usually indications for abortion in the first trimester. If albuminuria appears and persists, or if epigastric pain and tenderness, icterus, persistent vomiting or such symptoms as excessive activity of the reflexes or deviation from normal mentality are seen and do not yield to treatment, the argument for intervention is unanswerable.

In the second and third trimesters, the point of view is modified by the possibility of carrying the pregnancy to the point of viability of the fetus. In this stage of gestation, therefore, moderate degrees of hypertension, while an indication for caution, may not in themselves demand intervention. However, the appearance of marked albuminuria, retinal edema and exudate, separation of the retina or other signs of serious adverse progress permit little delay in ending the pregnancy. This action is fully justified on several grounds. In pregnancy marked by disturbances that seem to be primarily vascular in nature, the more serious types have little promise of fetal survival because of infarction, apoplexy or premature separation of the placenta. In the more acute types there is a threat to the maternal life. In the subacute types the mother is in little immediate danger but the risk to her future health is great. In eclampsia, preeclampsia and the less acute forms of toxemia also marked by vascular disturbances, the follow-up studies are illuminating. At least 50 per cent eventually develop cardiovascular disease with hypertension. Continuing pregnancy in the presence of such disorders or undertaking pregnancy when these have been manifest in previous pregnancies is to court chronic invalidism.

As in other medical problems, one must take account of the exceptions. Occasionally an example of chronic cardiovascular disease with hypertension and with well marked arteriosclerosis will go through one or more pregnancies without mishap. In my experience most of these patients have been Negroes. Again, a condition of hypertension antedating or appearing soon after conception or late in the gestatory period will not progress and may not appear in a subsequent pregnancy. In considering an individual situation these exceptions must be regarded, rare though they be. Follow-up studies seem to reveal the fact that such cases do not merit separate classification since they are not exempt from the ultimate consequences of their cardiovascular instability and should be regarded as examples of potential circulatory disease.

CONCLUSIONS

From a medical point of view the toxemias of pregnancy seem to fall into two groups. The first and smaller group includes the nephritides. These are examples of primary nephritis and to these alone is the term "nephritis" strictly applicable. The feature of this group is prolonged and marked albuminuria with a tendency to anemia, edema and uremia. Hypertension is not obligatory. Cases of this kind do badly in pregnancy and usually require abortion when nephritic symptoms are manifest and do not yield to treatment. Repeated pregnancies are practically always unfortunate in outcome, leading to fetal death and acceleration of the downward course of the disease in the mother.

The larger group of toxemias seems to include the eclampsias, preeclampsias and the large number of milder disturbances variously classified under such terms

as "recurring toxemia," "nephritis" and "substandard kidney." The dominant clinical feature of this group is hypertension. Nitrogen retention and uremia do not occur except rarely as the end result of renal arteriosclerosis. Albuminuria is usually absent. When it is present it is abrupt and late in appearance, variable in amount and, excepting in the hyperacute cases, is preceded by a considerable period of hypertension. During the acute phases of the toxemia, in the follow-up and at the necropsy in patients dying some years after the toxic pregnancy, one finds the stigmas of hypertensive cardiovascular disease rather than those of nephritis.

In this group the problem of abortion is usually less urgent than in the nephritic group. In the acute eclamptic cases abortion is usually unwise, as it adds greatly to the maternal burden at a most critical time. Recovery with continuation of the pregnancy or the more frequent event of fetal death and spontaneous delivery with relief of toxic symptoms may be looked for in all excepting the 15 per cent of mothers who die in the acute attack. Excepting in particular cases with special features, conservative medical treatment is safest. In subsequent pregnancies the evidence of cardiovascular disease with hypertension must be sought. The incidence of this disorder in about 50 per cent of those having had eclampsia, preeclampsia and the milder types of hypertension in former pregnancies cannot be ignored.

In the less acute types the decision as to abortion can be made in more leisurely fashion. If hypertension appears early in pregnancy and increases despite treatment, abortion is indicated. When to hypertension are added albuminuria and edema not yielding to treatment, the same action is advisable. If viability of the fetus can be attained by delay, this may be risked in selected cases under careful supervision. Always one must have in mind the adverse effect on maternal health of the prolongation of pregnancy under these circumstances. There is no better recipe than this for the production of chronic vascular disease. Repeated pregnancies are to be discouraged excepting in the mild cases appearing late in pregnancy and usually with little or no albuminuria or edema. Some of these do not recur when reproduction is again attempted. However, when all is said, it must be emphasized that each case is an individual problem to be solved on its own merits.

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ABSTRACT OF DISCUSSION

DR. ROBERT D. MUSSEY, Rochester, Minn.: The acute nephroses of pregnancy, unassociated with other conditions, such as arterial disease, are rare in pregnancy. I have never seen the acute severe nephrosis described by the author. I have made a diagnosis of mild lipoid nephrosis in several patients presenting late in pregnancy a marked edema, marked albuminuria without hypertension, without red cells in the urine, without retention of urea or of phenolsulphonphthalein in the blood, and without changes in the ocular fundi. These patients progressed to a satisfactory termination of pregnancy and had no further recurrence. Acute albuminurial nephritis of an infectious type as described by Dr. Herrick is unusual in pregnancy. This leaves the large group of nephroses, which, from the standpoint of obstetrics, may be divided into two general groups. These are, first, those conditions which include arterial and arteriorenal disease that existed prior to pregnancy, and, second, that large group of cases called preeclamptic toxemia. For those patients who have a preexisting arterial or arteriorenal disease before pregnancy and in whom the condition is definite and undoubted, abortion should be advised. But there are certain extremely mild conditions to which the term occult nephritis has been applied and in which the patient

under observation does not grow worse. Certain definite requirements may be laid down here to see whether the patient will have a reasonable chance of going through pregnancy: The patient should not have a systolic blood pressure over 150 and the urine should not have more than a definite trace of albumin. There should be no increase in the nonprotein nitrogen of the blood. The ocular manifestations of old trouble, if present, should be slight. The patient should have the ability to concentrate the urine to 1.025 and to dilute the urine to 1.003. Patients with undoubted chronic nephritis should be advised against becoming pregnant. On the other hand, a history of hypertension and of albuminuria, associated perhaps with a premature labor, is not definite evidence of chronic nephritis, and in some of these cases careful examination will reveal adequate arterial and renal function, so that the patient may be carried through. These cases also are rather rare. In addition to the hypertension, the albuminuria and the patient's symptoms, I have found the examination of ocular fundi of great importance in showing how to deal with severe pre-eclamptic toxemias. The examination with the ophthalmologist tells how much trouble there is. Repeated examination shows whether or not this is advancing and, lastly, the ophthalmologist is often able to tell when to terminate the pregnancy. Since last fall I have been using a test that has been described by Brown and Heins to measure the variability of the blood pressure in prenatal work. This test consists of a cuff on one hand. The other hand is placed in ice water for one minute. In thirty seconds after it is placed in there the blood pressure is taken. It is taken again at the end of one minute and the hand is removed from the ice water and two minutes later the blood pressure is taken, and every two minutes until it becomes normal. It has been found that in normal individuals the blood pressure returns to normal in ten minutes. In patients who have the so-called prehypertension type of blood pressure in arthritis the blood pressure takes a longer time to return to normal. There are indications that seem to point to its being possible to pick out these patients ahead of time.

INDICATIONS FOR THERAPEUTIC ABORTION IN TUBERCULOSIS

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In a specialty of medicine in which the success of treatment has made such rapid strides as in tuberculosis during the past quarter of a century, the prognosis, in the face of any complication, is subject to change from time to time.

Twenty-five years ago the coexistence of tuberculosis and pregnancy was considered so disastrous that a pregnant tuberculous woman was almost invariably advised to have the pregnancy terminated. The prognosis in tuberculosis today has become vastly more favorable; likewise the care given to the pregnant woman has changed immeasurably in her favor. So this question should be examined anew and the prognosis based on the facts possessed at this time. It is important to know to what extent, if any, the danger to a woman's life has been reduced by the modern methods of dealing with the complication of tuberculosis and pregnancy.

In order to determine this an endeavor should first be made to find out whether there is anything in the pregnant state that is inimical to the tuberculous patient, and, second, whether modern medical methods are able to overcome these unfavorable conditions.

While pregnancy is a normal physiologic state in which extraordinary demands are made on the patient's

metabolism but for which the organism is usually prepared to make necessary adjustment, tuberculosis is a pathologic condition which likewise makes extraordinary demands on the patient's metabolism but for which the organism is able to make necessary adjustment under some conditions but not under others; so the combination of these two conditions presents very serious problems which require special consideration from the physician.

Our problem for discussion is the extra hazard that is thrown on a woman suffering from tuberculosis by a complicating pregnancy. It probably can be best approached by discussing the special conditions that pregnancy brings about in the organism and by determining the influence that they may have on the patient from the standpoint of tuberculosis.

It is now well recognized that along with fecundation of the ovum and the stoppage of ovulation there comes a widespread readjustment of the endocrine system in which not only the ovary but the thyroid, pituitary and suprarenals bear an important part. The salt metabolism of the body too adjusts to the new physiologic demands. The physiologic balance is also disturbed in tuberculosis, the degree depending on the severity of the lesion and the particular constitutional characteristics of the patient. It stands to reason that pregnancy and tuberculosis, when present simultaneously, will require greater adjustment than either condition alone.

PHYSIOLOGIC DISTURBANCES BROUGHT ABOUT BY PREGNANCY

Many systemic reactions in pregnancy have been studied in an effort to determine the effect they might have on the tuberculous process. The result in most instances has been inconclusive. The following are some of the more obvious conditions that have been investigated:

It has been pointed out that the lipase content of the blood serum during pregnancy is lowered, reducing the lipolytic effect on the waxes of the bacillus and diminishing one of the natural antibacillary actions of the body. This effect, of course, is largely theoretical and is difficult to prove.

The increase in cholesterol which appears in the blood during pregnancy has been cited as favorable to the development of bacilli. Tuberculous guinea-pigs in which an increase in blood cholesterol was produced by feeding have been reported to show a more rapid dissemination and especially a wider spread of caseation than that of the control animals. Other experiments have failed to confirm these results.

The question of demineralization has been given much consideration. There is at times a change in the calcium-potassium ratio in the pregnant tuberculous woman in the form of a calcium deficiency, which, according to biophysical interpretation, means an increased permeability of cell membranes and an increased activity of the tissues. This has been pointed out as making the patient more susceptible to injurious influences. In order to supply calcium to the growing fetus some observers even cite instances in which they have noticed the absorption of calcium to take place from areas of healed tuberculosis in the lungs with a consequent reactivation of the lesions. Stewart and Percival state that the calcium demand in pregnancy increases from 0.006 Gm. per day in the early months to 0.6 Gm. at term.

Tuberculosis itself also may be accompanied by calcium deficiency, thus making necessary compensation more difficult.

It has long been pointed out that in pregnancy a condition of anergy is present, as shown in both weakened and reduced frequency of positive reactions to tuberculin. The number of reactions in pregnant women compared with nonpregnant women is reduced about 50 per cent.

Since the same lowered reactivity and absence of allergy is shown in the exanthems, influenza, cachexias and severe tuberculosis when the patient's immunity is waning, it is cited as definite proof of a decreased resistance to tuberculous infection. The interpretation of these conditions of decreased reactivity to tuberculin, which are brought on as a result of some complicating condition such as here mentioned, as meaning decreased resistance to tuberculosis seems to be well established. It must not be confused with the desensitization that comes on as the patient develops a greater tolerance for bacillary protein during the course of the disease, which at times may approach complete or almost complete desensitization.

The manner in which different conclusions may be drawn from the same premises is shown in the following interpretations of the effect of menstruation on the tuberculous patient. Some writer has said that the tuberculous woman kills herself through menstruation. This statement is based on the well established fact that the menstrual time is often accompanied by an increased activity in the tuberculous lesion, as evidenced by such symptoms as a rise in temperature, an increase in cough and expectoration, a spitting of blood, and not infrequently by formation of fresh metastases. The non-tuberculous symptoms too are often increased.

Recognizing this fact, some clinicians suggest the following analogy: that menstruation being the birth of an unfertilized ovum and pregnancy ending in the birth of a fecundated ovum are similar processes, but that the pregnancy, being accompanied by changes which are so much greater, is far more injurious to the woman. Others explain that pregnancy substitutes one physiologic process for another but one which for the time being relieves the woman from the menstrual ordeal and so should be helpful.

It seems well established that aside from the disturbed nutrition and temporary lowering of resistance, which is caused by the nausea and vomiting of the early months of pregnancy, the course of the tuberculous process is not infrequently favorably influenced during the later months, and again unfavorably influenced after birth of the child.

The slowing of activity in the later months and the increased postpartum activity have been observed sufficiently often to indicate that these conditions are something more than accidental. This postpartum activity has been accounted for in different ways. Some think it is caused by the involution of the postpartum uterus during which time protein substances are thrown into the blood stream, producing a nonspecific reaction in the tuberculous lesions; others think that certain substances, the formation of which is stimulated by the tuberculous infection, fix themselves to the antibodies and inhibit the protection which the antibodies would normally exert on the patient.

INFLUENCE OF THE MECHANICAL CONDITIONS OF PREGNANCY AND THE PUERPERIUM ON PULMONARY TUBERCULOSIS

The change in intrathoracic mechanics during pregnancy seems to me to be one of the most powerful forces which would be inclined to influence a pulmonary tuberculosis. It offers not only an explanation for the improvement that is witnessed in the later months but also one for the increased activity that so often follows delivery. As pregnancy progresses and the uterus enlarges, the intra-abdominal pressure increases and pushes the diaphragm upward. This acts in much the same way as paralysis of the diaphragm following an operation on the phrenic nerve. By decreasing the size of the intrathoracic space it aids the lungs, the volume of which is reduced by the tuberculous infiltration, in adjusting to this space which it must always fill; thus the pulmonary tissue is permitted to relax and conditions are brought about which favor healing. Unlike the phrenic operation, pregnancy does not paralyze the diaphragm, so it fails to remove the pull on the pulmonary tissue with its descent during inspiration and ceases to keep it elevated after parturition. In spite of this, however, the elevation alone, by lessening the intrathoracic space and maintaining the condition during the late months of pregnancy, may slow the activity in the pulmonary infection to such a degree as to bring about a temporary or even a permanent improvement.

Following delivery, on the other hand, the diaphragm, which has been elevated through the increased intra-abdominal pressure, descends, allowing the lung tissue to expand. This not only takes away the protection afforded by the previous elevation but brings about an extra hazard by causing increased respiratory and circulatory action in the dependent portions of the lungs; if the lung lesion is still active and discharging bacilli, it furnishes an opportunity for new infection to take place through the secretions which may be drawn down into the bronchi. It further brings about conditions that favor the absorption of greater quantities of toxins.

To my mind, this change in intrathoracic mechanics offers the most rational explanation of both the favorable influence that is noted during the time of the enlarging uterus and the ill effects that follow delivery, for it is recognized that decreased motion and relaxation of lung tissue are of great value in healing and that increased motion and increased tension in lung tissue not only interfere with healing but may favor both increased activity and the formation of metastases.

WHEN SHOULD ABORTION BE PERFORMED IN PULMONARY TUBERCULOSIS?

What is most desired in this discussion is information, if such is available, sufficient either to establish as a fact that the body is able to adjust to pregnancy and the development of the child, without prejudice to the woman's chance of successfully overcoming a tuberculous infection, or the contrary.

One would like to know whether the course of tuberculosis complicated by pregnancy is sufficiently constant and regular to permit the establishment of definite rules to guide future action. My experience would make me answer this question in the negative. There are so many variables concerned that each patient must be treated individually. Some of the variables that one is obliged to consider are the character of the lesion,

whether preponderantly proliferative or exudative, or whether it has taken on caseopneumonic characteristics; the extent and age of the lesion, from which an opinion may be gained as to the specific resistance of the patient; the general resistance of the patient as may be judged from her constitutional characteristics and environmental conditions, and her ability to avail herself of the best medical care for both the tuberculosis and the pregnancy.

Other variables on the part of the patient are the natural nervous and endocrine balance, whether she is a primipara or a multipara, the age of a primipara, the effects of previous pregnancies in a multipara, and the general attitude of the patient toward the pregnancy under the condition of her health.

In private practice among women who have been able to give themselves good care I always consider terminating the pregnancy if the disease is active and the condition has been discovered prior to the third month. My final decision, however, is determined very much by whether the patient will carry out the proper regimen of treatment, preferably in a sanatorium, both during the pregnancy and after delivery, and whether she will be relieved of the care of the child.

If proper care can be arranged and the patient apparently has good resistance, and provided the lesion is not extensive and is of the milder type, she may usually carry the child with safety. On the other hand, if the patient does not show evidence of good resistance and the tuberculous lesion is not of a mild type, and if the conditions for the mother during gestation and after confinement are not favorable, her safety will be best guarded by terminating the pregnancy at once.

My personal experience in terminating pregnancy has been far less favorable in those cases in which I intervened after the third month. The shock is usually considerable, and the operation is quite often followed by increased activity in the lung. It seems better to give such a patient the best possible treatment, pneumothorax being used if necessary, and to allow her to go on to term under the care of a skilful obstetrician so as to throw the least possible strain on her during and after confinement. In a primipara, cesarean section may now and then be the best way out. Under no circumstances should a mother with active tuberculosis nurse her child, and in case of open tuberculosis the safety of the child demands immediate removal from contact with the mother.

There is also a type of patient in whom, although the tuberculous lesion may be quiescent, a pregnancy should be treated with the same degree of seriousness as the active cases just described. I refer to patients who, on account of constitutional characteristics or because of bad environmental conditions, have been able to overcome a limited pulmonary tuberculosis only with great difficulty. Such patients are very apt to break down again under the strain of pregnancy, particularly if it occurs too soon following illness. I always advise the avoidance of pregnancy until two years has elapsed after the tuberculosis has healed, yet I often permit a woman of good physiologic balance who has attained an arrestment of a tuberculosis more recently than that to complete a pregnancy should it occur. It is advisable, however, for her to be under close observation during the entire time of gestation and for a few months after delivery. Multiple pregnancies in women who have successfully overcome pulmonary tuberculosis are, in my

experience, inadvisable and are not unaccompanied by danger to the mother. One pregnancy is usually stood all right—in many instances two; but I have seen an increasing number of patients break down after a third or more. Particularly is this true in instances in which the pregnancies occur close together.

With the more recent hygienic methods of treating tuberculosis, there is noted a decrease in the number of complicating metastases, a reduction in serious symptoms and a very definite increase in the number of favorable results obtained; which fact has taken away from the tuberculous patient a certain amount of protection that was formerly thrown about him. Because it is observed that the body will stand extra demands better than it did when the patient was treated less carefully, there is a tendency to underrate the serious load that tuberculosis throws on the body and to subject the patient to strains that may be harmful even though endured.

This has produced a bolder attitude toward a complicating pregnancy, yet one must always remember that while tuberculosis is curable, in many cases even when advanced, it is cured with difficulty; and the prognosis is reduced by every complication that throws an extra burden on the patient.

No matter how slight the lesion, any patient can overcome a tuberculous infection best if spared all unnecessary strain. So, while one may get by with an operation, a pregnancy or some other severe strain, the careful physician will shield his patient from all these when he possibly can.

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ABSTRACT OF DISCUSSION

DR. FRED L. ADAIR, Chicago: The marriage of a woman who has had or has a recognizable tuberculous disease raises certain problems aside from the possibility of contact tuberculosis. These are mainly questions relative to her reproductive life, as marriage per se has little influence on tuberculosis. It seems almost useless to discuss medical indications for the control of reproduction in these days when the general attitude toward childbearing is such that the woman should decide for herself what course to follow. Ethical consideration seems to be gradually passing into the background. Laws relative to the regulations and legal sanction of reproductive control are illogical and out of line with practice and present social and medical needs. The problems of contraception, sterilization, therapeutic abortion and management of pregnancy are major questions that arise in the care of the married tuberculous woman. It seems to be generally accepted that a woman with a healed tuberculosis may go through pregnancy with relative safety if she is under proper supervision and can receive adequate care. It is also agreed that conception should not take place in a woman with an active tuberculosis. One has to decide in these cases whether contraceptive methods should be used or sterilization performed. If the case is curable and the woman has not obtained her desired family, the former is the method of choice. In those patients with incurable or extensive processes or whose family is complete, sterilization is the procedure of choice. Therapeutic abortion is not indicated at any period of pregnancy except during approximately the first trimester. The method of procedure varies with the case. When subsequent pregnancy is desired, the uterus is emptied from below. If sterilization is deemed necessary, an abdominal hysterotomy with tubal resection is the procedure of choice. The indications for the performance of a therapeutic abortion are determined by (1) the activity, stage and type of disease; (2) the reaction of the patient to the pregnancy; (3) the social and economic condition of the patient and the availability of adequate care and treatment for the pregnancy. This

paper does not call for discussion of other phases of the relationship of pregnancy and tuberculosis, but it may be well to reiterate that the danger periods for the pregnant tuberculous woman are (1) the first trimester, (2) the period of labor and the immediate puerperium, and (3) the period of lactation.

LESIONS OF THE OPTIC NERVE AND RETINA IN PREGNANCY

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In the course of an apparently normal pregnancy, various ocular conditions may be encountered in which the influence of pregnancy must be taken into consideration. Hemorrhage into the vitreous, embolism or thrombosis of one of the branches of the central artery of the retina, acute chorioretinitis, retinal detachment, acute keratitis and iritis, paralysis of extra-ocular muscles and of accommodation, retrobulbar neuritis and homonymous hemianopia have been reported. In each instance the bearing of pregnancy on the severity of the disease or on its response to treatment must be evaluated. In the majority of cases, however, pregnancy is not directly connected with the causation of these lesions, and treatment can be carried out along the same lines and with as good results as if the patient were not pregnant.

An interesting condition on which pregnancy does have a direct bearing but which has no very serious significance is hemeralopia, or night blindness, which may develop among poorly nourished pregnant women. This night blindness disappears promptly after delivery or when the proper amount of vitamin A is added to the diet.

I saw recently an interesting case of a pregnant woman with retinitis pigmentosa in which the field defects definitely progressed during the latter months of pregnancy but returned rapidly to their previous status after birth of the child. I doubt, therefore, whether the presence of retinitis pigmentosa in a case in which the patient is pregnant would be a mandatory indication for therapeutic abortion. The question of abortion or sterilization in cases of hereditary diseases, such as retinitis pigmentosa or Leber's disease (hereditary retrobulbar optic neuritis and atrophy), would seem to lie in the field of eugenics rather than in that of therapeutics.

Considerable interest was aroused several years ago by reports of contractions of the temporal fields of vision observed in the course of otherwise normal pregnancies. These contractions were supposed to be caused by physiologic hypertrophy of the pituitary body. The changes reported in the visual fields never have been quite characteristic of pituitary lesions, at least of those seen in association with tumors of the pituitary body, and their significance would seem to be doubtful. I do not think any cases have been reported in which the loss of visual fields was sufficient to warrant consideration of interruption of pregnancy.

The conditions in the eye which are of more definite concern with reference to the question of therapeutic abortion are those for which some type of toxemia of

pregnancy is definitely responsible. Included in this group are optic neuritis, retrobulbar neuritis and hemorrhages in the retina seen in association with pernicious vomiting, and eclamptic amaurosis, angiospastic retinitis and detachment of the retina, which occur in the hypertensive toxemias of the later months of pregnancy.

The ocular complications of pernicious vomiting of pregnancy seem to have received relatively scant attention. They are rather rare, are seen apparently only in severe cases, and are of serious prognostic import. In 1932, Stander¹ reported two cases of hemorrhagic retinitis without edema of the disks. In both cases pregnancy was terminated artificially, in the second case immediately, but, in the first, not until eight days after the onset of hemorrhage into the retina. The first patient died, the second recovered. Stander expressed himself as regarding the appearance of hemorrhagic retinitis in pernicious vomiting as an absolute indication for immediate termination of pregnancy. These hemorrhages probably are an indication of a severe general toxemia, which is evidenced at times also by optic neuritis or retrobulbar neuritis with very rapid and marked loss of vision. Optic neuritis usually is a terminal manifestation, and the patient is likely to die in spite of immediate termination of the pregnancy.

Schiötz² reported two cases of retrobulbar neuritis; one patient died and one was still alive at the time of the report one week after abortion. The two cases recently reported by Tillman³ probably belong to this group; at necropsy, petechial hemorrhages and miliary focal necroses were found in the brain. Tillman's third patient, with a condition described only as "retinal hemorrhages," recovered, although bilateral flaccid paralysis of the lower extremities and the Korsakoff syndrome were in evidence. Masters'⁴ case in which the outcome was fatal probably also was optic neuritis. It is difficult to evaluate the terminal rise of blood pressure in this case, as the blood pressure was low in the other cases that have been reported. I have recently seen, in a case of pernicious vomiting, bilateral, intense, optic neuritis that progressed to complete blindness in from twenty-four to thirty-six hours. The pregnancy was terminated, but blindness persisted and paralysis of the extra-ocular muscles developed. Examination of the spinal fluid did not give evidence of meningitis, but the patient died a few days later. Necropsy was not obtained.

It would seem that lesions of the retina and optic nerve in pernicious vomiting may be of more frequent occurrence than is generally assumed. It would be well to make more frequent ophthalmoscopic examinations in these cases to learn whether warning symptoms appear in the retina before toxemia reaches an incurable stage. It is well to emphasize that, if in such cases and in cases of hypertensive toxemia examination is deferred until the patient has definite disturbance of vision, little can be done by the ophthalmologist except to give a serious prognosis.

With eclamptic amaurosis I have had little personal experience. In the most typical cases, a sudden, almost complete loss of vision occurs coincident with, or shortly

From the Section on Ophthalmology, prepared in collaboration with the Section on Gynecology and Obstetrics, the Mayo Clinic.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Stander, H. J.: Hemorrhagic Retinitis in Vomiting of Pregnancy, *Surg., Gynec. & Obst.* 54: 129-132 (Feb.) 1932.

2. Schiötz, Hjalmar: Ueber Retinitis Gravidarum und Amaurosis eclamptica, *Klin. Monatsbl. f. Augenh.* 67: 1-136, 1921.

3. Tillman, A. J. B.: Two Fatal Cases of Hyperemesis Gravidarum with Retinal Hemorrhages, *Am. J. Obst. & Gynec.* 27: 240-247 (Feb.) 1934.

4. Masters, R. J.: Routine Ophthalmoscopic Examination as an Aid in the Management of Maternity Cases, *Tr. Am. Ophthal. Soc.* 31: 416-458, 1933.

before, the onset of convulsive seizures, and no visible lesions are present in the retina or in the optic nerve. The pupil retains its reaction to light. In some cases eclamptic amaurosis may be superimposed on a previously existing, mild retinitis, but the loss of vision is out of proportion to the visible involvement of the retina and of the optic nerve. Often, by the time the patient regains consciousness, vision has considerably improved or returned to normal. The attack may be so transitory that it escapes observation or is regarded as a nervous or hysterical manifestation. Sometimes vision returns more slowly.

Schiötz reported fourteen cases of eclamptic amaurosis. In only two of these did the condition occur as early as the seventh month of pregnancy. In a few of his cases in which the return of vision was gradual, he was able to demonstrate homonymous hemianopia during the period of recovery. He expressed the opinion that eclamptic amaurosis was to be regarded as *bilateral homonymous hemianopia due to a transient lesion, probably edema, of the visual centers in the occipital lobes*. Schiötz expressed the belief that the prognosis was always favorable in these cases and that eclamptic amaurosis never was to be regarded in itself as an indication for immediate termination of pregnancy. The condition seems to be identical with uremic amaurosis, the prognosis of which is equally favorable.

The ocular lesion which has most aroused the combined interest of the obstetrician and ophthalmologist is the retinitis that occurs in association with hypertensive toxemia. This interest has centered in the diagnostic significance of the retinitis, especially with reference to the question of chronic nephritis, in its prognostic significance to the future health and vision of the mother, in its indications for termination of the existing pregnancy, and in its bearing on the advisability of future pregnancies. The answers to the last two questions must be based directly on the interpretation of the first two points of interest.

Attempts have been made to demonstrate that different types of retinitis occur in different types of toxemia and that "albuminuric" retinitis is always diagnostic of chronic nephritis. As has been evident from the reports of Schiötz and of Corwin and Herrick,⁵ among others, retinitis can occur in any type of toxemia in which hypertension is a feature. The differences described appear to be those of stage and degree rather than of type of retinitis. Earlier investigators especially stressed the edema, hemorrhage and exudation that make up the picture of retinitis, and apparently they paid little attention to the retinal vessels, although Silex⁶ stated that the prognosis was worse in cases of retinitis with definite changes in the retinal vessels.

It remained for Mylius,⁷ however, to demonstrate conclusively that changes in the arterioles preceded retinitis and were, in all probability, the local cause of it. The changes in the arterioles are primarily spastic in nature and the retinitis is therefore of angiospastic type. It seems most logical to assume, therefore, that in hypertensive toxemia of pregnancy, as in glomerulonephritis and essential hypertension among nonpregnant patients, lesions in the retinal arterioles and resultant

lesions in the retina proper are to be interpreted simply as evidences of injury to the arteriolar system rather than as signs of any particular cause of this injury. Interpreted in this way, it seems to me that the obstetrician can use the information furnished by ophthalmoscopic studies of pregnant women to much greater advantage than in attempting to separate different types of toxemia by their aid.

As shown by Mylius, in the absence of retinitis changes in the retinal arterioles may be present which may be purely organic (sclerotic), spastic, organic and spastic, or spastic followed by organic. If organic changes are present in the arterioles at the first examination in the early phases of toxemia, it is obvious that the patient has suffered previous injury to the arteriolar system, as a result either of chronic nephritis or of essential hypertension. If spastic changes are present, or develop either alone or superimposed on organic changes, it is strongly suggested that toxemia is causing an active arteriolar lesion which, if not controlled, will result in retinitis and in new or increased organic injury to the general arteriolar system. It is not always possible to tell at a single examination whether changes seen in the retinal arterioles are spastic or organic, but repeated examinations usually will establish the diagnosis. When diffuse retinitis has developed as the result of arteriolar spasm, organic injury to the retinal and systemic arterioles will almost always be present. This is the reason for the prevalence of chronic nephritis or persistent hypertension among toxemic patients who have had retinitis.

From the standpoint of vision, the prognosis of retinitis of the toxemia of pregnancy usually is good. Most of the patients, even those who have had very diffuse retinitis, regain normal, or only slightly impaired, vision. It is true that the longer retinitis persists in its active phase the more injury will be done to the retinal tissues and the less complete will be the return of function to the optic nerve and retina. The duration of the retinitis and the amount of edema of the optic disk and macula are of great importance to future vision. In the majority of cases, however, the end results are surprisingly good.

The prognosis with respect to the future health of the mother is not so favorable, however. It is possible that spastic changes in the retinal arterioles can pass gradually into organic lesions without the appearance of retinitis. It is also possible that individual cotton-wool patches and hemorrhagic areas may appear in the retina without the presence of demonstrable organic lesions. It is true, however, that the development of cotton-wool patches and hemorrhages are at present the best available sign of the probable onset of the organic phase of arteriolar disease, and it seems quite improbable that diffuse edema of the retina and extensive exudation and hemorrhage can occur without spasm severe and prolonged enough to produce some permanent injury to the walls of the arterioles of the retina.

It is of interest that histologic studies of the arterioles of muscles obtained at biopsy or at necropsy disclose changes that fairly closely parallel the degree of arteriosclerosis demonstrable with the ophthalmoscope. The organic changes seen in the retinal arterioles after diffuse retinitis probably are accompanied by an approximately equal degree of injury to the arterioles throughout the body. It is obvious, then, that the great

5. Corwin, Jean, and Herrick, W. W.: The Toxemias of Pregnancy in Relation to Chronic Cardiovascular and Renal Disease, *Am. J. Obst. & Gynec.* 14: 783-796 (Dec.) 1927.

6. Silex, Paul: Ueber Retinitis Albuminurica Gravidarum, *Berlin. klin. Wchnschr.* 32: 385-389 (May 6) 1895.

7. Mylius, Karl: Funktionelle Veränderungen am Gefässsystem der Netzhaut, *Berlin, S. Karger*, 1928.

majority of these patients will have persistent hypertension after termination of pregnancy. Thus, Schiötz, in follow-up studies, found evidence of chronic renal disease in twenty-seven of thirty-three cases of retinitis of the toxemia of pregnancy, and Masters in twenty-five of thirty-two similar cases. Seventeen of Schiötz's patients and thirteen of Masters' gave no evidence of nephritis before pregnancy.

TABLE 1.—Patients with Retinitis Before the Twenty-Eighth Week of Pregnancy

Series	Number	Hypertension		Gave Birth to Living Child
		Previous	Residual	
Schiötz.....	17	3	16	4
Masters.....	13	3	10	4
Wagener.....	7	1	7	1

My eight patients with diffuse retinitis all showed residual, persistent hypertension; only one had had hypertension previous to pregnancy. Of eight patients with only a few cotton-wool patches and hemorrhages, five had residual, persistent hypertension.⁸ Only one had had hypertension previous to pregnancy. Thirty-eight patients had spastic or organic changes in the retinal arterioles, but retinitis did not develop. Only five of twenty-four patients who had not had hypertension previously gave evidence of persistent, residual hypertension. In only two of fourteen patients who had had hypertension was there residual increase in the severity of the hypertensive disease.

It seems obvious, then, that the development of retinitis in any case of toxemia of pregnancy is a serious menace to the future integrity of the vascular system of the mother, and that the occurrence of angiospastic retinitis is by no means limited to cases in which there is preexisting hypertension or chronic nephritis.

If a patient who has not had antepartum care enters the hospital in the latter weeks of pregnancy with symptoms of toxemia and diffuse retinitis, immediate interruption of pregnancy unquestionably is advisable, not only for the preservation of vision but in the hope of minimizing the residual, permanent injury to the arteriolar system. Unfortunately, cases of this type are still seen. The majority of patients with toxemia of pregnancy, however, are seen nowadays before retinitis develops. In such cases it is my personal opinion

TABLE 2.—Patients Without Retinitis Before the Twenty-Eighth Week of Pregnancy

Series	Number	Hypertension		Gave Birth to Living Child
		Previous	Residual	
Masters.....	4	1	3	2
Wagener.....	7	2	2	3

that diffuse retinitis should not be allowed to develop. In order to forestall its development, frequently repeated ophthalmoscopic examinations should be made to follow the development and course of the spastic lesions in the retinal arterioles. If, in spite of conservative management, the spastic lesions become more marked, termination of pregnancy should be urged at the first indication of localized hemorrhage or of exudation into the retina.

I believe that the beginning of retinitis marks the onset of irreparable organic changes in the arterioles and that a delay of a few days may result in considerable injury, which could be avoided by prompt termination of pregnancy. If the fetus is of viable age, or if the toxemia and retinitis appear so early that it is obviously impossible to continue the pregnancy to the stage of viability, nothing evidently is to be gained by waiting. The most difficult problems for decision arise in cases in which the spastic lesions and retinitis develop at the stage of questionable viability of the fetus. When retinitis develops before viability, and pregnancy is allowed to continue for several weeks in the hope of obtaining a viable fetus, the chance of accomplishing this would seem to be too slight to justify the risk of increased injury to the vision and to the cardiovascular system of the mother. Thus in Schiötz's series of seventeen patients who had retinitis before the twenty-eighth week of pregnancy, only four were delivered of living babies; sixteen of these patients had residual hypertension. In Masters' series, thirteen patients had retinitis before the twenty-eighth week of pregnancy; only four gave birth to living babies; thirteen had residual hypertension. I have seen seven patients with retinitis before the twenty-eighth week; only one of these gave birth to a living baby; seven had persistent

TABLE 3.—Patients with Toxemia Before the Twenty-Eighth Week of Pregnancy

Type	Number	Residual Hypertension	Gave Birth to Living Child
Previous hypertension; retinitis.....	1	1	..
Previous hypertension; no retinitis....	2	2	..
No previous hypertension; retinitis...	6	6	1
No previous hypertension; no retinitis	5	..	3

hypertension. Only one of these patients had had hypertension before pregnancy (table 1).

Schiötz saw twenty patients with eclampsia who did not have retinitis; ten of them were delivered of living babies and none of them had persistent hypertension. Masters saw four patients with toxemia before the twenty-eighth week of pregnancy who did not have definite retinitis; two of these gave birth to living babies; three had residual hypertension. Seven patients seen at the clinic had toxemia before the twenty-eighth week of pregnancy but did not give evidence of retinitis. Three of these gave birth to living babies. Two had persistent hypertension; both had hypertension prior to pregnancy. It would seem, then, that in cases in which retinitis develops before the twenty-eighth week there is only about a 25 per cent chance of the patient giving birth to a living baby, even if pregnancy is continued to the stage of viability, and there is almost 100 per cent risk of permanent, cardiovascular-renal injury developing (tables 2 and 3).

There is some question whether patients who have evidence of preexisting cardiovascular-renal injury have a chance of carrying through pregnancy without increased injury. From the standpoint of changes in the retina, the incidence of angiospastic lesions, and especially of retinitis, seems to be less in this group of cases than in those of acutely developing toxemia. Of a group of twenty-four cases in which patients had hypertension previous to pregnancy, in thirteen cases

8. Wagener, H. P.: Arterioles of the Retina in Toxemia of Pregnancy. J. A. M. A. 101:1380-1384 (Oct. 28) 1933.

retinal arteriosclerosis was present, but spastic lesions developed in only six cases, or 25 per cent, and retinitis developed in only two, whereas in a group of fifty cases in which patients had toxic symptoms but had not had previous hypertension, spastic lesions developed in thirty-eight cases, or 76 per cent, and retinitis developed in seventeen. In only four of the group of twenty-four cases in which there was preexisting hypertension was there evidence of an increase in the severity of hypertensive disease following termination of pregnancy. The presence of previously established organic changes in the retinal arterioles is not, therefore, of itself an indication for abortion. I do believe, however, that the finding of angiospastic lesions is a definite indication for interruption of pregnancy if the tendency to spasms is not promptly and definitely controlled by conservative measures.

Among a certain number of patients with toxemia of pregnancy, especially of the eclamptic type, detachment of the retina develops. The occurrence of detachment of the retina is quite generally recognized as a definite indication for the prompt interruption of pregnancy from the standpoint of preservation of vision. In some cases detachment is caused by the subretinal edema which is a part of severe, diffuse retinitis. In these cases the prognostic indications with regard to the future health of the mother are the same as those of any diffuse angiospastic retinitis. The prognosis with regard to vision is rather poor, since in the majority of cases in which there is retinitis complicated by detachment, the retinitis subsides slowly and leaves considerable residual injury to the retina and choroid. In a few cases the retinal detachment is primary in type, that is, it is caused by subretinal exudation of serous fluid which apparently comes from the choroid and is not associated with preexisting retinitis. In these cases the retina usually reattaches itself quite rapidly after termination of pregnancy, and the patient usually regains surprisingly good vision. These primary detachments of the retina do not seem to have the serious prognostic significance, with regard to the integrity of the vascular system of the mother, as do the detachments associated with angiospastic retinitis. In three cases of this type seen at the Mayo Clinic, hypertension did not persist after termination of pregnancy. Prompt intervention is indicated at the first sign of detachment of the retina, however, for the sake of the mother's vision, for unquestionably the longer the detachment persists, the less completely will the function of the retina be regained.

Considered purely from the standpoint of the risk of increased injury to vision, future pregnancies are not strongly contraindicated among patients who have had retinitis or detachment of the retina associated with toxemia of pregnancy. It has long been recognized that retinitis does not often recur in later pregnancies. It is of interest that, in my series, retinitis occurred in only one of nine cases of recurrent toxemia. The observation of the grade of residual sclerosis in the retinal arterioles is, however, an aid in determining the degree of diffuse vascular disease persisting in a case of previous toxemia of pregnancy. The decision as to whether such a patient should become pregnant again must be based, I think, on the clinical estimation of the functional ability of the injured kidneys and vascular system to withstand the extra strain imposed by pregnancy. In most cases in which patients have

had diffuse angiospastic retinitis, the residual vascular injury is sufficient to contraindicate further pregnancies. Patients who have had detachment of the retina without retinitis, however, may show little or no evidence of permanent vascular or renal injury, and future pregnancies may be uncomplicated. I have seen one such patient in whose case two later pregnancies were uneventful.

SUMMARY

The lesions of the retina and optic nerve which occur in pernicious vomiting of pregnancy indicate a severe grade of general toxemia that may prove fatal even if pregnancy is terminated promptly. Earlier and more frequent ophthalmoscopic examinations in cases of pernicious vomiting may serve to give timely warning that the pregnancy should be interrupted.

The development of any type of retinitis in a case of hypertensive toxemia of pregnancy is an urgent indication for the termination of pregnancy, not only because of the danger to vision, but also because of the implied certainty of permanent injury to the general vascular system. In cases in which hypertension develops or increases while the patient is under observation, careful watch should be kept for angiospastic lesions of the retinal arterioles, either primary or superimposed on previous organic changes. If the integrity of the systemic arterioles is to be preserved, pregnancy should be terminated, if possible while the arteriolar lesions are still in the angiospastic phase, and certainly at the first indication of the onset of retinitis.

ABSTRACT OF DISCUSSION

DR. A. J. BEDELL, Albany, N. Y.: By means of photographs it is possible to visualize, clarify and correlate fundus changes, so that all will speak the same language and refer to the same things. By means of stereoscopic fundus photographs, early changes are recorded. The fundus vessels vary in size, distribution and contour. In some eyes they are almost straight and in others markedly tortuous. When the central retinal artery is occluded there is widespread pallor of the fundus, soon followed by a definite contraction of the artery. If nature has provided a secondary circulation by means of the cilio-retinal vessels, the supply going to the macula is preserved and central vision remains undisturbed. Retinal hemorrhages may be single or multiple. They may come from a single ruptured vessel or from closure of the central retinal vein. The most important early vessel change is spasm. Hypertension plays an important rôle in the production of fundus changes. The diagnostic sign of terminal hypertension is the appearance of dark brown more or less rounded deep retinal or choroidal spots, which are diagnostic and not found in any other condition. When the ocular signs of toxemia are not recognized, the patient may develop a severe hypertensive retinitis. Many recover ocular function but some show optic atrophy, irregular areas of retinal degeneration, choroidal sclerosis and white dots. It is seldom that radiations are seen about the macular region such as are common in brain tumor and certain forms of nephritis. There is, however, an edema of the optic nerve, which is so localized and so extreme that to the inexperienced it suggests an intracranial growth when in reality it is the papilledema of hyperpiesia. As Dr. Wagener has stated, detachment of the retina occurs in some forms of toxemia. This may be unilateral or bilateral, and it is readily recognized by the lobulated gray movable folds of the retina. Those who are responsible for maternal care must recognize that ophthalmoscopy offers a valuable method for recognizing impending circulatory disasters. And so the message that we bring as ophthalmologists is early recognition of spasm of the retinal artery and the removal of the cause of that so as to prevent permanent hypertension.

INDICATIONS FOR THERAPEUTIC ABORTION

FROM THE STANDPOINT OF THE NEUROLOGIST
AND THE PSYCHIATRIST

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The induction of abortion should be undertaken as reluctantly as one would commit justifiable homicide. If in the course of pregnancy some disease arises as a direct consequence of gestation, or if a woman suffering from disease is made much worse by the existence of pregnancy, and if her life is distinctly endangered in consequence, it is not only justifiable, but it is the physician's duty to terminate gestation, and thus to save one life, and that the more valuable of the two, instead of sacrificing both mother and fetus.

This statement by Hirst¹ is quoted as one setting forth, in my opinion, the fundamental principles to be considered in therapeutic abortion. My topic calls for a discussion of the indications for abortion in neurologic and psychiatric disorders under these principles; that is, a discussion of the neurologic and psychiatric disorders found in pregnant women which arise as a direct consequence of gestation or are made worse by the existence of pregnancy, so that the woman's life is distinctly in danger in consequence.

I may say at the outset that a review of the literature and my personal experience do not lead me to believe that there is any specific neurologic or psychiatric disorder which is in itself and without exception an absolute indication for the interruption of pregnancy. My opinion agrees with others who believe that not only the disease but its severity, its course, and the general condition of the pregnant woman have to be given consideration in the individual case. The problem would be rendered much easier if there were unanimity of opinion regarding conditions in the individual case which indicated abortion, but such is not the situation, and one would hardly expect it to be so in this problem any more than that unanimity exists in many other problems in the practice of medicine. I wish to present, therefore, the points of view on the indication of abortion of the various experts as recorded in the literature and finally to present briefly reviews of specific cases in which the question of abortion has arisen in my own experience.

As part of a symposium on the psychiatric and neurologic indications for interruption of pregnancy held in Vienna, May 18-19, 1931, under the leadership of the late Prof. Constantin von Economo, Prof. H. Herschmann² discussed the various points of view that he had obtained by a questionnaire method from directors of neurologic and psychiatric university clinics in Germany and Austria as well as from the directors of the neurologic divisions of some of the general hospitals. He inquired from these directors regarding their attitude toward therapeutic abortion in seventeen organic nervous diseases and received thirty-two replies, of which some were incomplete because of the lack of personal experience with the diseases inquired about. Some replies were generalizations; only a few were detailed.

Twenty-five experts expressed themselves on the question of the interruption of pregnancy in epilepsy. Six of these were against abortion in epilepsy. For example, Wagner-Jauregg said that he did not believe that abortion was indicated in epilepsy and that in cases of status epilepticus interruption comes too late or may be dangerous. Gaupp stated that there is no justification for interruption of pregnancy in epilepsy, maintaining that epilepsy is not made worse by pregnancy but that, on the contrary, one does see not infrequently that epileptic women have fewer attacks during pregnancy than at other times.

On the other hand, nineteen experts declared that epilepsy under certain circumstances presented a medical indication for abortion. Schlesinger held, for example, that genuine epilepsy was a compulsory indication for abortion. Bumke interrupts pregnancy in severe progressive forms of epilepsy and in status epilepticus. Ewald interrupts pregnancy, especially in those cases in which psychic deterioration appears during the pregnancy with epilepsy. According to von Economo, the indication is given in those cases in which the epileptic disease per se shows progression in the course of time and in which, in spite of medical treatment during pregnancy, an increase in attacks appears; also in those cases in which the attacks appear for the first time in pregnancy.

There were, therefore, three groups of opinions from these psychiatric and neurologic experts regarding abortion in epilepsy: those who completely deny indications, those who see indications in every outspoken case, and those who see indications under some conditions which, to be sure, are not clearly defined.

The same lack of unanimity of opinion and criteria is indicated by Herschmann in his report of the attitudes of the experts toward abortion in cases of the other sixteen diseases of the nervous system about which he inquired.

In multiple sclerosis some of the neurologists advocate therapeutic abortion on the ground that a rapid progress of the disease is noticed during pregnancy. Others in each diagnostically certain case of multiple sclerosis advocate abortion. Others point to the necessity of abortion in early cases on the ground that the patients may thereby be given a few years of bearable existence. Gaupp permits abortion in severe cases of spastic paraplegia but in other cases, especially if the child is wanted, he believes that the pregnancy may be allowed to proceed. Three experts on the other hand deny the necessity of interruption of pregnancy in multiple sclerosis.

Regarding exophthalmic goiter, thirteen of twenty experts replied that in their opinion abortion would be indicated in severe cases with decompensation and marked weakness. On the other hand, Hübner stated that he had not seen any case of exophthalmic goiter in which he would recommend abortion. Pötzl and Raimann spoke in favor of abortion in acute cases. Von Economo held that in cases of exophthalmic goiter in the early stages, as well as in cases in which the disease develops during pregnancy, abortion is indicated. There was no unanimity of opinion among the experts regarding the question of operative procedure in exophthalmic goiter in pregnant women.

Regarding abortion in tabes, some experts expressed themselves as positively in favor of it. Others were equally positive against abortion. Twelve experts indicated that in their opinion abortion might be indicated

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Hirst, B. C.: *A Textbook of Obstetrics*, Philadelphia, W. B. Saunders Company, 1906.

2. Herschmann, H.: *Neurologic Indications for Abortion*, *Wien. klin. Wchnschr.*, 44: 900-906 (July 10) 1931.

in tabetic patients suffering from exhaustion or a respiratory disorder or severe gastric crises.

Regarding chorea, seventeen of twenty-three experts were in favor of abortion in all severe cases, particularly when threatening cardiac symptoms or psychotic symptoms of a marked degree appeared.

The experts also differ regarding abortion in epidemic encephalitis. Some believed that in acute cases abortion was indicated; others said that in the chronic parkinsonian conditions abortion was likewise indicated but still others disagreed, stating that they had seen women with chronic epidemic encephalitis pass smoothly through pregnancy, giving birth to healthy children. Von Economo, who was acknowledged as the best authority on encephalitis, expressed the opinion that abortion was indicated in all acute cases of encephalitis and also in those chronic cases in which the condition was deteriorating. In other chronic cases von Economo might advise abortion because, during pregnancy, a dangerous aggravation of the condition may appear at any time.

Regarding polyneuritis, Bumke expressed the opinion that the development of this disorder during pregnancy was an indication for abortion if the polyneuritis was of a progressive character. Wagner-Jauregg said that the general status of the patient, particularly the condition of the circulation, had to be taken into consideration.

According to Bonhoeffer, abortion is indicated when hyperemesis exists simultaneously with polyneuritis because then the causal relationship between the pregnancy and the neuritis exists. He calls attention to the necessity of considering the cases in which marked residual paralysis of the abdominal and respiratory muscles remained after the polyneuritis.

Regarding syringomyelia, there was a difference of opinion. Some of the experts believed that in the uncomplicated cases there was no indication for abortion. Others thought the general condition of the patient had to be taken into careful consideration. Schlesinger, whose opinion was looked on as most authoritative, held that abortion was indicated only in those cases in which outstanding paralytic symptoms were present and, further, cases in which during an earlier pregnancy there had been a rapid progression of the spinal paresis. He also stated that with bulbar and vagus symptoms abortion was definitely indicated because in such cases experience had shown that during pregnancy there might be a progression of the disease, threatening life.

Regarding myasthenia gravis the majority of experts spoke in favor of immediate interruption of pregnancy, but several stated that abortion was indicated only under certain conditions. Gamper called attention to the fact that the course of the pregnancy was entirely undisturbed in some cases.

Regarding progressive bulbar paralysis, amyotrophic lateral sclerosis and progressive spinal muscular atrophy, the experts gave a large variety of opinions regarding abortion. Only seven of eighteen experts spoke in favor of abortion in each case. The remaining twelve responded variously, at times in part negatively.

Regarding the spinal cord degeneration associated with pernicious anemia, more than one half of the experts indicated that they had no personal experience with such cases. Of fourteen clinicians who discussed this point, eight spoke in favor of abortion in each case, four experts were in favor of abortion in each severe case, and one would wait to see whether during the

pregnancy there was a progression of the neurologic symptoms. One expert held that the neurologic symptoms in this disease gave no indication for abortion but that the decision depended only on the severity of the anemia and therefore rested with the internist.

Wagner-Jauregg held that brain tumor was an absolute indication for abortion; if the patient dies during advanced pregnancy, the child usually is also lost. On these grounds, as Pilcz proposes, in the advanced stages of pregnancy interruption should be made in the interest of the child. In other cases, Pilcz holds that abortion is not indicated. Von Economo pointed out that brain tumors usually progress rapidly during pregnancy, and he was therefore in favor of abortion. Schlesinger spoke in favor of abortion on similar grounds and also for the additional reason of the danger of a sudden increase of intracranial pressure. Other experts held that abortion is indicated in all cases of certain diagnosis of brain tumor.

Still other experts did not see any indication for abortion in cases of brain tumor. Some felt that in order to avoid the dangers of labor to patients with brain tumor artificial delivery should be made at term. Raimann distinguished between cases of brain tumor with a hopeless prognosis and those in which an intracranial operation was to be considered. If the brain tumor has a hopeless outlook then he believes that there is no excuse for abortion. On the other hand, Hübner would carry out abortion in such cases in which the disease picture is severe and is rapidly progressing. Meyer pointed out that if the tumor is localizable and operable one should carry out a radical operation. In such cases the postoperative course might unfavorably influence the pregnancy, and under these circumstances abortion should be carried out. In cases of nonlocalizable tumors the decompression operation should be done, but this is not so severe that the approach need interfere with pregnancy.

Herschmann concludes from these observations that the indications for abortion in cases of organic nervous disease are not sufficiently clear and that the problem must be studied in clinics because the opinions of the experts are based on individual, purely subjective criteria. Investigation is needed to determine which organic nervous diseases are apt to be aggravated by pregnancy. In such cases abortion must be recommended without question regardless of whether the condition appeared before or manifested itself at the time of the pregnancy.

Concerning the other organic nervous diseases in which the relation between pregnancy and physical and mental deterioration cannot be proved, one has to act differently, taking into consideration the appearance of the disease before or during the time of pregnancy. If the disease appears before the pregnancy one has to wait, and if it becomes worse abortion may be recommended. If the disease arises during the period of pregnancy, abortion should be recommended even if the pregnancy will not contribute anything of etiologic significance to the development of the disease. In his opinion, under all circumstances, indication for abortion is given in cases of dangerous disturbance of blood circulation, pernicious anemia, nephritis and cases in which during pregnancy grave psychotic symptoms are apt to develop into acute delirium.

Ware³ recently reported the cases of three paraplegic women in whom pregnancy was not interrupted, two

3. Ware, H. H., Jr.: *Pregnancy After Paralysis*, J. A. M. A. 102: 1833-1835 (June 2) 1934.

patients being delivered by cesarean section and the third with the assistance of midforceps. These cases present rather strikingly the fact that paralyzed women can go through a pregnancy successfully and have living children.

Kogerer⁴ discusses the problem of abortion in connection with mental disorders. In general it may be stated that abortion is justified in extremely dangerous situations in cases of manic and depressive psychoses. This is a matter not only of psychiatric indications but also of general medical indications. In women who have suffered several times from acute psychotic attacks after a period of pregnancy, Kogerer recommends that abortion be carried out in subsequent pregnancies in order to avoid other attacks.

Kogerer feels that the problem of relationship between pregnancy and schizophrenia is very important, difficult and contestable. The frequency of these cases and often their hopelessness demand an immediate and clear formulation of the problem, and the first question would be whether the pregnancy in general exerts an influence on the process of schizophrenia. He points to menstrual disturbances frequently seen in schizophrenic women, the decline of sexual libido, and the drop in the metabolism and the circulation and also in the other vegetative functions and endocrine systems.

Degenerative changes have also been reported in the gonads and suprarenals among schizophrenic patients by some investigators. A considerable amount of investigation proves that there are some changes related to pregnancy in schizophrenic patients, but less certain is the assumption of the influence of pregnancy on the chronic progressive forms. In such instances the objection might be raised that the disease would have progressed in the same way without pregnancy. It is therefore very difficult to decide whether abortion is to be applied in cases of schizophrenia. It is not easy to state whether abortion will have a possible influence on the psychosis.

Kogerer reports that in cases of paranoia and psychopathy opinion is against abortion. In cases of hysteria, one is led by somatic indications in solving the problem of abortion. In cases of psychoneuroses two situations are emphasized; the first one has to do with vomiting of pregnancy so far as it is psychically determined. In such a situation the physical condition will always determine the decision. The second situation has to do with psychogenic depression with danger of suicide on account of the unwanted pregnancy. Wagner-Jauregg justified abortion in the latter situation. Siemerling recommends the isolation of the patient with careful watching in order to save her from suicidal attempts. Kogerer is against such a plan and claims that isolation will have a pernicious influence on the patient.

Kogerer also states that he agrees with most of the authorities who expressed opinions to the effect that pregnancy has no unfavorable influence on the disease process in dementia paralytica and therefore abortion in this disease does not come into question.

Paul Nietzsche⁵ also discusses therapeutic interruption of pregnancy in mental diseases. He points out that abortion by physicians is permitted under the existing German laws only on therapeutic grounds and,

furthermore, only in cases in which there is great danger for the life or health of the mother.

In his opinion mental and nervous diseases very seldom justify the interruption of pregnancy. He states that aside from the eclamptic psychoses there are no specific psychoses of pregnancy, but psychopathic diseases are seen in pregnancy which also appear in other conditions. In a large majority of such cases it is not to be expected that the interruption of pregnancy would have a favorable therapeutic effect, but under all circumstances this measure is indicated in eclamptic mental disturbances as it is in eclampsia in general.

The attacks of manic depressive insanity are not conclusively influenced by the interruption of pregnancy.

Psychoses among the group of patients with schizophrenia give, in general, no indications for therapeutic abortion. However, certain investigators speak of these diseases being precipitated by pregnancy. Bumke raises the question, however, as to whether the bad effect that might be caused by pregnancy would be removed better through artificial abortion than through the natural process of birth. The possibility that pregnancy may cause further progression never gives an excuse for the sacrifice of the child in a disease such as dementia praecox with an unfavorable prognosis and an unpredictable course. Moreover, the condition of the catatonic pregnant woman can only exceptionally become so threatening that the interruption of pregnancy is indicated.

Nietzsche points out that others, for example, E. Meyer, hold that abortion is indicated in the case of a woman who has had several attacks of this disease in connection with previous pregnancies and then becomes pregnant again. In such cases, which are of infrequent occurrence, an intervention might be justified, but it is not justified in instances in which the course of the disease does not have such a definite relationship.

Although in the specific mental diseases there is very seldom an excuse for the interruption of pregnancy, the borderline conditions of psychopathy, neuropathy and hysteria are absolutely denied by Nietzsche as indications for abortion. One cannot emphasize that fact too strongly, he says, because of the fact that according to experience in these cases the danger exists that, on social grounds or because of considerations of comfort, nervous symptoms will appear in the foreground in order to make the physician susceptible. Also it is desirable to evaluate the emotional states in the pregnant woman, very carefully.

There are, however, mental disturbances occurring in pregnancy which justify intervention when all other methods of treatment have failed; but it is very seldom that these indications must be approved unconditionally. This type of illness makes its appearance in abnormal reactions in depressive moods, anxiety and fear, which are related to the pregnancy. The pregnancy complex stands in the center of these manifestations. It goes on to an anxiety state, tendency to suicide, emotional outbursts, animosity toward the husband, neglect of duties and loss of weight. In these cases the loss of strength becomes so considerable that severe danger ensues, and then the interruption of the pregnancy becomes necessary in case other forms of treatment such as psychotherapy and institutional treatment fail. However, careful conscientious psychiatric observation is unconditionally necessary before a decision is made regarding the indications and, as a rule, should be done in a clinic. A suicide complex cannot be recognized

4. Kogerer, H.: *Psychiatric Indications for Abortion*, Wien. klin. Wchnschr. 42: 906-909 (July 10) 1931.

5. Nietzsche, Paul in Bumke, Oswald: *Handbuch der Geisteskrankheiten*, Berlin, Julius Springer, 4, 1929.

per se as an indication for interruption of pregnancy in so far as a suicide fear is not a symptom of a psychotic condition justifying such a measure.

In an article on the effect of reproduction on insanity, Robinson⁶ reports on the replies of ninety-five British alienists to a questionnaire sent out by him, in which inquiry was made, among other things, regarding the indications for abortion in women with a history of cured mental disease and in women with active mental disease.

As a result of these inquiries Robinson makes the following observations:

The induction of abortion for the treatment of mental disease is evidently looked upon with little favor by the alienist and unqualified disapproval was expressed in the large majority of answers. It is clear that the scope of therapeutic abortion for both quiescent and active mental disease is very limited.

If it could be shown that conception may lead to permanent insanity in certain defined cases, then the termination of pregnancy would clearly be in the best interests of the patient, and the operation would conform to the desired standards; but the contrary appears to be the rule, for insanity initiated by pregnancy rarely persists, but tends to recover after a comparatively short period and in some cases may clear up spontaneously before full time is reached. Women who show permanent impairment of mentality following childbirth belong to the class of the potential psychotic for whom pregnancy is merely a subsidiary factor in the pathogenesis of insanity; upon the mentality of such a woman the operation of abortion cannot be curative and it may exert a deleterious effect that is more harmful than the continuation of pregnancy.

Little evidence has been brought forward to show that the induction of abortion has any positive therapeutic value in arresting the development of permanent insanity in women who are predisposed to that disease or may already be suffering from a mild but unrecognized form of it.

In connection with the problem of induction of abortion in threatened suicide, Robinson makes the following statements:

This argument in favor of abortion might be urged by any woman who is confronted with an unwanted pregnancy and it is therefore open to grave abuse; such threats may, however, be associated with true insanity and here there is unquestionably a real danger of the threat being carried out unless steps are taken to eliminate the risk by strict supervision of the patient or the termination of pregnancy. The physician in charge must be prepared to deal firmly with the patient's relatives who may attempt to force his hand; it is natural for the husband to seek an easy way out by operation in preference to certification and compulsory detention, but it must be pointed out that operation is not free from risk and that even successful intervention will not necessarily cure the mental symptoms or keep the patient out of an asylum; indeed the shock of surgical intervention may aggravate the mental condition and even precipitate admission to an institution.

Similarly, the patient's personal fear of recurrence may sometimes justify the termination of pregnancy. But it is not a sufficient reason for surgical interference in all patients who give a history of previous insanity because recurrence is not inevitable and much may be done to eliminate the risk by careful antenatal work.

It is clearly not possible to lay down any hard and fast rules concerning the use of therapeutic abortion on the grounds of threatened or actual insanity of the expectant mother, but each case must be judged on its own merits after due consideration has been given to the physical condition of the patient, her environment, the family record and the personal history, if any, of previous attacks of reproductive insanity.

I have reviewed some of the opinions of neurologists and psychiatrists on therapeutic abortion and briefly

report a number of specific cases of mental disorders, involving the question of abortion.

REPORT OF CASES

CASE 1.—An unmarried woman, aged 22, admitted to the Psychiatric Institute, had symptoms of a retarded depression which had existed for ten months. After two months' hospitalization she improved sufficiently to return home. Subsequently, a manic reaction developed. She became pregnant and was very anxious to have the pregnancy terminated at Sloane Hospital, where she was admitted. In the inquiry from that hospital regarding abortion it was said she appeared normal. I advised against abortion. The patient went through a normal pregnancy, was delivered of an apparently normal child, and has returned to her previous occupation. There is no evidence that gestation or labor has had a deleterious effect on her mental condition, and there is no certainty that the child will be abnormal.

CASE 2.—A married woman, aged 26, admitted to the Psychiatric Institute, had symptoms of a retarded depression. Four and a half months previously she had given birth to a child. She probably had a short period of elation and then had been depressed for three months before admission. After hospitalization for less than six months she was much improved. She had insight and a desire to return home and care for her child. Within five weeks she was readmitted in a manic state; she apparently recovered after eight months. After her return home she again became pregnant. On the recommendation of another physician, an abortion was performed. She soon became depressed and was again hospitalized seven weeks after the abortion. She again recovered after six and a half months but soon developed a manic attack and was committed to a state hospital, where she has remained for the past year. Obviously the interruption of the pregnancy in this case did not prevent a mental attack.

CASE 3.—A married woman, aged 20, had been under antepartum care at the Sloane Hospital from January to June, at which latter time she began to show albumin in the urine and hypertension. She was hospitalized there in July and delivered of a macerated fetus a month later. Two days before the delivery delusions and hallucinations developed. She was shortly admitted to the Psychiatric Institute. The albumin and casts in the urine and the hypertension gradually disappeared; she cleared mentally and was discharged within two months as recovered. About nine months later she again reported at Sloane Clinic in a pregnant condition. I advised against abortion. The patient had an uneventful pregnancy and labor with a healthy child and was recently discharged from the maternity hospital.

CASE 4.—An unmarried woman, aged 21, had been treated for diabetes for four years in the medical clinic. She did not adhere closely to the prescribed diet and at times had severe insulin shocks. After seeing a maternity moving picture she became confused and the next day was admitted to the Presbyterian Hospital in coma. Under treatment she was confused, unstable, and at times catatonic. She was admitted to the Psychiatric Institute with a blood sugar of 375 mg. and the urine showed 9 per cent sugar, acetone and diacetic acid. The diabetes was controlled, her mental symptoms cleared up and she was discharged as recovered after four and a half months. Within a few months she became pregnant and was married. I advised against abortion from the psychiatric standpoint. She went through pregnancy and labor without mental symptoms and has a living child.

CASE 5.—A married woman, aged 24, attempted suicide with gas when she found she was pregnant. As a result of the gas poisoning a mental disturbance developed, with excitement, clouding of the sensorium and amnesia, and she was committed to a state hospital. The pregnancy was not interrupted. She was discharged after three months' residence when seven months pregnant and went through an uneventful later pregnancy and labor with a normal child. She still showed lapses of memory and difficulty in concentration and this condition has continued approximately for a year since the childbirth, the late effects, I believe, of the gas poisoning. She is in good

6. Robinson, A. L.: Effect of Reproduction upon Insanity, *J. Obst. & Gynaec. Brit. Emp.* 40:1 (Feb.) 1933.

general physical condition. One cannot conclude that she was harmed by the lack of interruption of pregnancy.

CASE 6.—An unstable woman, aged 24, unhappily married, had an induced abortion which was followed by a depression from which she recovered. At the age of 33 she passed through childbirth but six months later psychoneurotic symptoms became accentuated. Shortly after this she became pregnant again and had an induced abortion. A fourth pregnancy ensued during which she showed psychoneurotic symptoms and was admitted to a private sanitarium, where she remained for about four months. On her return home, however, her symptoms became aggravated. It was recognized at the Sloane Antenatal Clinic that she had a psychiatric condition; because of her difficult home situation it was not considered advisable for her to remain at home, and she was admitted to the Psychiatric Institute, where she remained through the latter months of her pregnancy. She was in the first stages of labor when she was transferred to the Sloane Hospital, where she had a normal childbirth. Her instability made it impossible for her to live at home for any length of time and she was not satisfied to stay away from her home, so that she was again admitted to the institute seven months after childbirth. She was more settled, apart from her husband. Within a few months she became enthusiastic about returning home and caring for her family. The patient's children appear to be healthy and normal. It appears to have made little difference in this woman's mental condition whether abortion was induced or whether she was allowed to go through with the pregnancy.

CONCLUSIONS

1. There appears to be no individual neurologic or psychiatric disorder that is an absolute indication for abortion in women suffering from such disorders.

2. Experience shows that some women with severe advanced neurologic disorders may go through pregnancy and have healthy children.

3. Experience shows that some women suffering from severe mental diseases may pass through normal pregnancy and childbirth.

4. Experience shows that abortion does not necessarily prevent a recurrence of mental attacks or bring about recovery from attacks already existent. The pregnant woman's general physical condition must be given careful consideration in a decision regarding the termination of pregnancy.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. PARDEE, HERRICK, POTTENGER,
WAGENER AND CHENY

DR. FREDERICK J. TAUSSIG, St. Louis: In setting the indications for therapeutic abortion, one should be guided not merely by the question of the disease and the extent of its involvement but by the question of the individual patient having that disease. What is her age, the number of her children, her economic status as it affects her diet, her household and parental obligations, her ability to carry out rest or institutional treatment, the hereditary and constitutional factors in the particular case? To say that if the indications are not made hard and fast it leaves the door open to all kinds of abuses may to some extent be true, but all know that these abuses exist. Unscrupulous physicians readily find excuses for an abortion that is really done for other reasons. That is no reason for taking away from the conscientious physician the privilege of deciding each case on its own merits with that broader wisdom which seeks to act for the good health, happiness and proper care of that particular family. In the last two decades the indications for therapeutic abortion have shown a decided change. The number of cases that must be aborted have taken a definite drop, while the number of cases that may be aborted have at the same time increased. On the one hand improvement in the treatment of hyperemesis, the striking

results obtained by the sanatorium treatment of tuberculosis, more dexterous management of cardiac and nephritic mothers, and the diminishing mortality attending cesarean section for contracted pelvis have almost cut in half the number of patients who had to be subjected to therapeutic abortion ten to twenty years ago as a life-saving procedure. On the other hand, many mothers with ailments much less serious than these were brought to an early grave or seriously handicapped for life because of factors that were beyond their control, such as poverty, undernourishment, overwork, overworry, an asthenic constitution and a bad heredity. More of these women are now being subjected to a therapeutic abortion if they have such a physical ailment. That a therapeutic abortion is not a minor operation must again be emphasized. It has a mortality even in expert hands which equals that of a simple laparotomy, and a morbidity that is greater than that of such an operation. Its sequelae in the form of minor pelvic infections, endocrine disturbances and psychic upsets are very common, as has been amply verified by the voluminous reports in recent years from Russian sources. May I emphasize also the advisability of prompt decisions in setting the indications for a therapeutic abortion. Delay increases the risks and lessens the benefits to the patient. An abortion done before the eighth week of gestation is half as serious a procedure as one done between the third and sixth months.

DR. JOSEPH B. DE LEE, Chicago: The reason the first part of this session was made a symposium was mainly personal. I myself wanted to know what men in the various specialties did in cases of pregnant women who had various nonobstetric complications. I often get letters from doctors asking me whether an abortion should or should not be done in a given case. One inquires whether a woman who has had a resection of six feet of small bowel and who is pregnant six or eight weeks should have an abortion done. An inquiry is made regarding a woman having a progressive otosclerosis and whose sister and aunt are deaf. Should an abortion be induced? A doctor reports a case of a woman who has a spleen so large that it rests in the left iliac fossa. She is pregnant six weeks. Should an abortion be induced? Another doctor reports a case of a woman with a skin disease covering her entire body and becoming worse during pregnancy. He does not know the nature of the skin disease. What should be done in the case of a woman with tuberculosis of the left kidney and pregnancy? The kidney was removed. Should an abortion be done? Inquiries come as to whether an abortion should be performed for leukemia, for Hodgkin's disease, and for thrombocytopenia. Should an abortion be performed for chorea which occurred in childhood and became worse following pregnancy? With the present unmorality of the times, the induction of abortion is adopted without any compunction and the purely scientific side of the subject has been stressed. Dr. Adair touched on the social side and possibly the religious side; I have tried, however, to keep that out of the discussion so as to prevent any real discussion. I have a letter on my desk asking for advice in this case and I hope the neurologists can enlighten me: A grandmother developed epilepsy at the age of 45 and died at 60. She had two children, a daughter and a son. The son became insane at 52 and committed suicide at 55. The daughter had three children. One son developed epilepsy at the age of 20 and now has suicidal tendencies. The two girls are married. One is three months pregnant and one is six months pregnant. The woman who is six months pregnant is not alarmed; she is willing to go through pregnancy. The woman who is three months pregnant is fearful that her child will develop epilepsy. The doctor asks about abortion. When I get home, I am going to tell this doctor what I am being told here today. I feel that it is very important for the general practitioner to know what to do in unusual cases in which an abortion is requested.

DR. MISCH CASPER, Louisville, Ky.: I wish to make a plea for the unborn child. It obviously cannot talk for itself. This subject is a scientific one, but on the other hand it goes contrary to the teachings of Christianity, which has dominated the civilized world for twenty centuries. I take it that the age of the fetus has very little to do with the killing of it. Its life is just as important to it at one month as it is at nine

months, the relativity being about the same as a child of 1 year to that of a child of 9 years, were one considering its destruction. But when some of these indications for therapeutic abortions are considered and I wish to say that I never have knowingly committed a therapeutic abortion—there is always a way to avoid it. Pernicious vomiting can now be controlled with treatment. Largely that is true of hypertension and even of severe heart cases. Who knows what minute a patient with severe heart trouble is going to die? I tell the patients that they may die the next minute or any minute of any day or any night. Who can say how much if any greater danger exists by going on to viability? The great question is, Can both be saved? I think scientific men should more diligently apply themselves to the task of trying to save both mother and child. Then this problem will resolve itself into the attitude of the physician toward the moral side of it. He can do a great deal. Some of us do not hesitate to advocate a therapeutic abortion because that is the easiest way out. I am glad to hear the lung specialist say that the pendulum has changed in pulmonary tuberculosis in the last twenty-five years and the psychiatrist that there is no essential indication for therapeutic abortion in psychiatry.

DR. CLARENCE O. CHENEY, New York: Review of the literature shows that seventeen of twenty-three experts were in favor of abortion in severe cases of chorea, particularly when threatened cardiac symptoms or psychotic symptoms of a marked degree were present. Regarding the question of abortion in the family that was mentioned and about which an inquiry was made, I was not able to follow the relationship throughout, but I would say that an abortion was not necessarily indicated. Before one can form a definite idea of the prospects of the child that might be born to the woman mentioned, one would wish to know about the family history and the stock of the father, because the father has just as much a bearing on the type of child as the mother. I do not see any definite indication for abortion in the history of the mother.

DR. HENRY P. WAGENER, Rochester, Minn.: I included a short reference to retinitis pigmentosa in my unabridged paper. The question of retinitis pigmentosa in pregnancy is more one of eugenics and sterilization than of therapeutic abortion. I think that it must be realized that a great many of these patients with hereditary retinitis pigmentosa are from families who have various other hereditary defects, among them being epilepsy and nerve deafness. As far as the patient herself who has the retinitis pigmentosa is concerned, I do not believe that under the ordinary conditions of a well conducted pregnancy there is much danger to her sight. During pregnancies in which undernourishment is a marked feature, night blindness of the idiopathic type can develop without retinitis pigmentosa. This type of night blindness can be readily controlled by the addition of proper food, particularly the proper amount of vitamin A, to the diet, and usually disappears promptly after delivery even if the vitamin A has not been sufficiently added during the pregnancy. I have recently observed the effect of pregnancy on a patient with retinitis pigmentosa. During the later months of the pregnancy, when presumably nutrition was somewhat reduced and the stock of vitamin A in the tissues was somewhat depleted, there was a definite progression of the visual defect. However, after the termination of pregnancy at term, there was a very rapid return of vision. The diminution in vision that may occur in these cases of retinitis pigmentosa during pregnancy is probably due to the extra call on the vitamin A sources of the mother. A few more words might be said with reference to the occurrence of retinitis and detachment of the retina in cases with hypertension. It is true that at the present time, under proper conservative methods of control of hypertensive disease, fewer patients than formerly show a tendency to develop angiospastic retinitis. In the cases of primary retinal detachment which are not associated with or the result of retinitis, abortion is indicated largely for the preservation of vision; for in this type of case, after the termination of pregnancy the vascular system often returns completely to normal as far as can be told by clinical and laboratory tests, and these patients can often go through later pregnancies without complications.

DR. W. W. HERRICK, New York: Any degree of hypertension, any impairment of the ability of the kidney to pass a concentrated urine, any degree of albuminuria, or of nitrogen retention, is an indication for an abortion. The question of procedure in cardiovascular-renal disorders seems to me to become increasingly clear and I think it has been somewhat clarified this afternoon. The pure nephroses are rare indeed and when they occur in pregnancy probably are complicating factors in a vascular condition, so they require no separate discussion. I agree with Dr. Mussey that the pure nephritides are relatively rare. They constitute about 10 per cent of the 1,000 cases of toxemia that are at present under study in the follow-up clinic of the Sloane Hospital. When nephritis declares itself early in pregnancy and does not yield to treatment, abortion should be performed. If it does not declare itself until late in pregnancy or if it does not progress seriously, one may attempt to carry on to the period of viability or to term. It is of great interest to me that the ideas that I have entertained for the last fifteen years as a result of the study of toxemias of pregnancy seem to be accepted elsewhere. The evidence from the studies of cases of toxemia, the studies of retinal circulation, of the capillary circulation in the nail fold, the follow-up studies, and now the necropsy studies which are appearing, seem to indicate definitely that the larger group of toxemias of pregnancy comprising preeclampsia and that great group of mild toxemia in which the dominant symptom is hypertension are widespread vascular disorders that have as an end result an arteriosclerosis not only in the kidney, sometimes not in the kidney at all, but in one or two of the necropsy cases in other parts of the vascular tree. These are not emergencies except the acute eclampsia, and they had probably at best be left to nature. In the early stages of pregnancy the hypertensive cardiovascular disease usually suggests the desirability of abortion, particularly if it does not yield to treatment. In the late stages, if it is not complicated by serious retinitis, albuminuria, edema, decline or other evidences of grave disturbance, one can attempt to carry on to viability or to term. I believe it important and less confusing to give up the traditional term nephritis as applied to renal complications of this vascular disease. I would suggest the use of the term "vascular type of toxemia" for this predominant group.

DR. HAROLD E. B. PARDEE, New York: I believe that Dr. Hamilton sizes up his patients much as has been suggested in this paper, although he may not consciously place them in any definitely named functional categories. I believe that he so rates them in his mind and I believe this because his results, his statistics, are so good. I cannot agree, however, with his statement that "any of these patients may develop cardiac failure; that they may in the morning appear to be all right and in the afternoon develop severe cardiac failure." Such things do not happen unexpectedly when the functional grouping is used. I refer to table 2, which shows 157 patients in class 1, all with what Dr. Hamilton would call serious cardiac disease, and none of these patients died. In class 1 and class 2A combined there were 337 patients with serious cardiac disease and in this group only one patient died. This death was the result of embolism of the popliteal artery. In contrast with these figures are 209 patients in class 2B and class 3, of whom twenty-four died, or 12 per cent. I believe that any classification which can select 337 patients as in a good category and show a mortality of 0.3 per cent and can select 209 patients as in a dangerous category and show a mortality of 12 per cent in this group is a useful classification and should be helpful in the management of these patients during pregnancy.

DR. F. M. POTTINGER, Monrovia, Calif.: In answer to the question that the chairman asked about tuberculosis of the kidney, I wish to say that if I had a patient in whom a kidney had been removed because of tuberculosis, but the patient was otherwise well, I would see no reason for an abortion. If, on the other hand, the patient had a kidney that was actively tuberculous and the disease was spreading, or the disease was so active that the patient was suffering from an elevation of temperature at the time, I certainly would advise abortion if the pregnancy was discovered in the early months and would advise considering it even if the pregnancy was further advanced.

OBLITERATIVE VASCULAR DISEASE

PRELIMINARY REPORT ON TREATMENT BY
ALTERNATING NEGATIVE AND
POSITIVE PRESSUREGÉZA DE TAKÁTS, M.D.
CHICAGO

Obliterative vascular disease is characterized by a sudden organic occlusion or a gradual narrowing of the arterial tree. The viability of the affected part or organ will depend on the rapidity with which a collateral circulation can be established. In studying the methods that nature utilizes to effect the maintenance of a sufficient circulation, one may observe that blood pressure usually rises above an arterial obstruction, thereby forcing blood more readily into the preformed but unused channels. This presupposes an adequate myocardial reserve. Should this be low, as in arteriosclerosis with hypotension, a support of the blood pressure with digitalis or ephedrine is helpful.¹ Secondly, the peripheral vascular bed enlarges, an effect designated by Bier "blood thirst" of the tissues and probably due to the accumulation of metabolites in the isehemic or anemic area. This peripheral vasodilatation may be supported and augmented by drugs, notably theobromine,² and by continuous, though not excessive, heat. The difficulty, however, with organic vascular disease is that in its late or terminal stages, when seen by the physician, the capacity for vasodilatation is small or completely abolished. This failure of the vascular bed to dilate in times of increased load or in a sudden vascular occlusion has often been the immediate cause of the death of the tissues.

It was a significant suggestion then, made simultaneously by two groups of investigators,³ to increase the peripheral blood flow to the extremities by encasing them in air-tight compartments made of aluminum or pyrex glass and subjecting them to the alternate effects of suction and positive pressure, thus creating, in the words of Reid, a "peripheral heart apparatus." The pressures used by Landis and Gibbon were from 80 to 120 mm. of negative pressure for twenty-five seconds, and positive pressure of from 60 to 80 mm. for five seconds, whereas Herrmann's apparatus, in its perfected stage, was intended to create 80 mm. of negative and 20 mm. of positive pressure, alternating at cycles from two to four a minute. The previous literature on the use of negative pressure to stimulate blood flow need not be considered here;⁴ the principle of alternating the pressures, and alternating them at short intervals, is a radical departure from the previously used continuous suction with occasional release.⁵

From the Peripheral Circulatory Clinic, Northwestern University Medical School and St. Luke's Hospital.

1. Sutton, D. C., and Lueth, H. L.: Treatment of Hypotension in Arteriosclerosis, *Illinois M. J.* 65:500 (June) 1934.

2. Scupham, G. W.: The Use of Theobromine in Peripheral Vascular Diseases, *Arch. Int. Med.*, to be published.

3. (a) Landis, E. M., and Gibbon, J. H., Jr.: Effects of Alternate Suction and Pressure on Circulation in Lower Extremities, *Proc. Soc. Exper. Biol. & Med.* 20:593 (Feb.) 1933; The Effects of Alternate Suction and Pressure on the Blood Flow to the Lower Extremities, *J. Clin. Investigation* 12:925 (Sept.) 1933. Landis, E. M.: Observations on Peripheral Vascular Disease, *Ann. Int. Med.* 8:232 (Sept.) 1934. (b) Reid, M. R., and Herrmann, L. G.: Treatment of Obliterative Vascular Diseases by Means of an Intermittent Negative Pressure Environment, *J. Med.* 14:200 (June) 1933. Herrmann, L. G.: The Pavaex (Passive Vascular Exercise) Treatment of Obliterative Vascular Diseases of the Extremities, *ibid.* 14:524 (Dec.) 1933. Reid, M. R.: Diagnosis and Treatment of Peripheral Vascular Diseases, *Am. J. Surg.* 24:11 (April) 1934.

4. Herrmann, L. G., and Reid, M. R.: The Conservative Treatment of Arteriosclerotic Peripheral Vascular Diseases, *Ann. Surg.* 100:750 (Oct.) 1934.

5. Meyer, Willy, and Schnieden, Victor: Bier's Hyperemia Treatment, Philadelphia, W. B. Saunders Company, 1908.

THEORETICAL CONSIDERATIONS

Landis³ pointed out that the law of Poiseuille is applicable in the presence of rigid arteries incapable of dilatation. Early in the last century Poiseuille observed that the amount of blood flowing through a rigid tube depends on the fall in pressure along the tube. As a continuous elevation of the systemic blood pressure may seldom be accomplished, the diminution of venous pressure, which increases the difference between capillary and venous pressure, may more effectively augment blood flow through the capillary bed. This law was applicable with restrictions to capillary circulation.⁶ Landis and Gibbon also showed in normal subjects, under controlled temperature conditions, that blood flow as indicated by skin temperature was greater in the limb exposed to variations in pressure. It is easily demonstrable through a glass boot that during suction the skin becomes red as the capillaries and veins are filled with blood, whereas under positive pressure, which is used to empty the peripheral vascular bed, the skin blanches. "The emptying affords a reservoir in which fresh arterial blood may be drawn by the next period of negative pressure."

PRACTICAL APPLICATION

While Landis and Gibbon presented these theoretical considerations and described a few clinical cases, Reid and Herrmann, independently from these workers, tested the idea of alternate suction and pressure in a mass experiment. In 1932 Herrmann designed and built a machine, which during construction had undergone several modifications. Publication was withheld until more than 3,000 treatments were given. In his Matas lecture in New Orleans, Reid reported that sixty-nine patients received more than 5,500 treatments of this "passive vascular exercise." In a vast material, observed under conditions in that most of these patients were hospitalized, commands the greatest respect, and their conclusions must be of general interest to all interested in this form of treatment. They also found, as Landis, that the skin temperature rose during treatment. It stayed higher and gradually returned to its previous level in two days. From this they concluded that treatments might be given in the chronic form of obliterative disease about three times a week for periods of one-half hour, whereas, in acute vascular occlusions, treatments as often as from five to seven times a day were recommended. Reid carefully summed up the conclusions at New Orleans by saying that the treatment has been much the most effective single stimulant to the development of collateral circulation. For critical periods of vascular disease it saved many limbs that would otherwise have been amputated. It has also been used to save the life of an extremity following the ligation of a large artery. It has been used in chronic arthritis to increase the circulation.

In his latest article, Landis studied sixteen patients very carefully, in regard to changes in skin temperature, color and the effect on rest pain, on the healing of indolent ulcers and on frank gangrene. Concerning the real therapeutic value of the procedure, he was unwilling to state whether the development of collateral circulation can permanently return the tissues to a normal state. He showed, however, that patients might be tided over acute crises of rest pain and ulceration, so that time might be gained for the natural development.

6. Landis, E. M.: Poiseuille's Law and Capillary Circulation, *Am. J. Physiol.* 103:432 (Feb.) 1933.

of improved circulation. Shipley⁷ treated seventeen patients with different types of vascular disease and included cases of ununited fracture and causalgia. He noted a marked improvement of circulation in all of them.

Herrmann and Reid attempted a closer evaluation of the results obtained on 300 patients with more than 12,000 treatments. They emphasized that in the acute forms of peripheral obstruction, such as thrombosis or embolism, trauma or arterial ligation, the results are truly startling. But when they were dealing with a slow, progressive arteriolar obstruction, the results were not nearly so encouraging; in fact, 42 per cent of the cases were not benefited. Between these two extremes of acute arterial obstruction and the slow progressive arteriolar disease, all variations in the rate of progression of the disease are found and this naturally reflects on the value of the pressure therapy. Reid⁸ emphasized in his most recent paper, read before the New York Academy of Medicine, Nov. 14, 1934, that gangrene and infection of the foot call for excellent surgical judgment in the use of the alternating pressure.

OWN OBSERVATIONS

Treatment was begun at the end of April 1934 with the "pavaex" apparatus of Herrmann. Every patient received a systematic examination of the peripheral vascular status, which included the palpation of pulses, the cutaneous histamine test, the oscillometric curves at different levels and, in doubtful cases, an estimation of the capacity for vasodilatation.⁹ This was determined by a peripheral nerve block¹⁰ and in the later cases by the simple and excellent method of Landis and Gibbon.¹¹ Only organic types of vascular disease showing little or no spasm were selected, as suggested by the originators of the method. For estimation of the improvement, the claudication, rest pain, cyanosis and the increase in the oscillometric curve were studied.

GROUP 1.—Arteriosclerosis Obliterans.—The average plan of treatment was, as originally outlined by Reid and Herrmann, to administer treatment three times a week for half an hour. Better results seem to be obtained by daily treatment for an hour. All these patients were ambulatory, most of them dispensary patients, coming from a long distance. Four stayed away because of no improvement after six treatments. Six patients received from fifty to a hundred treatments; all these noted subjective improvement. It became obvious that objective improvement could be registered only after two weeks of intensive treatment, and that forty or fifty hours of treatment should possibly be given for a real trial of the method. For some of these older patients, one of whom was 78, the other 80 years old, a daily trip to the outpatient department was exhausting. Their cardiovascular status was poor; two were fibrillating, another was decompensated.

The best results were obtained in a man, aged 64, with hypertension, auricular fibrillation and an indolent ulcer, who took fifty one hour periods of treatment. The ulcer became painless and showed a marked

tendency to heal. Another man, aged 61, took sixteen half hour and twenty-nine one hour periods, with definite objective improvement. My experience with this group as a whole is that daily periods of one hour should be insisted on, and that unless they are hospitalized a number of them will stay away for various reasons and will not derive benefit from a few treatments.

GROUP 2.—Acute Vascular Occlusions (thrombosis, embolism).—Four patients were treated in this group. They received almost continuous treatment, one hour on and one hour off, through forty-eight to seventy-two hours. One 78 year old man who showed a popliteal embolus following prostatectomy was seen only two days after the occlusion had to be amputated above the knee and died of a pulmonary embolus after the operation. A girl, aged 16, with a *Streptococcus viridans* endocarditis, was brought in forty-eight hours after an embolism occluding both iliac arteries, chiefly the right, on which side a gangrene of the first three toes set in. This patient received sixteen three hour treatments. The gangrene did not progress, but neither did it appear on the untreated other side, which was pulseless from the popliteal space down. She died of a cerebral embolism. One man, aged 72, with peripheral arteriosclerosis and a failing heart, developed a popliteal thrombosis. He received twenty-six half hour treatments, did not improve, was discharged home and died there suddenly. One man, aged 56, was shot through the popliteal fossa, with the production of a traumatic thrombosis of the popliteal artery. He was treated one year after the injury because of intermittent claudication, numbness and coldness in the toes. After twenty-six one hour treatments he felt no improvement, although there was a slightly increased capacity for vasodilatation. The case was regarded as one of compensation neurosis.

My experience with this group was very limited. The general conditions of these patients, their tendency to repeated and multiple emboli, and the fact that none of them were treated the first six to eight hours following the embolism, led to complete failure to avert amputation or death. The fourth case, which properly does not belong here, had a medicolegal aspect, which makes an evaluation of the results especially difficult.

It would be unfair, however, to condemn the method in this group of cases, which seem to give the most startling results in the experience of Reid and Herrmann. As is the case with the results of embolectomy, the education of the medical profession to regard these cases as a true surgical emergency and admit them to the hospital during the first few hours after the acute occlusion has occurred would be the greatest single factor in saving the limb.

GROUP 3.—Thrombo-Angiitis Obliterans.—Two cases were selected, because they showed very little spasm and no evidence of a recent activation. One man, aged 51, received fifty-two one hour treatments. There was no subjective or objective improvement. He had symptoms of a more generalized vascular involvement (coronaries, mesenteric vessels), and complete rest, abstinence from tobacco, and sufficient fluid intake were instituted. His general condition remained unimproved. Another man, aged 49, received twenty-five half hour treatments with no results. He later improved on sub-reactionary doses of typhoid vaccine.¹²

7. Shipley, A. M., and Yeager, G. G.: Passive Vascular Exercise in the Treatment of Peripheral Circulatory Disease, Surg., Gynec. & Obst. 59: 480 (Sept.) 1934.

8. Reid, M. R.: Personal communication to the author.

9. de Takáts, Géza, and Mackenzie, W. D.: The Diagnosis and Treatment of Peripheral Vascular Disease, Surg., Gynec. & Obst. 58: 655-667 (March) 1934.

10. de Takáts, Géza: The Differentiation of Organic and Spastic Vascular Occlusions, Ann. Surg. 94: 321-326 (Sept.) 1931.

11. Landis, E. M., and Gibbon, J. H., Jr.: Simple Method of Producing Vasodilatation in Lower Extremities, with Reference of Its Usefulness in Studies of Peripheral Vascular Disease, Arch. Int. Med. 52: 785 (Nov.) 1933.

12. de Takáts, Géza: Peripheral Vascular Disease, to be published.

When one realizes how slight an injury, how trivial a respiratory infection is capable of activating a migrating phlebitis or arteritis in these patients, the danger of subjecting patients with true Buerger's disease to such powerful vascular massage is obvious. In the terminal, healed stages of obliteration, a cautious treatment in two cases did not seem to bring about improvement.

GROUP 4.—Endarteritis Obliterans.—This group, strictly separated from Buerger's disease, is the obliterative healed stage of many different chemical and bacterial injuries that affect the intima. For purposes of discussion I have grouped the frost bites, the syphilitic, tuberculous arteritides, the scleroses due to lead and arsenic, into this group.¹²

One man, aged 33, with considerable focal infection and rheumatoid joints, had a marked vascular occlusion. Following six treatments, his intermittent claudication

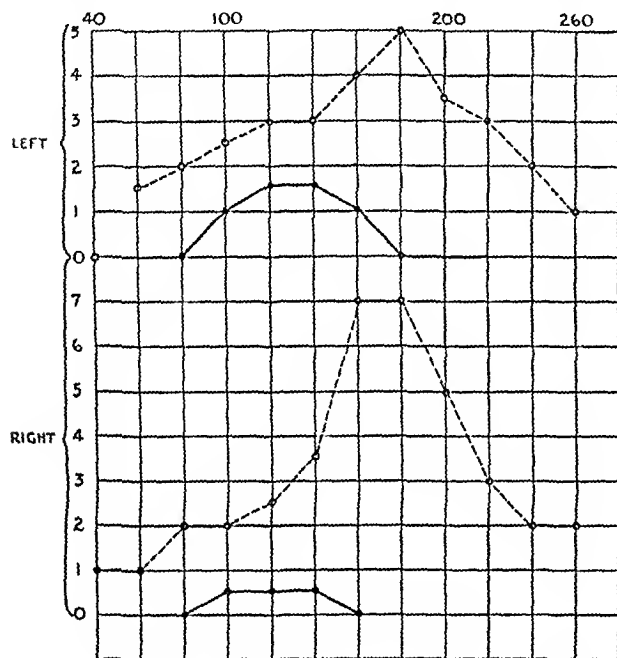


Fig. 1.—Oscillometric curves of J. F., a man, aged 53, with peripheral arteriosclerosis: solid lines, oscillometric curve at the ankles; interrupted lines, oscillometric curves at the mid thigh. Note the small elevation of the curve at the right ankle. The foot clinically was pulseless. Note the unusual height of the curve at mid thigh, compared with that of the left side. This patient is pounding blood into the extremity with vascular obstruction below the knee.

was greatly improved. Another patient, aged 43, had thirty-five one hour treatments in the hospital. He had a phlebitis of the retinal vessels, suggestive of tuberculosis, and a marked obliterative vascular disease in both lower extremities, with absence of calcification. No biopsy was permitted. He was hospitalized for two weeks. The claudication improved from one to six blocks. However, after discharge from the hospital, although receiving ambulatory treatment once a week, he relapsed into his previous condition. One man, aged 41, suffering from a severe frost bite suffered two years previously, and an indolent ulcer on the great toe, showed a rapid healing of the ulcer. A skin graft took well. He received fifty-eight half hour treatments. Another man, J. H., aged 46, with a rheumatic heart, arthritis of the foot, fallen arches and a history of prolonged exposure to cold, showed a marked improvement in color and capillary circulation. The joint pains were not influenced.

In this group there was a marked improvement in all cases, which is due, I believe, to the fact that, first, this is a younger age group; second, the interference with circulation is in the small arteries and the larger vessels are free, and, third, with the exception of one case, prolonged treatment was given.

THE CLINICAL ESTIMATION OF IMPROVEMENT

1. Rest Pain.—All patients afflicted with rest pain, which is particularly excruciating in acute vascular occlusion, were promptly relieved during the application of alternating pressures. The patient with the popliteal embolus went to sleep under the treatment, without sedatives. The rest pain returns, however, when the apparatus is stopped. The difficulties encountered in maintaining continuous treatment for long periods of time will be discussed later.

2. Intermittent Claudication.—This is the complaint which brings most of the chronic obliterative vascular obstructions to the attention of the physician. In the arteriosclerotic group, claudication improved in four out of the ten patients. These few were patients who took the most treatments, who belonged to the younger group and whose general cardiovascular status was fair. The slightest improvement was from one to three blocks, the greatest from one-half block to eight blocks. Obviously, so many factors enter here that such records serve only to encourage the patient and are not regarded as an accurate, although a very suggestive, indication of better circulation. In the group with Buerger's disease, no improvement was noted, while in the group diagnosed as endarteritis obliterans, claudication improved from one to six blocks, from one-half to eight blocks, from six blocks to a mile, and from six blocks to no cramping at all.

3. Color Changes.—Cyanosis often is seen to disappear during treatment. This was particularly true in the case of frost bites, although the climatic and meteorological conditions are naturally important. That patients are apt to get more benefit from this treatment when maximal vasodilatation enlarges the reservoir capacity of the vascular bed has been emphasized by Landis, who advises an electric pad or immersion into hot water for the upper extremities, to produce reflex vasodilatation during treatment.

4. The Oscillometric Curves.—All patients had an oscillometric examination before and during treatment. From these curves, which will not be reproduced here for lack of space, I learned that a high blood pressure, and particularly a higher curve on the affected side above the obstruction, gives a good prognosis as to the efficacy of treatment (chart 1). This is one of the mechanisms of developing collateral circulation. Unfortunately, however, many of the older patients with arteriosclerosis have a low, plateau form of curve above the knees, or no oscillations at all. This is especially true of the acute vascular occlusions, emboli occurring at the iliac bifurcation, or at the aorta. Suction of blood from a relatively avascular area cannot be as helpful as when the main vessel above the cuff of the machine is pulsating and widely patent. In one case it was possible to improve this flat oscillometric curve (chart 2). In general, however, it was impossible to see definite changes in the curves. This is not surprising, as the improvement of circulation is probably in the nonpulsatile element of collateral circulation.¹³

13. Dr. R. W. McNairy is responsible for the distinction between pulsatile and nonpulsatile circulation. This is a very expressive term.

5. *The Healing of Ulcers.*—As stated later, the indolent ulcers due to endarteritic processes heal faster and become painless. The efficacy of treatment will depend almost entirely on the capacity of the peripheral bed to dilate, and a sufficient myocardial reserve to maintain head pressure.

6. *The Effect on Frank Gangrene.*—In the cases that were admitted with frank gangrene, amputation had to be performed, except in the case of the girl with septic endocarditis, in whom amputation was considered useless. The question arises whether the level of amputation could be changed to a lower site following treatment.

In most of the acute occlusions there will not be enough time to establish a new collateral circulation. The effect, then, must be due to a release of spasm in the collateral vessels, a fact that has also been suggested by Reid.⁸ My observations with the intravenous use of papavcrine in acute vascular occlusions would indicate the importance of relieving the initial spasm of collaterals in acute vascular occlusions.¹⁴ The last indication of a spreading infection would require stopping the treatment and amputation. In one case it was possible to obtain positive histamine flare at the level of the knee joint, whereas, two days before, the first positive reaction was obtained at midhigh.¹⁵ Outside of infection, the increase of venous thrombosis should also militate against further vascular exercises.

CONTRAINDICATIONS TO TREATMENT

On theoretical grounds, infection and venous thrombosis, appearing separately or jointly, should constitute a serious warning against the use of the machine. Particularly in the infectious type of diabetic gangrene with osteomyelitis of the toe, it would seem unwise to use negative pressure. McKittrick and Root¹⁶ pointed out the frequency of a latent streptococcic septicemia in diabetic gangrene. Venous thrombosis in the larger vessels often accompanies arterial obstruction. A recent soft clot may readily be mobilized by this treatment. One should also think of certain acute venous thromboses, which produce a temporary arterial spasm and exhibit cold, cyanotic, numb and tingling toes and may mislead the surgeon to apply the apparatus for an arterial embolus. The differential diagnosis of an arterial embolus, arterial thrombosis and venous thrombosis is important for those using the machine.

DIFFICULTIES OF TREATMENT

1. The apparatus is not noiseless. In using it for a long period for acute occlusions, not only the patient but even more his neighbors are greatly handicapped or inconvenienced. This necessitates a private room for such patients, or the placing of the apparatus in an adjoining room.

2. The rubber cuff connecting the glass boot with the extremity under treatment is supposed to be soft and adjustable, not causing any venous constriction. Up to the present no cuff has been suggested or supplied that would maintain the partial vacuum and not produce constriction of the limb. This constriction is so uncomfortable that patients will not stand the treatment for longer than an hour; some of them complain bitterly after half an hour. It is obvious that this steady venous hyperemia militates against the full effects of alternate

suction and pressure. It favors venous stagnation and may predispose to venous thrombosis. The latter is merely a theoretical consideration, as I have not observed any such effect.¹⁷

3. The glass boot is so constructed that it will encase the extremity above the knee. Reid and Herrmann pointed out the importance of the external and internal geniculate arteries as collateral channels. But many of these patients have arterial obstruction much higher than midhigh. For these with flat or absent oscillometric curves at that level the suction cannot be very effective.

COMMENT

This preliminary report is obviously based on such a small number of cases, treated and followed for such a short period of time, that its only justification lies in the importance of outlining the present status of this therapy. It is not possible at this time to state the scope and the lasting efficacy of this treatment. The facts that speak in favor of this treatment can be briefly enumerated. First, I believe it is correct to assume that a temporary increase in blood flow can be obtained in the presence of an organic obstruction and in the presence of a peripheral vascular bed, which can hardly dilate, even if deprived of its vasoconstrictor tone.

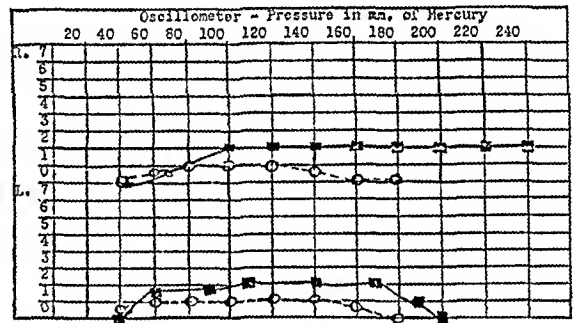


Fig. 2.—Circulatory record of L. K., aged 57, before and after fifty-two hours of treatment: square blocks after fifty-two hours of treatment. While the curves at the ankle remained unchanged, the curves at the midhigh were definitely improved. Note how straight these curves are, indicating the rigidity of the vessels.

Second, it would seem that, if these treatments are given often enough, at least an hour a day for periods of weeks and months, a subjective and objective improvement may be obtained in patients for whom no other therapy except amputation is available. It is obvious that with increasing experience certain groups will be eliminated and others especially singled out for this treatment. Third, if used by men familiar with peripheral vascular disease, no harm can come from its use. On the contrary, certain acute vascular occlusions, if subjected as early as six or eight hours after the occurrence of typical clinical symptoms, may be actually tided over the crisis with minimal loss of tissue.

Against the success of this treatment militate the following factors: First, one is dealing here with some patients who have arrived to a terminal stage of a generalized cardiovascular disorder. If their myocardial reserve is gone, if their aorta and large vessels keep sending more and more intimal plaques to obstruct the peripheral vessels, if their minute vessels are gradually closing up, and if their general reaction to injury and repair are at a low ebb, a temporary aspiration of blood

17. At present a long segment of a seven inch inner tube is used as a cuff. This tube had to be split by vulcanizing a strip of rubber tissue into it, to enlarge the circumference.

14. Denk, W.: Zur Therapie der arteriellen Embolie, München. med. Wehnschr. 81: 437-439 (March 23) 1934.

15. de Takáts, Géza: The Determination of the Proper Level of Amputation, Internat. J. Med. & Surg. 47: 339 (Sept.) 1934.

16. McKittrick, L. S., and Root, N. W.: Diabetic Surgery, Philadelphia, Lea & Febiger, 1930.

into the periphery can hardly be of lasting benefit. These patients would probably respond much better if they were hospitalized. As pointed out by Reid, the passive vascular exercise brings new blood to the part but without any additional requirement of oxygen consumption, whereas active exercise, walking and so on, uses up the small reserve of blood for metabolic activities. It is also obvious, and has been emphasized throughout the writings of Reid and Herrmann, that the method is only a valuable adjunct to other forms of conservative therapy and has not been put forward as a cure-all. In the embolic group, the source of the embolus may continue to send showers into the other extremity and into vital organs. Nor do all these patients arrive as early to the surgeon as they should. The practicing physicians can hardly take the blame when the interns of some of the best hospitals fail to recognize or to act on the presence of a peripheral embolus.

Second, the method is not perfected to the stage at which the treatment can be continuous for hours or days. The prolonged pressure of the cuff is painful and probably not harmless. The continuous throbbing of the machine is inconvenient. More important, if suction could be instituted from a higher level, such as around the waistline, and patients encased in light sleeping bags with a metal framework to stand the variations in pressure, an inflow of blood could be secured for the type of extremity that is pulseless at the femoral ring.

From the brief analysis of these factors that speak for and militate against the success of this treatment, it can readily be seen that the younger individuals, with less degree of cardiac damage, and those whose obstruction is at or below the popliteal fossa, will derive the most benefit. Especially suitable seem patients with localized forms of endarteritis, as in frost bite, whose cardiovascular apparatus is not damaged or is only moderately damaged. In the hands of those who will select their patients with as much care as they would in selecting them for a major operation, the method can do no harm and may show spectacular results. For the cardiovascular wrecks, and the embolic patients, arriving with a forty-eight hour old frank gangrene, the apparatus should not offer any hope. No attempt has been made as yet to treat the purely spastic types of vascular occlusion.

As to the permanent improvement following a temporary restoration of circulation, nothing can be said; nor in my opinion will a mass of joint statistics be of any avail. The original course of the disease will prevail and only individual prognoses can be made.

SUMMARY

1. The principle of treating organic vascular obstructions by an intermittent negative pressure environment is physiologically sound.
2. The apparatus of Herrmann, delivering 80 mm. of negative and 20 mm. of positive pressure, was used on twenty patients. Ten of them had arteriosclerosis, four suffered from acute emboli or thrombosis, two were afflicted with Buerger's disease, and four had endarteritis obliterans.
3. The improvement was gaged in regard to rest pain, intermittent claudication, changes in color, changes in the oscillometric curve, the healing of ulcers and the effect on frank gangrene.
4. Rest pain was promptly abolished with the beginning of the treatment. Intermittent claudication

was improved in some of the cases, chiefly those in which there was sufficient cardiac reserve and which were treated long enough. Cyanosis improved, particularly in the frost bites. The oscillometric curve of the total group did not change, except in one instance. Indolent ulcers healed more promptly. In the stage of frank gangrene, amputation became necessary.

5. Most favorable seemed to be the cases presenting involvement of the smaller vessels and relatively less cardiovascular damage. This seems to be at variance with the experience of Reid and Herrmann. Least favorable were the hypotensive arteriosclerotic patients with cardiac damage and flat or absent oscillometric curves at midthigh. The acute vascular obstructions all came too late for treatment. Two cases of Buerger's disease showed no response. The endarteritic patients were generally benefited.

6. The apparatus requires technical modifications, so that it can be used for a longer period of time, that it be noiseless and that it may encase larger areas of the extremities.

7. At present the method should be under the control of peripheral vascular clinics with facilities of hospitalization, careful selection of cases and evaluation of results. The therapy is a valuable adjunct to other useful methods already in use. Late results cannot be predicted. They will be mainly governed by the underlying cause and progressive tendency of the vascular occlusion.

122 South Michigan Avenue.

A STUDY OF ONE HUNDRED CASES OF JAUNDICE

WITH PARTICULAR REFERENCE TO
GALACTOSE TOLERANCE

LEON SCHIFF, M.D.

AND

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During the last three years we have studied a group of 100 patients with jaundice at the Cincinnati General Hospital with particular attention to clinical manifestations, galactose tolerance and ability to excrete bromsulphalein. We have determined the degree of jaundice during the course of illness by means of the icteric index and van den Bergh determinations and the presence or absence of complete obstruction by study of duodenal contents, urine and stools. We are thoroughly in accord with the importance of clinical observations in the differential diagnosis of jaundice as recently stressed by Flood, Seegal, Spock and Loeb.¹ We feel, however, that laboratory studies, particularly the galactose tolerance test, may prove of great help in the diagnosis of some cases and lend confirmatory evidence in others.

The galactose tolerance test was devised by Bauer² in 1906 as a test of hepatic function. Two years later

From the Department of Internal Medicine, University of Cincinnati College of Medicine and the Medical Service, Cincinnati General Hospital. Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Flood, C. A.; Seegal, David; Spock, Benjamin, and Loeb, R. F.: The Differential Diagnosis of Jaundice, *Am. J. Med. Sc.* **185**: 358 (March) 1933.

2. Bauer, R.: Weitere Untersuchungen über alimentäre Galaktosurie, *Wien. med. Wchnschr.* **56**: 2537, 1906; Ueber die Assimilation von Galaktose und Milchsucker beim Gesunden und Kranken, *ibid.* **56**: 20, 1906.

he³ reported excessive galactosuria in cases of catarrhal jaundice in contradistinction to slight galactosuria in cases of jaundice due to obstruction. The test has been

TABLE 1.—Catarrhal Jaundice

No	Age	Sex	Day of Jaundice	Galactose Excretion, Gm	Serum Bilirubin, Mg per 100 Cc	Icteric Index	Brom sulphalein Retention, per Cent
1	57	♂	6	3.6	37.5	200.0	100.0
2	23	♀	9	3.1	4.8	50.0	60.0
3	29	♀	9	10.0	26.5	180.0	100.0
4	24	♂	21	3.6	3.0	13.6	15.0
5	20	♀	21	4.5	6.5	48.0	30.0
6	25	♀	26	5.3	4.0	49.0	30.0
7	20	♀	5	4.0	11.7	70.0	100.0
8	20	♀	2	4.1	6.6	47.0	90.0
9	22	♀	64	5.4	2.7	36.0	40.0
10	24	♂	11	5.3	7.7	65.0	70.0
11	19	♂	23	4.7	10.7	76.3	90.0
12	56	♀	5	5.2	15.2	99.0	90.0
			20	2.7	1.1		0.0
13	24	♀	9	8.2	11.0	69.0	80.0
14	25	♀	17	3.0	7.6	51.3	50.0
15	29	♀	20	3.5	27.7	171.5	100.0
16	26	♀	6	0.9	5.7	39.0	70.0
17	27	♀	16	3.3	8.5	53.9	90.0
18	14	♀	47	6.4	1.6	19.0	10.0
19	25	♀	13	3.7	4.0	39.5	40.0
20	25	♀	11	4.5	16.5	101.0	100.0
21	38	♂	11	6.9	14.0	110.0	100.0
22	54	♀	43	4.2	21.5	134.0	100.0
23	35	♂	11	7.2	4.8	40.2	100.0
24*	62	♀	31	4.5	21.6	152.0	90.0
25	53	♀	13	6.4	19.0	170.0	100.0
			17	6.3	6.5	74.0	30.0
			27	6.1	3.2	45.0	5.0
			31	6.9	2.5	41.5	0.0
			35	4.4	1.9	36.0	0.0
			42	4.1	1.4	28.2	0.0
			45	5.7	1.3	27.6	0.0
			57	5.0	—0.2		0.0
26	68	♀	17	3.3	9.8	72.6	40.0
27	52	♀	17	3.8	16.0	138.6	100.0
			20	5.0	2.0	190.0	100.0
			32	3.9	7.8	81.8	50.0
			41	3.1	3.3		0.0
			103	0.5	—0.2		0.0
28	47	♀	20	3.0	14.9		100.0
29	33	♀	9	3.5	14.9	111.0	40.0
30	20	♀	6	3.0	11.5	81.4	80.0
31	54	♀	18	5.5	10.4	73.7	100.0
32	28	♀	21?	4.6	12.0	90.0	50.0
			28?	0.0	2.4	32.5	0.0
33	27	♂	8	3.6	17.0	121.0	100.0
			18	3.8	23.2	154.0	100.0
			25	3.6	11.5	91.0	100.0
			32	2.0	5.4	57.0	40.0
			47	0.9	2.8		0.0
34	24	♀	5	8.9	18.7	143.0	100.0
			27	5.0	2.3	21.5	0.0
			68	2.3			
35	23	♀	3	9.4	15.5	108.9	100.0
36	20	♀	14	9.1	6.8	46.0	80.0
37	22	♀	3	1.3	13.4	83.6	50.0
			8	3.0	2.0	28.0	0.0
			15	2.4	0.7	17.0	0.0
38	32	♂	7	5.5	10.0	65.0	80.0
			29	5.0	4.2		0.0
			40	6.4	2.6	33.5	0.0
			51	2.6	1.7	28.7	0.0
39	37	♀	15	7.2	5.0	49.0	30.0
40	32	♀	10	4.7	20.0	148.0	100.0
			25	7.9	3.4	36.0	30.0
			32	7.1	2.3	32.0	0.0
			39	5.1	1.4	24.0	0.0
41	29	♀	21	4.0	20.0	101.8	100.0
42	33	♀	11	5.0	33.0	176.0	100.0
43	39	♀	19	6.9	19.0	121.0	100.0
			39	5.1	1.6		
44	53	♀	42	5.5	21.5	160.0	100.0
45	13	♀	7	1.5	9.8	65.0	100.0
			11	4.0			
			18	2.4	0.7	16.8	
46	26	♂	8	10.64	15.0	80.0	80.0
			29	7.9	15.0	121.0	50.0
47	38	♂	10	7.7	12.0	61.6	100.0
			25	6.8	1.7	28.0	
48	47	♂	24	7.5	13.7	104.2	100.0
			62	5.3	0.0	22.0	
			167	2.5	..	9.9	
49	42	♂	4	5.3	19.0	11.0	80.0
			9	3.0	6.2	56.0	
50	47	♂	17	4.2	20.0	114.0	100.0
			37	1.2	1.0	..	0.0

used extensively in European clinics but it is only recently that clinical application of it has been made in this country. This has been due largely to the work

3 Bauer, R. Ueber alimentäre Galaktosurie bei Ikterus, Deutsche med Wchnschr 24:1505, 1908

of Shay and Schloss,⁴ who have corroborated Bauer's results and have emphasized the importance of the test in the differential diagnosis of painless jaundice, particularly that appearing in the later decades of life. For an excellent review of the literature on the subject of this test, the reader is referred to the papers of Shay, Schloss and their associates and to the more recent publication of Tumen and Piersol.⁵ Bollman, Power and Mann⁶ feel that galactose is theoretically the sugar of choice for the testing of carbohydrate metabolism in hepatic disease.

The technic of the galactose tolerance test as carried out in this study is essentially that given by Shay and Schloss. After an overnight fast, the patient is instructed to empty the bladder, the specimen being used as a control for glycosuria. The patient is then given 40 Gm. of galactose dissolved in 500 cc. of water to which a few drops of lemon juice have been added. Specimens of urine are collected at hourly intervals for five hours and placed in separate containers. During the period of the test the patient may drink water if he desires, but nothing else. Each specimen is tested for sugar by means of the Benedict qualitative reaction.

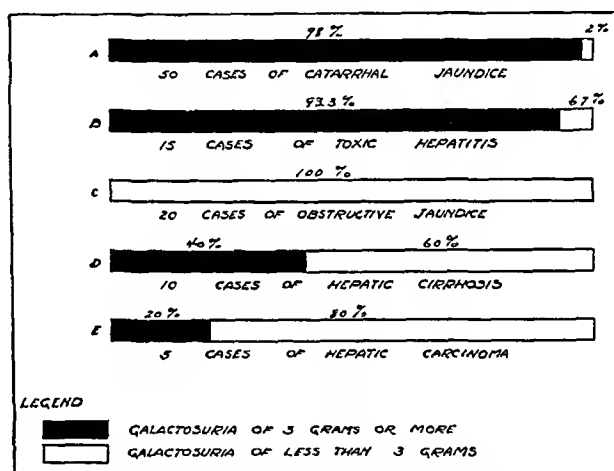


Chart 1.—Galactose test in 100 cases of jaundice.

Those specimens giving a positive test are mixed and the total amount of sugar is determined by the Benedict quantitative method. An excretion of more than 3 Gm. is considered as indicative of intrahepatic jaundice and is referred to as a positive galactose test, whereas an output of less than 3 Gm. is referred to as a negative galactose test. Care must be taken to exclude the presence of oliguria, as it may result in an unreliably low output of galactose.

The technic of Rosenthal and White⁷ was employed in the tests of bromsulphalein excretion, 2 mg. of the dye being given per kilogram of body weight. It was thought preferable to employ this amount rather than

4 Shay, Harry, Schloss, E. M., and Bell, M. A. The Metabolism of Galactose: 1. Considerations Underlying the Use of Galactose in Tests of the Function of the Liver, Arch. Int. Med. 47:391-402 (March) 1931. Shay, Harry; Schloss, E. M., and Rodis, Isadore. The Galactose Tolerance Test in the Differential Diagnosis of Jaundice, ibid 47:650-659 (April) 1931. Shay, Harry, and Schloss, Eugene. Painless Jaundice: Its Differential Diagnosis by the Galactose Tolerance Test, J. A. M. A. 98:1433-1436 (April 23) 1932.

5 Tumen, H. J., and Piersol, G. M. The Value of Alimentary Galactosuria in the Diagnosis of Jaundice, Ann Int Med 7:311-329 (Sept.) 1933.

6 Bollman, J. L., Power, M. H., and Mann, F. C. The Relation of the Liver to the Metabolism of Galactose, Proc Staff Meet, Mayo Clin. 6:724-725 (Dec) 1931.

7 Rosenthal, S. M., and White, F. C. Clinical Application of the Bromsulphalein Test for Hepatic Function, J. A. M. A. 84:1112-1114 (April 11) 1925.

the larger (5 mg.) dose because of the presence of jaundice. The results expressed in the tables indicate the percentage of dye retained in the blood stream half an hour after injection. Normally, none of the dye should be detectable in the blood after this period of time.

The results of the galactose test are given in chart 1.

CATARRHAL JAUNDICE

There were fifty patients with catarrhal jaundice (table 1). The diagnosis was based on jaundice that was generally painless, of short duration, frequently

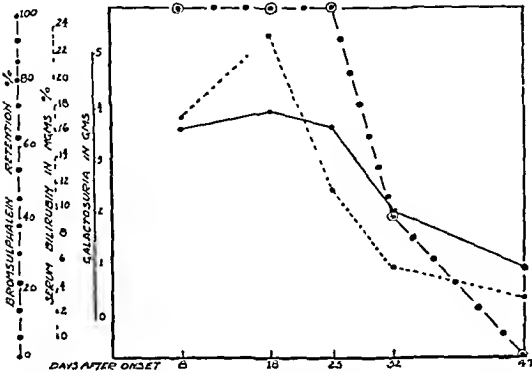


Chart 2 (case 48)—Relation between serum bilirubin galactosuria and bromsulphalein retention (catarrhal jaundice).

preceded by an infection of the upper respiratory tract, accompanied or shortly preceded by epigastric discomfort, and one that ended in recovery with the exception of two patients who died and were examined post mortem. Following subsidence of the jaundice, all patients over 30 years of age, and many of the younger individuals, were subjected to a Graham test and showed normal gallbladder visualization. Bile microscopy was negative with respect to calcium bilirubinate and cholesterin crystals.

In forty-seven of the cases a positive galactose test (excretion of 3 Gm. or more) was obtained on first

TABLE 2—Duration of Jaundice and Average Galactose Output (Catarrhal Jaundice)

Number of Cases	Duration of Jaundice	Average Galactose Excretion, Gm.
12	2-7 days	4.47
16	9-14 days	6.21
11	15-21 days	4.33
10	23-64 days	5.16
1	Uncertain	4.60

examination. In two others (cases 37 and 45) a second test, done five and four days, respectively, after the first, was positive, making forty-nine positive among a total of fifty cases. This agrees closely with the experience of Shay, Schloss and Rodis, who reported positive tests in all of sixteen patients with catarrhal jaundice. Tumen and Piersol obtained positive tests in eighteen of twenty-three cases (78.3 per cent).

The importance of repeating the test, particularly when early in the course of jaundice a discrepancy appears between clinical and laboratory observations, is illustrated in cases 37 and 45. The third case with a negative test (case 16) was an extremely mild one, the serum bilirubin not exceeding 5.7 mg. per hundred cubic centimeters and the jaundice disappearing on the twelfth day. It is interesting to note that the negative tests were all obtained in younger patients (aged 13, 22

and 26 years respectively), in whom differential diagnosis is generally less difficult and less urgent than in older individuals. The average galactose output was somewhat higher (5.33 Gm.) in nineteen individuals over 35 years of age than in the thirty-one individuals below this age level (4.99 Gm.).

TABLE 3.—Toxic Hepatitis

No.	Age	Sex	Day of Jaundice	Galactose Excretion, Gm.	Serum Bilirubin, Mg. per 100 Cc.	Icteric Index	Brom sulphalein Retention, per Cent	Toxic Agent
1	44	♂	14	4.2	16.8	130.0	100.0	Arsphenamine
2	31	♀	5	7.0	13.2	83.4	100.0	Arsphenamine
3	37	♀	17	2.8	15.6	...	80.0	Arsphenamine
4	53	♂	20	6.1	26.0	158.0	...	Arsphenamine
5	25	♂	6	4.4	0.6	60.1	90.0	Arsphenamine
6	58	♀	13	6.6	24.0	170.0	100.0	Arsphenamine
7	54	♂	18	2.7	9.0	75.0	80.0	Arsphenamine
8	32	♀	27	...	1.4	24.0	...	Arsphenamine
9	31	♀	12	3.6	14.0	114.4	100.0	Arsphenamine
10	32	♀	32	2.5	1.5	30.0	0.0	Arsphenamine
11	31	♀	70	0.5	1.2	10.6	0.0	Arsphenamine
12	24	♀	10	7.4	16.4	123.0	100.0	Arsphenamine
13	31	♀	14	6.1	13.2	114.0	90.0	Arsphenamine
14	64	♀	12	4.7	14.0	123.0	100.0	Arsphenamine
15	63	♀	26	7.7	20.4	182.0	100.0	Arsphenamine
16	31	♀	32	6.9	34.5	205.8	...	Arsphenamine
17	31	♀	57	5.2	10.6	114.4	...	Arsphenamine
18	31	♀	102	3.0	1.0	37.0	0.0	Arsphenamine
19	31	♀	362	1.5	...	...	0.0	Arsphenamine
20	31	♀	29	7.6	7.5	46.0	90.0	Arsphenamine
21	31	♀	35	7.9	16.0	94.0	100.0	Arsphenamine
22	31	♀	41	7.5	4.0	45.0	50.0	Cinchophen
23	31	♀	49	6.8	1.5	24.0	10.0	Cinchophen
24	31	♀	200	3.1	Negative	...	0.0	Cinchophen
25	31	♀	323	1.9	Negative	...	0.0	Cinchophen
26	24	♀	14	5.73	16.0	110.0	100.0	Arsphenamine
27	31	♀	25	5.67	1.5	23.0	0.0	Arsphenamine
28	31	♀	8	3.5	10.6	67.2	20.0	Cinchophen
29	64	♀	8	6.0	14.0	73.0	100.0	Cinchophen
30	63	♀	167	2.69	...	10.5	...	Hyperthyroidism
31	63	♀	9	10.3	29.0	189.0	100.0	Hyperthyroidism

In all of thirty-one patients in whom there was a history of an antecedent infection of the upper respiratory tract the galactose test was positive, the average

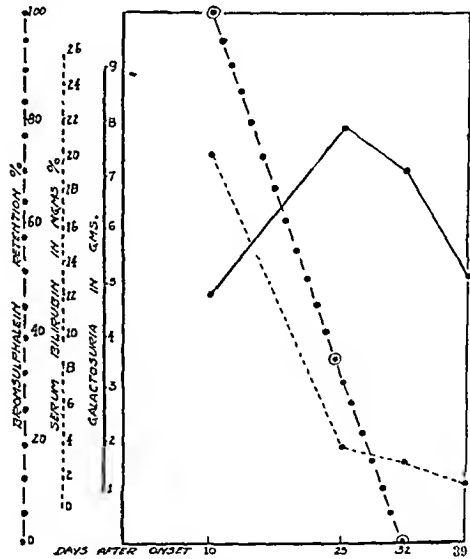


Chart 3 (case 40)—Relation between serum bilirubin galactosuria and bromsulphalein retention (catarrhal jaundice).

output in this group being 5.28 Gm., in contrast to an average of 4.85 Gm. in the remaining patients.

The galactose output does not appear to be directly related to the duration of jaundice. This has been the experience of Tumen and Piersol and others (table 2).

There also appears to be no direct relationship between the level of serum bilirubin, galactose output

and bromsulphalein retention (charts 2, 3, 4 and 5). At certain stages the galactose test may be the sole one to show evidence of liver damage. Chart 2 shows an increase and subsequent decrease in jaundice with constant galactosuria and later a slight degree of jaundice with a normal galactose output. Chart 3 shows an increase in galactosuria with a simultaneous decrease in the degree of icterus. The galactose output was still high in the absence of bromsulphalein retention. Chart 4 illustrates persistence of excessive galactosuria after

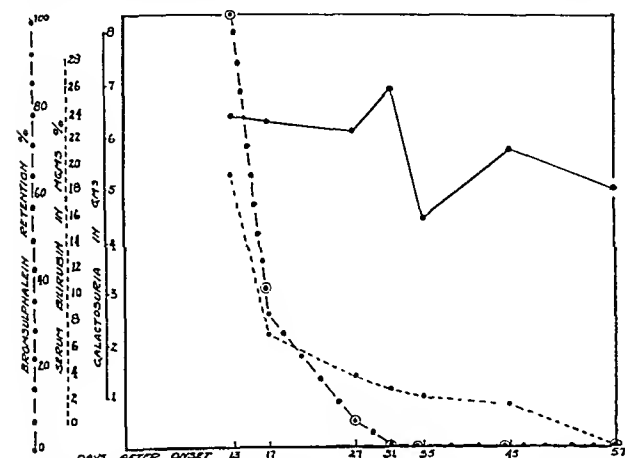


Chart 4 (case 25).—Relation between serum bilirubin galactosuria and bromsulphalein retention (catarrhal jaundice).

complete subsidence of icterus. Chart 5 shows a tendency of galactosuria to parallel icterus.

In thirty-two of the patients the liver was felt to be definitely enlarged, extending from one to four or more fingerbreadths below the right costal margin. The average galactose output in this group was 4.7 Gm. In the remaining eighteen patients the liver was not demonstrably enlarged, being either not palpable at all or barely felt at the end of deep inspiration. The average galactose output in this group was 5.19 Gm. The three individuals with an initial low galactose output (cases 16, 37 and 45) showed respectively no hepatic enlargement, one fingerbreadth and two fingerbreadths enlargement.

TOXIC HEPATITIS

Of fifteen cases of toxic hepatitis, the galactose test was positive in fourteen (table 3). This is to be expected in view of the changes found in acute catarrhal jaundice, which is felt to be a form of acute hepatitis. Banks, Sprague and Snell⁸ report positive tests in fifteen of eighteen cases of acute and subacute intrahepatic jaundice, including two cases of catarrhal jaundice. Tumen and Piersol obtained a positive test in only seven of thirteen cases of toxic hepatitis.

OBSTRUCTIVE JAUNDICE

The obstructive jaundice group comprised twenty cases (table 4). In eleven the jaundice was due to common duct stone. In six of these the diagnosis was confirmed at operation, while the remaining five presented the clinical signs of Charcot's intermittent hepatic fever associated with leukocytosis. Three of

these five patients, 8, 9 and 11, had had gallstones (and the gallbladder) removed one, three and seven years prior to admission. In the other two, after disappearance of the icterus, the gallbladder failed to visualize on repeated roentgen examination. In one, no B bile was obtained on repeated attempts at biliary drainage, while B bile obtained from the second individual contained calcium bilirubinate and cholesterol crystals.⁹

In four cases gallbladder disease was found at operation, with obstruction probably due to cholangitis in three and pancreatitis in the remaining one, in which a cholecystogastrostomy was performed.

In the remaining five cases, obstruction was apparently due to pancreatic carcinoma in four and pancreatic cyst in the fifth. In two of these cases diagnosis was based on the clinical observation of progressive, painless, fatal jaundice of long standing with complete obstruction associated with enlargement of the liver and gallbladder and with negative roentgen changes except for evidence of distortion of the duodenum.

As can be seen from a study of table 4, the galactose output was relatively low in every instance, regardless of the duration of the jaundice or the cause of the obstruction. It is interesting to note the drop in the galactose output in case 18 almost two months after the first test with practically little change in the degree of jaundice.

Our results are similar to those of Shay, Schloss and Rodis, who encountered negative galactose tests in all of eighteen cases of obstructive jaundice. Tumen and Piersol encountered only one positive test in eighteen cases. Banks, Sprague and Snell obtained negative galactose tests in only sixteen of thirty cases of carcinoma of the head of the pancreas or ampulla of Vater and primary neoplasm of the common or hepatic ducts. These authors also obtained negative tests in only two thirds of thirty-seven cases of jaundice due to choledocholithiasis, stricture, and cholecystitis and hepatitis and

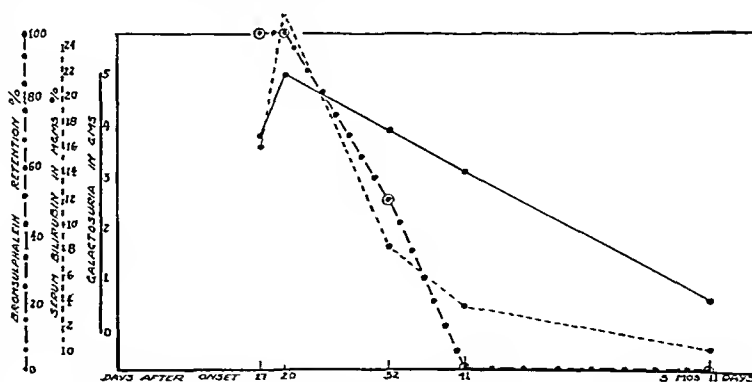


Chart 5 (case 27).—Relation between serum bilirubin galactosuria and bromsulphalein retention (catarrhal jaundice).

cholangitis. We are unable to reconcile our results with those of these authors unless their patients had more extensive parenchymal hepatic injury.

CIRRHOSIS OF THE LIVER

There were ten cases of cirrhosis, of which eight were portal in type and two biliary in character (table 5). In four the galactose output was positive, while in six it was negative. Wagner¹⁰ also obtained four

8. Banks, B. M.; Sprague, P. H., and Snell, A. M.: Clinical Evaluation of the Galactose Tolerance Test, *J. A. M. A.* 100:1987-1993 (June 24) 1933.

9. The diagnosis in this case was subsequently confirmed by operation.
10. Wagner, F.: Klinische Untersuchungen über die Bedeutung der verschiedenen Zuckerproben für die Beurteilung der Leberfunktion, *Ztschr. f. klin. Med.* 80: 174-199, 1914.

positive tests among ten cases, while Banks, Sprague and Snell obtained but two positives among thirteen patients. Wagner examined hourly specimens until two that were sugar free were obtained. Baucr has more recently adopted this method because of the delayed excretion of galactose if oliguria is present.

Opportunity was afforded to examine microscopically the livers of three patients in this series. Case 1, which gave a positive test, showed in addition to the cirrhosis severe parenchymal damage (table 7), in the form of rarefaction and granularity of the cytoplasm of most of the liver cells and subacute hepatitis associated with beginning bile stasis. Case 9

diffuse cirrhosis considerable regeneration of liver tissue, a finding that has been invoked to explain some instances of a negative galactose test in cirrhosis. However, case 6, which also gave a negative test, showed very little evidence of regeneration.

Banks, Sprague and Snell report two instances of increased galactose excretion falling to normal as the patients recovered from brief episodes of jaundice.

patient developed ascites. A second determination done six weeks after the first showed the galactose output to have dropped to 1.1 Gm. Death occurred on December 17, on the one hundred and second day of jaundice. It is of interest to note the change in galactose output with the development of subacute cirrhosis. While the excretion of galactose may have been somewhat impaired as a result of the patient's condition, it is felt that this did not account for the difference in the two determinations, as on the occasion of the first test a total of 195 cc. of urine was obtained during the five hour period and during the second test 145 cc.

It is interesting to note the extensive types of liver damage other than acute with low galactose outputs as exemplified by the remaining cases with one exception (case 12).

ILLUSTRATIVE CASES

CASE 1 (case 50, catarrhal jaundice).—An obese white woman, aged 47, was admitted to the Medical Service of the Cincinnati General Hospital, Dec. 11, 1933, complaining of icterus of fifteen days' duration. This was preceded by an

TABLE 4.—Obstructive Jaundice

No.	Age	Sex	Duration of Jaundice	Galactose Excretion, Gm.	Serum Bilirubin, Mg. per 100 Cc.	Icteric Index	Bromsulphalein Retention, per Cent	Diagnosis	Basis for Diagnosis
1	43	♀		0.2	16.5	96.0	100.0	Common duct stone	Operation
2	64	♂	18 days	0.5	2.0	17.6	10.0	Common duct stone	Operation
3	52	♂	3 days	1.8	3.2	28.0	30.0	Common duct stone	Operation
4	46	♀	6 days	0.0	4.3	36.0	50.0	Common duct stone	Operation
5	64	♀	.....	0.7	1.3	....	0.0	Common duct stone	Operation
6	48	♀	27 days	0.0	9.4	67.2	85.0	Common duct stone	Operation
7	63	♂	6 months	1.6	2.0	20.0	30.0	Common duct stone	Clinical observations
8	49	♀	7 days	1.0	3.4	31.2	30.0	Common duct stone	Clinical observations
9	42	♀	13 days	1.2	14.3	108.0	100.0	Common duct stone	Clinical observations
10	55	♀	15 days	0.0	15.0	154.0	100.0	Common duct stone	Clinical observations
11	65	♀	10 days	0.5	12.0	....	....	Common duct stone	Clinical observations
12	43	♂	10 days	0.0	....	32.0	....	Cholelithiasis	Operation
13	31	♀	.....	0.5	7.7	53.0	40.0	Cholecystitis and cholangitis	Operation
14	30	♀	12 days	0.80	4.0	34.0	80.0	Cholecystitis and cholangitis	Operation
15	..	..	.....	0.00	3.0	22.0	....	Cholelithiasis, pancreatitis	Operation
16	62	♂	20 days	0.28	16.7	71.4	70.0	Pancreatic cyst compressing the common duct	Operation and autopsy
17	53	♀	2 months	0.5	26.4	187.0	100.0	Carcinoma of the pancreas	Clinical observations
18	47	♂	3 months	1.4	12.3	104.0	100.0	Carcinoma of the pancreas	Autopsy
			4 months	0.8	13.7	106.6	100.0		
			and 23 days						
19	80	♂	1 month	1.6	18.7	110.0	80.0	Carcinoma of the pancreas	Autopsy
20	59	♀	34 days	1.8	10.2	105.0	100.0	Carcinoma of the pancreas	Clinical observations

CARCINOMA OF THE LIVER

In four of five patients, the galactose test was negative (table 6). This may be explained by the fact that enough of the liver parenchyma was not destroyed (or injured) to interfere with conversion of galactose into glycogen. Banks, Sprague and Snell reported three positive tests in seven cases of malignant metastatic deposits in the liver. Wagner reports negative tests in extensive primary hepatic neoplasm. According to Bauer,¹¹ metastatic malignant lesions of the liver rarely produce any significant change in galactose tolerance.

ANATOMIC HEPATIC CHANGES

The liver sections of twelve of the patients were studied by Drs. R. S. Austin and Pearl Zeek of the department of pathology. The results are recorded in table 7.

In two cases giving positive galactose tests, severe parenchymal injury was found (cases 1 and 3). The third patient (patient 2) was admitted with catarrhal jaundice. On the forty-second day of icterus, the galactose output was found to be 5.5 Gm. The jaundice persisted, the liver began to decrease in size and the

attack of severe epigastric pain radiating to her right shoulder blade and accompanied by nausea and vomiting. There was a history of indigestion during the preceding eighteen months. There was no history of an antecedent infection of the upper respiratory tract, ingestion of cinchophen or injection of arsphenamine. Her temperature on admission was 100 F. and there was considerable tenderness over the region of the right upper quadrant. The liver edge extended two fingerbreadths below the right costal margin, its surface being smooth and tender. The white cells numbered 10,400, with 74 per cent neutrophils. There was no anemia. The serum bilirubin was 20 mg. per hundred cubic centimeters, van den Bergh reaction direct, and urobilinogenuria negative. The impression of both internists and surgeons who saw the patient was one of common duct stone. The galactose output was 4.5 Gm. On the basis of this finding, surgical intervention was less seriously considered and a diagnosis of catarrhal jaundice was made. A week after admission, the jaundice began to decrease rapidly and recovery was uneventful. A Graham test later showed a normally visualized gallbladder, and repeated bile microscopy failed to reveal calcium bilirubinate or cholesterol crystals.

CASE 2 (not included in the reported series).—A white man, aged 66, was first seen about four months after the onset of a painless jaundice that was accompanied by marked anorexia, weakness and loss of weight. Pruritus was prominent. Examination revealed the liver edge to extend three fingerbreadths below the level of the right costal margin in the nipple line; the surface was smooth and not tender. The spleen was not felt. There was no ascites. The serum bilirubin was 4.9 mg.

11. Bauer, R.: Unsere Kenntnisse über Leberfunktion und ihre Verwertung für die Klinik, Wien. klin. Wchnschr. 45: 1577 (Dec. 23) 1932.

per hundred cubic centimeters; the galactose output 5 Gm., and bromsulphalein retention 60 per cent. Urobilinogen was present in the urine in excess. Roentgen examination of the gastrointestinal tract was negative. On the basis of excess galactosuria (and urobilinogenuria) a diagnosis of an atypical and unusually prolonged catarrhal jaundice with possible subacute necrosis was made. The patient's condition has steadily improved on a high carbohydrate, low fat regimen, together

In view of the excessive galactosuria (and urobilinogenuria) a diagnosis of an unusually prolonged catarrhal jaundice was made. There was a rapid decline in the patient's icterus, and recovery was uneventful.

SUMMARY AND CONCLUSIONS

The galactose tolerance test was positive (output of galactose exceeded 3 Gm.) in forty-nine of fifty cases of catarrhal jaundice and fourteen of fifteen cases of acute toxic hepatitis.

A negative test (output of less than 3 Gm.) was obtained in all of twenty cases of obstructive jaundice.¹² Negative tests were mostly obtained in cases of cirrhosis and neoplasm of the liver.

TABLE 5.—*Cirrhosis of the Liver*

No.	Age and Sex	Duration of Jaundice	Galactose Excretion, Gm.	Serum Bilirubin, Mg. per 100 Cc.	Bromsulphalein Retention, per Cent	Icteric Index	Was serum albumin elevated	Basis for Diagnosis
<i>A Portal Cirrhosis</i>								
1	41 ♂	2½ days	4.6	10.0	88.2	90.0	+	Autopsy
2	55 ♀	3½ days	0.7	8.6	65.0	40.0	+	Clinical observations
3	18 ♀	6 mos.	3.5	3.7	31.2	60.0	+	Operation
4	45 ♂	24 days	5.2	5.6	54.0	40.0	+	Clinical observations
5	66 ♂	8 days	1.1	2.8	23.0	50.0	0	Clinical observations
6	64 ♀	?	0.0	6.6	45.0	70.0	+	Autopsy
7	56 ♀	18 days	3.8	1.1	14.4	35.0	0	Clinical observations
8	64 ♂	?	0.5	9.8	5.7	70.0	+	Clinical observations
<i>B Biliary Cirrhosis</i>								
1	23 ♀	5 years	1.0	10.5	83.4	40.0	0	Autopsy
2	27 ♂	3 years	0.3	6.3	59.0	40.0	0	Clinical observations

with frequent transduodenal biliary drainages. After eight months there are no abnormal findings except for slight increase in the size and consistency of the liver (one fingerbreadth below the right costal margin).

CASE 3 (case 24, catarrhal jaundice).—A white man, aged 62, was admitted to the Cincinnati General Hospital complaining of a painless jaundice of four weeks' duration. Anorexia and weakness were prominent and there was considerable loss of weight. There was no pruritus. The temperature was normal and the abdominal examination gave negative results. Serum bilirubin was 21.6 mg. per hundred cubic centimeters, bromsulphalein retention 90 per cent, galactose output 4.5 Gm. There was no urobilinogen in the urine. The admission diagnosis was carcinoma of the head of the pancreas. A diagnosis of catarrhal jaundice was later made because of the marked galactosuria. The patient died suddenly, seven days after admission, and autopsy revealed changes associated with acute hepatitis.

TABLE 6.—*Carcinoma of the Liver*

No.	Age and Sex	Duration of Jaundice	Galactose Excretion, Gm.	Serum Bilirubin, Mg. per 100 Cc.	Bromsulphalein Retention, per Cent	Icteric Index	Primary Site	Basis for Diagnosis
1	60 ♂	?	1.2	7.5	57.2	50.0	Liver	Autopsy
2	70 ♂	13 days	0.6	7.3	54.0	40.0	Gall bladder	Autopsy
3	77 ♂	?	2.1	15.0	92.0	80.0	Liver	Autopsy
4	58 ♂	34 days	1.2	7.3	57.0	100.0	Liver	Autopsy
5	60 ♂	4½ mos.	3.4	6.8	48.8	80.0	?	Clinical observations

CASE 4 (case 22, catarrhal jaundice).—A white woman, aged 54, was admitted to the Cincinnati General Hospital, complaining of a painless jaundice of five and one-half weeks' duration. There was marked pruritus. She had lost 25 pounds (11 Kg.). The temperature was 99.2 and the abdominal examination negative except for a firm, smooth, moderately tender liver, which extended two fingerbreadths below the right costal margin. Serum bilirubin was 21.5 mg. per hundred cubic centimeters, bromsulphalein retention 100 per cent, galactose output 4.2 Gm. Urobilinogenuria was present in excess. Roentgen examination of the gastro-intestinal tract was negative

TABLE 7.—*Liver Functional Tests and Anatomic Hepatic Changes*

No.	Diagnosis	Serum Bilirubin, Mg per 100 Cc.	Bromsulphalein Retention, per Cent	Galactose Excretion, Gm.	Anatomic Changes
1	Catarrhal jaundice	21.6	90.0	4.5	Necrosis, atrophy and hemorrhage; some fibrosis of portal areas, with slight lymphocytic infiltration
2	Catarrhal jaundice	21.5 (Oct 18)	100.0	5.5	
	Subacute cirrhosis with ascites	15.2 (Dec 4)	.	1.1	Diffuse fibrosis, with lymphocytic infiltration of portal areas; some atrophy of adjacent liver columns
3	Portal cirrhosis	10.0	90.0	4.6	Diffuse cirrhosis; rarefaction and granularity of cytoplasm of most liver cells around portal areas; subacute hepatic pericholangitis
4	Portal cirrhosis	6.6	70.0	0.0	Diffuse cirrhosis; beginning proliferation of bile ducts; very little evidence of regeneration
5	Biliary cirrhosis	10.5	40.0	1.0	Diffuse cirrhosis with regenerating liver tissue; bile stasis
6	Portal cirrhosis, hepatoma	7.5	50.0	1.2	Diffuse cirrhosis; hepatoma; hemosiderosis
7	Portal cirrhosis, hepatoma	7.3	..	1.2	Diffuse cirrhosis; hepatoma; bile stasis
8	Carcinoma of liver	7.3	40.0	0.6	Extensive invasion of liver by tumor cells; no cirrhosis
9*	Carcinoma of liver	12.3	40.0	1.4	Extensive invasion of liver by tumor; focal necrosis; biliary stasis
10*	Carcinoma of liver	18.7	80.0	1.6	Extensive invasion of liver tissue; bile stasis
11	Common duct stone	4.3	50.0	0.0	Diffuse fibrosis with multiple (microscopic) liver abscesses mostly around bile ducts; acute and chronic ulcerative cholangitis
12	Common duct stone	1.3†	0.0	0.7	Liver changes scant; slight focal fatty infiltration; slight focal degeneration in central zones; slight periportal lymphocytic infiltration

* Secondary to carcinoma of pancreas.

† 7.3 mg. per hundred cubic centimeters three days previously.

The test appears of great value in differentiating acute (toxic or infectious) jaundice from obstructive (extrahepatic) jaundice.

The galactose tolerance bears no direct relationship to the degree or duration of jaundice or to the amount of retention of bromsulphalein. In the later stages of acute intrahepatic damage it may remain positive when other tests of liver function have become negative.

The test should be repeated when a discrepancy arises between clinical and laboratory observations.

12 Since this report was completed a case of carcinoma of the head of the pancreas with jaundice of eight weeks' duration (serum bilirubin 25 mg. per hundred cubic centimeters) was seen with a galactose output of 3.1 Gm.

ABSTRACT OF DISCUSSION

DR. HARRY SHAY, Philadelphia: The authors have presented data that should convince the most confirmed skeptic of the value of the galactose tolerance test in the clinical differentiation between toxic or infectious jaundice encountered in acute diffuse liver cell damage, and jaundice due to obstruction. The data portray clearly the usual results obtained with this test. It is difficult to reconcile their almost consistent results, the results reported this morning by Dr. Rosenberg of Chicago before the Section on Gastro-Enterology and Proctology, and my own previously recorded data, with those recently published by Banks, Sprague and Snell, in which the test did not show so favorably. The difficulty, I believe, lies not in the test itself but in the varying behavior of galactose metabolism in different types of liver cell damage. In studies on metabolism of galactose, as well as in the application of this test in jaundice, I have stressed certain very obvious facts concerning the function of the liver. First, the carbohydrate function of the liver is a vital one as has been adequately demonstrated by Dr. Mann and his associates. Second is the tremendous reserve of the liver and, third, the great power of regeneration. Because of the physiologic facts mentioned, no impairment of galactose utilization is seen unless the liver is involved acutely and diffusely. Then are seen high excretions of galactose in so-called catarrhal jaundice, in reality a diffuse hepatitis, and in cases of toxic or infectious jaundice from other damaging agents. In cases of obstructive jaundice, however, also a positive galactose tolerance test is seen when the obstruction has lasted for so long a period that the accumulated damage has overcome the reserve of the liver, by prolonged obstruction alone or obstruction plus infection, or when the regenerative power of the liver has failed. The discrepancy between my results and those of the present authors and of Dr. Rosenberg, as contrasted with the data of Banks, Sprague and Snell, may be due entirely to this fact. I am reasonably certain that the cases studied by the latter workers at Rochester, Minn., were of long duration or presented associated infection of the biliary tree, facts that would explain why they obtained such a high percentage of positive results in their obstructive jaundice group. It is true that this test is not a measuring stick in the experimental sense; but when one is confronted with the task of attempting an early differential diagnosis in jaundice, particularly in the painless jaundice of middle and later life, the test becomes of inestimable value. It is a simple office procedure. If done early and repeated, and if the physiologic principles for the interpretation of results are properly considered, the apparent failures of the test will be very few.

DR. F. C. MANN, Rochester, Minn.: The so-called liver function tests were first developed on the basis that hepatic function can be measured. The evidence today would indicate that liver function cannot be quantitated by any one test or any combination of tests. It would also appear that there is a dissociation of functions of the liver; that is, one function may be injured by a pathologic process without greatly interfering or even affecting other functions of the organ. It is logical, then, to do what the authors have done, to employ two or more tests in attempting not to quantitate hepatic function but to find out whether one function is more affected than another. While the tests cannot be used really to measure hepatic function, such data as the authors have presented may be accumulated, which may indicate that the tests can be used to differentiate various pathologic processes in the organ. The work in my laboratory would indicate that the liver is responsible for the utilization of a high percentage of galactose; that is, a dehepatized animal appears to utilize only a small amount of the galactose administered to it. This is entirely different from the administration of levulose to a dehepatized animal, in which case the animal can utilize a high percentage of the levulose administered, or dextrose in which it appears to utilize all of it. Experimentally the test has not proved to be of much value in quantitating hepatic function because of the marked variability in the ability of the animal to utilize this sugar. I believe that the authors' employment of the various tests to differentiate the pathologic processes in the liver rather than to attempt to quantitate liver function is of value.

Clinical Notes, Suggestions and New Instruments

NEURONITIS OF PREGNANCY WITHOUT VOMITING

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AND

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The etiology of neuronitis of pregnancy is still in question. Until recently, this condition was usually considered as being due to a toxemia associated with pregnancy. It is now generally believed, however, that it is caused by a deficiency in vitamins, such deficiency usually being attributed to the excessive vomiting that occurs among patients who develop the disease.

A review of the literature reveals the high incidence of vomiting in cases of neuronitis of pregnancy. Of the fifty-two cases, reports of which were collected by Berkwitz and Lufkin,¹ in only one was it specifically stated that vomiting had not been noted. Caffier,² Wilson and Garvey,³ McGoogan,⁴ Strauss and McDonald,⁵ Luikart,⁶ Lubin⁷ and Gillespie⁸ have all reported cases of this disease, and in each one of these severe vomiting occurred prior to the onset of neurologic symptoms. Vandel⁹ has reported three cases in which the patients had neuronitis; two of them had hyperemesis, and the third, a semistarved woman, was in a very poor nutritional state. Hornung and Creutzfeldt¹⁰ reported two cases in which paralysis was associated with pregnancy; in one of these they considered the paralysis to be the result of neuronitis associated with vomiting, and in the other, in which vomiting did not occur, they attributed the paralysis to concurrent infection, poliomyelitis. Although Plass and Mengert¹¹ do not give the protocols for their twelve cases, they state that "gestational polyneuritis almost invariably develops late in the course of or following an attack of hyperemesis gravidarum."

Strauss,¹² in his most recent article discussing the rôle of the gastro-intestinal tract in conditioning deficiency diseases, stated that "the disease [polyneuritis of pregnancy] occurs only after 'pernicious vomiting' of pregnancy. It is thus apparent that the failure of the gastro-intestinal tract to retain food can cause this deficiency." A case of neuronitis of pregnancy recently has come under our observation, which refutes the dogmatism implied by this statement and which casts doubt on the universal validity of the theory of vitamin deficiency. We are reporting this case not to describe the disease, which has been amply done in the literature, but to focus attention on the fact that neuronitis of pregnancy may occur without vomiting and without any gross dietary deficiency.

REPORT OF CASE

A married woman, aged 31, came to the Mayo Clinic, April 30, 1934, complaining of paralysis of the right leg and weakness of the left leg, both of four and a half months' duration. Her history is significant. As a child she had had scarlet fever.

From the Section on Neurology, the Mayo Clinic.

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11. Plass, E. D., and Mengert, W. F.: Gestational Polyneuritis, J. A. M. A. 101:2020-2023 (Dec. 23) 1933.

12. Strauss, M. B.: The Rôle of the Gastro-Intestinal Tract in Conditioning Deficiency Disease, J. A. M. A. 103:1-4 (July 7) 1934.

In 1918 she had had influenza. She had then been well until six weeks before the birth of her first child, in 1929. At that time a peculiar feeling in both arms had developed. She found it difficult to describe this feeling, saying "It was not a real numbness nor a tingling but just a funny sensation." In addition her arms seemed to be weak, and for no reason she could explain she had suddenly dropped things. This condition had cleared up entirely immediately after the birth of the child. Vomiting had not occurred at any time during the pregnancy.

Six or eight weeks before the birth of the patient's second child, in 1931, the same symptoms developed in her arms, although in addition she now had numbness and tingling in her legs, which at times would suddenly buckle up under her. Again all her symptoms disappeared completely after the child was born. There was no vomiting during this second pregnancy.

Six weeks before the birth of a third child, 3 months old at the time of the patient's admission, the patient had a severe right renal colic, which was followed the next day by hematuria and by the passage of small calculi. Two days after this attack her right leg became weak, and within three or four days it was completely paralyzed. The left leg became weak at the same time, but it never was completely useless. The back and abdominal muscles became involved, the patient being unable to sit up in bed. There seemed to be no loss of strength in the arms. She complained, however, of moderately severe, fleeting pains in both the arms and legs and of a peculiar, numb feeling of the legs. This condition remained stationary until after delivery, when there was marked improvement in the use of the left leg but very little return in function of the right. The back and abdominal muscles became slightly stronger.

negative. Examination of the ocular fundi gave negative results. The perimetric fields were normal.

Laboratory Examination.—The urine was of a specific gravity of 1.028 and was acid in reaction; it contained a slight amount of albumin and a large amount of pus but no sugar. The value for hemoglobin was 12.4 Gm. per hundred cubic centimeters of blood, and erythrocytes numbered 4,030,000 and leukocytes 6,500 per cubic millimeter. The differential count was normal; morphologically, the blood picture was that of mild, hypochromic anemia. The flocculation test was negative. Roentgenologic study of the thorax gave negative results. Examination of the spinal fluid gave the following results: Wassermann reaction, negative; globulin, positive; small lymphocytes, 3 per cubic millimeter; total protein, 0.40 Gm. per liter; colloidal gold, 0001200000; pressure, 90 mm. on the water manometer; prompt response to jugular pressure up to 230 mm., prompt fall.

THE CASE AGAINST THE A. B. & S. PILL

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The cathartic agent known as the A. B. & S. pill, even though relegated to the National Formulary, is still rather freely recommended by some practitioners and consequently is promiscuously used by the public. Hence there are frequent disastrous consequences when these pills are eaten by unsuspecting youngsters, who presume that the beautifully colored and sugar-coated pellets are "candy" rather than "deadly buck-shot" by virtue of the contained strychnine which accompanies the belladonna and aloin.

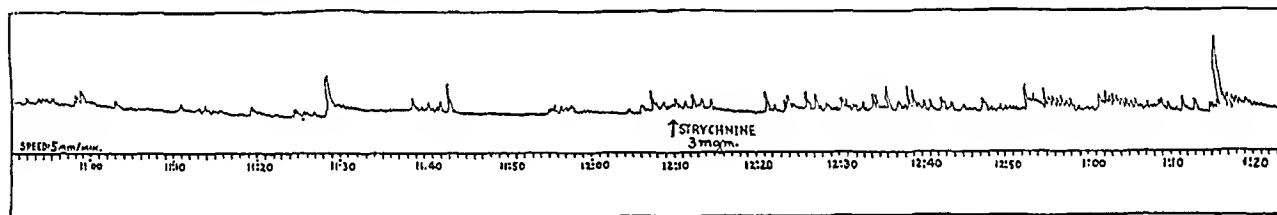


Fig. 1.—Man, aged 52; Cecostomy, March 2, 1934. Time interval in minutes. At 12:10 p. m., 3 mg. of strychnine intramuscularly.

Again during this third pregnancy there had been no vomiting, and prolonged inquiry did not reveal any gross dietary deficiency during this or the other pregnancies. The diet seemed to be adequate in amount and in vitamin content. There was no history of exposure to metals, and no medication was taken at any time during the pregnancies.

The functional inquiry gave essentially negative results. At no time was there diplopia, loss of vision, facial paralysis, speech defect or loss of sphincter control.

Physical Examination.—The patient was well developed and moderately obese. Her eyes reacted to light and in accommodation; the pupils were equal and regular. Small tonsillar tags and mild gingivitis were present. The thyroid gland was slightly enlarged and soft, but there was no bruit or thrill. Examination of the heart, lungs and abdomen gave negative results. Pelvic examination likewise gave negative results except for indicating a badly lacerated cervix. Rectal examination revealed small hemorrhoids.

Neurologic Examination.—The cranial nerves were normal. There was no nystagmus. The muscles of the head, neck and upper extremities were normal. The back and abdominal muscles were markedly diminished in strength. The muscles of the left thigh were moderately weak and the muscles of the left leg were slightly weak. There was no atrophy of this leg.

The muscles of the right thigh were almost completely paralyzed and the muscles of the right leg completely so. The muscles of this leg were moderately atrophied. There was no fibrillary twitching in either leg. The arm reflexes were brisk and the abdominal reflexes normal. The patellar reflex was absent on the right and was just obtained with reinforcement on the left. The achilles tendon reflex was absent on the right and normal on the left. There was bilateral flexor response of the Babinski reflex. The sensory examination was

The danger of all disguised medicants containing strychnine is vividly portrayed by Aikman¹ in his analysis of agents responsible for death preceded by convulsions in children under 5 years of age. He finds that strychnine in the form of Hinckle's, A. B. & S., and A. B. S. & C. pills or tablets is the most frequent causative poisoning agent.

In 1929 in Dr. O. H. Plant's laboratory at Iowa City, experiments² with various doses of strychnine were conducted by the "balloon method"³ on unanesthetized trained dogs with Thiry-Vella loops of the ileum. As a result of these studies, which showed slight but definite increased activity of the dogs' small intestine, the following statement was made: "If we are justified in transferring these results, obtained in dogs, to the human subject on a basis of per kilogram dosage, then the use of strychnine to increase muscular activity of the intestine or to make other drugs more effective, is warranted as a therapeutic measure."

May we frankly state, however, that we have long been of the conviction that drugs less hazardous than strychnine are available for purposes of either promoting or augmenting catharsis.

Not until Aikman's review appeared were we cognizant of the actual frequency of convulsive poisoning by strychnine. His paper convinced us of the desirability of ascertaining by the graphic, balloon method the effect of therapeutic doses of strychnine in man.

From the Department of Pharmacology, Boston University School of Medicine, and the Evans Memorial Hospital.

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METHOD

Long, sausage-shaped balloons tied to rubber catheters were inserted through cecostomies and colostomies into the large intestine of four patients, one woman and three men.⁴ The catheter was then connected to a water manometer in which any change in water level and hence in air volume was distributed graphically to a smoked paper on the kymograph through a modified⁵ Brodie air bellows. All patients were given breakfast and the balloon was usually inserted, without pain in any instance, at about 9:30 or 10 a. m. The patient was allowed to assume a comfortable position on his back in

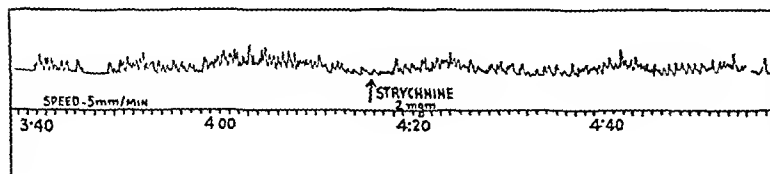


Fig. 2—Woman, aged 54. Cecostomy, June 19, 1933. Time interval in minutes. At 4 16 p. m., 2 mg. of strychnine intramuscularly.

his own bed and changed only slightly from this position for four, six or seven hours with little discomfort. All injections of strychnine sulphate were given intramuscularly, after a normal record of one hour's duration had been obtained.

RESULTS

In five experiments on four patients there was no recognizable change in either tone or peristalsis, in three instances following

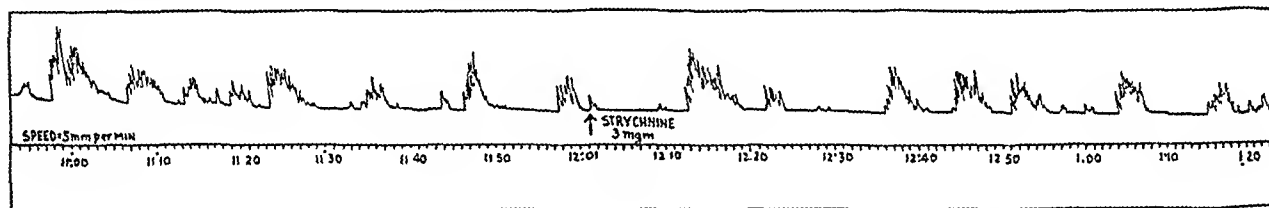


Fig. 3—Man, aged 55. Colostomy, Feb. 15, 1934. Time interval in minutes. At 12.01 p. m., 3 mg of strychnine intramuscularly.

2 and 3 mg. of strychnine; only slight increase in peristalsis in one case after 3 mg., and considerable depression of peristalsis in another when 2 mg. was given. The accompanying tracings are representative.

COMMENT

Our results are taken from only five experiments in four cases but these we hope to supplement presently and to report when a sufficient number accrues. From the data at hand it seems that strychnine in doses found in the A. B. & S. pill

some significant increased activity seen in a previously lethargic colon. This slight increase, however, was obtained with three times the therapeutic dosage when employed in the form of the A. B. & S. pill.

If little or no effect is obtained in most cases of strychnine intramuscularly, one might reasonably expect less effect, if any, after oral administration with its subsequent less accurate dosage, dependent obviously on varying degrees of intestinal absorption.

From this work we cannot say that strychnine in 2 and 3 mg. dosage does not augment catharsis promoted by aloin orally, but we can conclude that in itself it has little if any effect when administered intramuscularly. To lend weight to our suspicion that it does not synergize or augment aloin activity we quote from Fantus,⁶ who says: "Nothing may seem more logical than to add to the aloin some strychnine for the purpose of increasing the irritability of the motor neurons on which the aloin is to act; nor might it seem that anything would be more suitable to counteract the reputed tendency of aloes to produce griping than the powerful antispasmodic belladonna. Unfortunately, by utilizing them in pill form at the same time they cannot possibly act together because of the different speed and duration of action of the three agents. Aloin is slow in action, requiring from ten to twelve hours—that is why it is generally given at bedtime. Strychnine and atropine, on the other hand, are rapidly absorbed and rapidly excreted, having but a brief duration of action. No experienced clinician would expect either of these alkaloids to act for more than four hours. By the time the aloin gets its

action in, the alkaloids have long since left the system by excretion into the urine."

If the results reported here are indicative of what may be expected from a larger group of cases, we feel strongly with Dr. Aikman that something should be done to "save the youngsters" against accidental strychnine poisoning. This was again vividly brought to mind recently when four small children were brought into the Boston City Hospital in convulsions as a result of having eaten "candy," according to the two

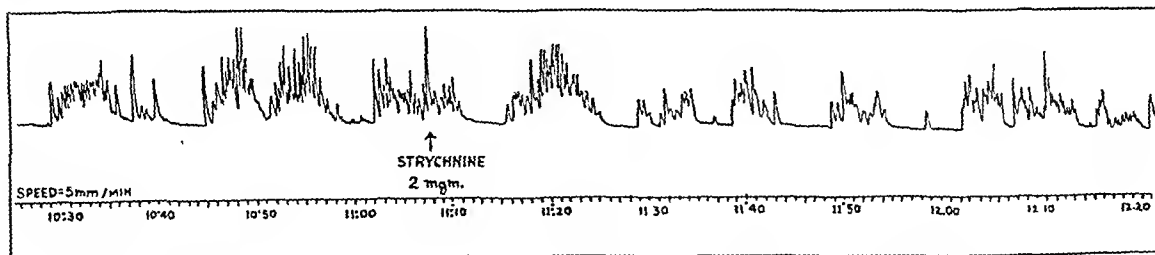


Fig. 4.—Man, aged 48: Colostomy, Feb. 13, 1934. Time interval in minutes. At 11:08 a. m., 2 mg. of strychnine intramuscularly.

(0.5 mg. per pill) is of no value. This seems particularly evident from the three cases reported here, in which strychnine in two and three times the amount found in a therapeutic dose of two pills (1 mg.) was injected without results. Further, twice the therapeutic amount actually caused depression in one case of a moderately active colon. In only one instance was

survivors of the group. This case illustrates the point—the children were playing in a vacant lot when one youngster happened on a bottle containing nicely colored "candy" (A. B. & S. pills). This bottle had been thrown from an adjacent apartment window when the tenants cleaned the medicine chest prior to vacating.

Adults, usually unaware of the dangerous constituents of the cathartic tablets, carelessly leave the bottles and contents

4. We are greatly indebted to Dr. W. R. Morrison, Dr. E. S. A. King and Miss Agnes MacDonald, R.N., of the Boston City Hospital for their hearty cooperation in this investigation.

5. Mendenhall, W. L.: Demonstration, Federated American Society for Experimental Biology, Rochester, 1927.

6. Fantus, Bernard: Useful Cathartics, Chicago, American Medical Association, 1927, p. 133.

within reach of unsuspecting youngsters. These children can be protected only by having proper emphasis laid on the potential death-dealing components—particularly strychnine. This can best be done by (a) leaving the pill uncoated so that the bitter alkaloids will be repulsive to the child, (b) controlling more rigidly the sale of strychnine pills and tablets or (c) through adequate pharmacy laws prohibiting the inclusion of strychnine in any coated pill form, since its use seems unwarranted. The latter seems most desirable.

SUMMARY

1. Strychnine, in amounts two and three times that found in the usual compound pills, has little or no effect in promoting activity of the colon, as observed by the "balloon" method in man with cecostomy and colostomy.

2. Since strychnine poisoning is most common in small children and usually results from mistaking sugar and chocolate-coated cathartic tablets and pills such as Hinckle's Cascara and A. B. & S. for candy, the inclusion of strychnine in this type of medication should be prohibited.

TYROSINOSIS: A SEARCH FOR ADDITIONAL CASES

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Medes¹ has described a condition in which a male patient was unable to metabolize tyrosine in a normal manner and has given the name of tyrosinosis to this error of metabolism. The patient was not capable of metabolizing tyrosine beyond the stage of *p*-hydroxyphenylpyruvic acid but retained the ability to oxidize homogentisic acid. The inability to metabolize the latter substance characterizes the condition of alcaptonuria.

When I heard of this new error of metabolism, I agreed to make a search for additional cases. The urine of Medes' patient had reducing properties and also gave a positive Millon's reaction. I therefore subjected all urine specimens that showed a slight amount of reduction by Benedict's picrate method for sugar to an additional test for the reduction of phosphomolybdic acid. This was used as suggested by Medes, as follows: To 1 cc. of urine in a test tube is added 2 cc. of Fiske and Subbarow² reagent (2.5 per cent ammonium molybdate in sixth normal sulphuric acid). Then 20 cc. of distilled water is added and the mixture is allowed to stand at room temperature for ten minutes. Normal urine at this time gives only a very faint greenish tint. In tyrosinosis a deep greenish blue develops. In case there was some reduction of the phosphomolybdic acid, I made the Millon test according to the procedure of Folin and Ciocalteu.³

Before these tests were applied to the specimens they were tried with a sample of the patient's urine and found to respond as described. During the period from April 25, 1930, to June 5, 1934, the molybdic acid test was applied to 16,838 specimens containing from 0.25 per cent to 0.5 per cent of sugar as determined by the Benedict picrate method. Also 9,354 specimens having more than 0.5 per cent sugar were tested. A few specimens gave a more or less blue or green color but failed to respond to the Millon test. One specimen was positive with both tests. However, a subsequent specimen from the same man and specimens from his two sons obtained after eating a meal rich in protein failed to give either test. It was decided that this man might have taken something which caused the positive observations with the first specimen. Dr. H. C. Fidler of Easton, Pa., kindly cooperated in obtaining these specimens. The results reveal the extreme rarity of this error of metabolism, not one case having been found in more than 26,000 examinations. Tyrosinosis certainly occurs less often than does alcaptonuria.⁴

From the Biochemical Laboratory, Metropolitan Life Insurance Company.

1. Medes, Grace: A New Error of Tyrosine Metabolism: Tyrosinosis: The Intermediary Metabolism of Tyrosine and Phenylalanine, *Biochem. J.* **26**: 917 (No. 4) 1932.

2. Fiske, C. H., and Subbarow, Yellapragada: The Colorimetric Determination of Phosphorus, *J. Biol. Chem.* **66**: 375 (Dec.) 1925.

3. Folin, Otto, and Ciocalteu, Vintila: On Tyrosine and Tryptophan Determinations in Proteins, *J. Biol. Chem.* **73**: 627 (June) 1927.

4. The work was done with the assistance of Henrietta Barnes, Lillie V. McCluskey, Susan D. Sawyer and Madeline A. Tschaler.

GRANULOPENIA FOLLOWING ALLONAL

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E. J., a woman, aged 60, of Norwegian parentage, was admitted to the Coatesville Hospital, July 8, 1934, complaining of weakness and lassitude of two months' duration.

The family history showed nothing of importance. Her past history revealed that she had a repair of a cystocele in 1929. She was treated for carcinoma of the cervix uteri in July 1931 with radium. This was repeated in 1932 and 1933. In August 1933 and April 1934 she was given high voltage roentgen therapy for the same condition.

On account of insomnia, a physician advised her to take allonal (allylisopropylbarbituric acid with amidopyrine) tablets. From February 1934 until July 22, 1934, she took two of these tablets every evening before bedtime.

The present illness had a gradual onset in the early part of May 1934 with "loss of strength." About June 15 her gums and throat became very sore, associated with swelling of the glands of the neck. About the same time three abscesses developed in the gluteal region. The angina had almost entirely cleared up on admission to the hospital on July 8.

The patient was pale, poorly nourished and well developed. She was too weak to sit up and became exhausted on the slightest exertion. The heart sounds were normal. The pulse was rapid and weak, about 110 per minute. The temperature was 102 F. There was an advanced carcinoma of the cervix uteri with no evidence of metastasis.

Laboratory examination, July 9, revealed: red blood cells, 2,160,000; hemoglobin, 55 per cent (Tallqvist); white blood cells, 5,700; polymorphonuclear leukocytes, 12 per cent; lymphocytes, 58 per cent; large mononuclears, 18 per cent; transitionals, 4 per cent; basophils, 8 per cent. The red cells showed moderate anisocytosis and poikilocytosis. Examination of the urine showed a light cloud of albumin, occasional pus cells and occasional red blood cells. The Wassermann reaction was negative. Smear and culture of a gluteal abscess showed a few pus cells with a growth of *Staphylococcus aureus*. Blood culture, July 9, yielded no growth.

The patient was given blood transfusions of whole blood by the direct method: July 11, 120 cc.; July 13, 175 cc.; July 15, 175 cc.; July 19, 120 cc.; July 23, 200 cc. As a result of the transfusions the hemoglobin was raised to 75 per cent and red blood cells to 4,180,000, July 20. In spite of this increase in red blood cells and hemoglobin the white cell count on July 20 was only 2,800, with 2 per cent polymorphonuclear leukocytes. July 30 there were only 1,200 white blood cells, and no polymorphonuclear leukocytes could be found in a smear.

The temperature was of a septic type, ranging from 98 to 103. The fever continued until July 30, eight days after the allonal tablets were stopped. Since July 30 the temperature has been normal.

July 22 the allonal tablets were discontinued. Beginning July 25, pentnucleotide and liver extract were injected every day and later every other day until the time of patient's discharge from the hospital, August 11.

A white count and differential, August 6, showed that the white cells had gone to 4,900 and that of these 55 per cent were polymorphonuclear leukocytes. September 10 the white cell count was 6,100, with 69 per cent polymorphonuclear leukocytes.

Clinically, the patient began to improve a few days after the allonal tablets were discontinued. The abscesses of the buttocks and soreness of the gums had cleared up at the time of discharge from the hospital. The patient now feels much stronger and is able to be about.

This case is interesting because of the fact that the bone marrow function had been apparently depressed by the high voltage therapy and probably by toxins elaborated from the carcinoma previous to the administration of the allonal tablets. Kracke and Parker¹ have pointed out that, "in the clinical or experimental development of granulopenia, it is necessary to presuppose the existence of a previously weakened, damaged or idiosyncratic bone marrow which may be congenital or acquired."

1. Kracke, R. R., and Parker, F. P.: The Etiology of Granulopenia, *J. Lab. & Clin. Med.* **19**: 799 (May) 1934.

Special Article

ALTHOUGH A NUMBER OF BACTERIOPHAGE AND ANTIVIRUS PRODUCTS HAVE APPEARED ON THE MARKET DURING THE PAST SIX YEARS, RELATIVELY FEW HAVE BEEN SUBMITTED TO THE COUNCIL ON PHARMACY AND CHEMISTRY. NONE HAVE BEEN ACCEPTED FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES. INQUIRIES FROM PHYSICIANS, HOWEVER, AND THE ADVERTISEMENTS OF MANUFACTURERS INDICATE THAT THE EXPLOITATION OF THESE PREPARATIONS IS SUFFICIENT TO WARRANT THE PUBLICATION OF A REPORT ON THEM. AS THE SUBJECT IS RELATIVELY NEW AND OBSCURE, AND AS THE PUBLISHED ACCOUNTS OF BACTERIOPHAGE THERAPY ARE CONFLICTING, IT IS OBVIOUS THAT A REPORT LIMITED TO COMMENTS ON THE COMMERCIAL PREPARATIONS WOULD HAVE ONLY A RESTRICTED USEFULNESS. BELIEVING THAT PHYSICIANS DESIRE A MORE EXTENSIVE PRESENTATION OF INFORMATION ABOUT BACTERIOPHAGE AND THE PRINCIPLES AND POSSIBILITIES OF BACTERIOPHAGE THERAPY, THE COUNCIL ON PHARMACY AND CHEMISTRY HAS AUTHORIZED THE PUBLICATION OF THIS REVIEW. IN ADOPTING THIS REPORT THE COUNCIL EXPRESSED APPRECIATION OF THE EXCELLENT WORK OF DRS. EATON AND BAYNE-JONES. PREVIOUS INSTALLMENTS OF THIS REVIEW APPEARED IN THE JOURNAL DECEMBER 8 AND 15. IT IS CONCLUDED IN THIS ISSUE.

PAUL NICHOLAS LEECH, Secretary.

BACTERIOPHAGE THERAPY

REVIEW OF THE PRINCIPLES AND RESULTS OF
THE USE OF BACTERIOPHAGE IN THE
TREATMENT OF INFECTIONS

MONROE D. EATON, M.D.
AND
STANHOPE BAYNE-JONES, M.D.
NEW HAVEN, CONN.

(Concluded from page 1853)

Bacteriophage in the Treatment of Plague.—d'Herelle,¹²³ reported successful results from the injection of a highly "virulent" bacteriophage into the buboes in four cases of bubonic plague. He stated that, as a result of bacteriologic examination of the buboes, lysis of the organisms in vivo had occurred. Pons¹²⁴ and Couvy,¹²⁵ as a result of more detailed studies, have also come to the conclusion that lysis of the organisms in vivo occurs in cases of plague injected with bacteriophage. Couvy¹²⁶ treated twenty-one cases of plague with bacteriophage and observed a mortality of 33 per cent. In 124 serum treated cases the mortality was 65.3 per cent. In a following year this author further studied 245 cases of plague. Seventy-two of these patients died within less than twenty-four hours after admission to the hospital and were not treated with bacteriophage. In the remaining 173 cases treated with bacteriophage the mortality was 31 per cent, but the total mortality, including the patients who died less than twenty-four hours after admission, was still around 60 per cent. Although this series of cases is probably large enough to be significant, the controls and statistical treatment of the results are open to question. Robic¹²⁷ treated four cases of pneumonic and five cases of bubonic plague with a bacteriophage which was active for the organisms isolated from the cases. Contrary to the observations of Pons, he found the organs infested with *B. pestis* after death. The bacteriophage therapy appeared to have little effect in these cases. Naidu and Avari,⁴⁰ using a highly active bacteriophage in studying the effects of bacteriophage and serum in 200 cases of plague, found the bacteriophage to have

very little therapeutic value. In the 200 treated cases the bacteriophage was injected into the buboes, intravenously, and also given by mouth. Ninety-seven control cases received serum treatment alone. In cases receiving both bacteriophage and serum the mortality was higher than in the group receiving only serum.

The evidence, based on a considerable number of cases, for the therapeutic value of bacteriophage in plague is contradictory and for the most part points to the negative side. It seems certain that d'Herelle's early reports of dramatic cures of this disease have not been confirmed by later studies.

For other references and reviews on bacteriophage therapy the reader is referred to the following papers: Hauduroy,¹²⁸ Hadley,¹²⁹ Bronfenbrenner,⁶ Schultz,¹²⁹ d'Herelle,¹³⁰ Larkum,¹³¹ Charnock¹¹⁰ and Hoder.³²

4. *Discussion of the Mode of Action of Bacteriophage Lytic Filtrates in Vivo.*—So far the most convincing evidence presented for the therapeutic value of the bacteriophage lytic filtrates is in the various suppurative conditions and pyodermias, principally those caused by staphylococci. In certain cases of pyelitis and cystitis administration of bacteriophage also seems to have been of value. In other diseases the evidence is at present just as conflicting as it always has been since the first attempts at bacteriophage therapy over twelve years ago.

If we grant that the administration of the lytic filtrates may have some therapeutic value in certain diseases, it is necessary to look for some mechanisms other than lysis of bacteria in vivo to account for the favorable results obtained. It seems likely, on the basis of present evidence, that any appreciable lysis of bacteria in vivo seldom, if ever, occurs, except possibly in the bladder and walled off spaces where little exudate is present and where irrigation with large amounts of bacteriophage can be used. Oral administration of bacteriophage, as used in typhoid, dysentery and cholera, seems to have had little effect, and there is at present no convincing evidence that lysis of bacteria by bacteriophage occurs in the intestine, even though the lytic agent may reach the intestinal canal by the oral route. Even d'Herelle^{130b} emphasizes the fact that "the phenomenon of bacteriophagy in vivo is far more complex than that occurring in vitro."

In spite of the large amount of published work on bacteriophage therapy it is not at present certain whether the bacteriophage itself or other constituents of the lytic filtrates produce the effects observed. Bazy⁸² found that heated filtrates, or filtrates of autolyzed cultures free of active bacteriophage, produced improvement in staphylococcal infections comparable with that resulting from the administration of bacteriophage. Gratia and Doyle,¹³² in studies on experimental cholera and *B. coli* infections in guinea-pigs, found that filtrates of old autolyzed cultures containing no bacteriophage injected from twenty-four to forty-eight hours before infection conferred the same degree of protection as bacteriophage filtrates. They also observed that *B. coli* filtrates

128. Hauduroy, P.: d'Herelle's Bacteriophage, *Medicine (supp)* 7: 341 (April) 1926.

129. Schultz, E. W.: Bacteriophage as Therapeutic Agent, *California & West. Med.* 31: 510 (July) 1929.

130. d'Herelle, Felix: (a) Le phénomène de bactériophage et sa signification biologique, *Bull. et mem. Soc. nat. de chir.* 56: 986-994 (July 19) 1930. (b) Bacteriophage as Treatment in Acute Medical and Surgical Infections, *Bull. New York Acad. Med.* 7: 329-348 (May) 1931.

131. Larkum, N. W.: (a) Bacteriophage from Public Health Standpoint, *Am. J. Pub. Health*, 19: 31-36 (Jan.) 1929; (b) footnote 68 (c) Bacteriophage in Clinical Medicine, *J. Lab. & Clin. Med.* 17: 675-680 (April) 1932.

132. Gratia, A., and Doyle, D.: Effects of Injections of Bacteriophage in Experimental Colon Bacillus Septicemia, *Compt. rend. Soc. de biol.* 93: 452-453 (July 17) 1925.

123. d'Herelle, Felix: Treatment of Bubonic Plague by Bacteriophage, *Presse med.* 33: 1393-1394 (Oct. 21) 1925, abstr. *J. A. M. A.* 85: 1762, 1653.

124. Pons, R.: Le bactériophage anti-pesteux in vivo, *Compt. rend. Soc. de biol.* 110: 184-186 (May 27) 1932.

125. Couvy, L.: Le bactériophage du bacille de Yersin; son comportement in vivo, *Compt. rend. Soc. de biol.* 110: 38-41, 1932.

126. Couvy, L.: Le bactériophage du bacille pesteux son utilisation thérapeutique, *Médecine* 13: 909-913 (Dec.) 1932.

127. Robic, J.: Note sur le traitement de la peste par le bactériophage, *Bull. Soc. path. exot.* 26: 756-760, 1933.

with or without bacteriophage produced some degree of protection against cholera. Brouardel¹³³ has also observed nonspecific therapeutic effects from the use of bacteriophage filtrates.

One effect of the bacteriophage itself that has received too little consideration in the discussion of the mechanism of action *in vivo* is the ability of the lytic agent to produce avirulent forms of bacteria from virulent organisms, as shown by Hadley.¹³ This author believes that the therapeutic effects of bacteriophage are due to the production of bacterial dissociants which are easily destroyed by the usual bodily defense mechanisms. He cites a large amount of more or less indirect evidence to support this view, and it seems at present that this explanation may be even more likely than the assumption of *in vivo* lysis. A point against this view, however, is the known fact that dissociants are sometimes produced by the bacteriophage which are more virulent than the parent organism.

Among the effects of lytic filtrates which may or may not be due to bacteriophage are the production of increased leukocytosis and phagocytosis. Arnold and Weiss,¹³⁴ using Wright's technic, observed an increased phagocytosis *in vitro* which was proportional to the bacteriophage content of the preparations tested. Smith¹³⁵ and Nelson¹³⁶ confirmed these results and found that the phagocytosis of resistant organisms was not increased by the action of the bacteriophage preparations. The latter point indicates that the opsonizing action is due to the bacteriophage itself. Similar results have been obtained *in vivo* by MacNeal, Frisbee and Slavkin,¹³⁷ who observed increased phagocytosis of bacteria by the reticulo-endothelial cells of the spleen and liver during experimental staphylococcal septicemia in rabbits, treated by intravenous bacteriophage from two to twenty hours after infection, as compared with untreated controls. Nelson¹³⁶ observed that the intravenous injection into rabbits of staphylococcus bacteriophage together with susceptible organisms caused a much more rapid increase of leukocytes than did the intravenous injection of susceptible organisms alone. Repeated injections of bacteriophage caused a relative leukopenia. Injections of resistant organisms and bacteriophage produced only a slight effect on leukocytosis.

d'Herelle^{130b} has adhered to the view that bacteriophage causes increased phagocytosis in the body. He also supports the view of Hadley that microbic dissociation produced by the bacteriophage plays a part in therapeutic effects, but he also maintains that lysis occurs *in vivo*.

Among the effects that cannot be attributed specifically to the bacteriophage are the marked febrile reactions observed by a number of investigators after injection of the lytic filtrates. These reactions are probably nonspecific in nature and due to the bacterial proteins and substances from the nutrient broth contained in the preparations. Petersen¹³⁸ has adequately reviewed the large amount of work on the nonspecific effect of the injection of foreign proteins and bacterial

vaccines into the body. There are cited many instances of great benefit or prompt recovery, in various infectious diseases, resulting from the injection of foreign proteins or vaccines. In this effect actual specific immunization plays no part.

A large number of investigators, as cited by Petersen, have observed many striking changes in the animal body as the result of injecting foreign proteins. There is a primary leukopenia followed by a later leukocytosis with a relative granulocytosis. Changes in the amount and proportions of blood proteins, the amount of fibrogen and the clotting time have been noted. There is an increase in complement which seems to have a close relation to the therapeutic effect. Studies of the chemistry of the blood give evidence of a primary acidosis, which is followed by a rather long continued alkalosis with corresponding changes in the reaction of the urine. Other changes in blood chemistry and the chemistry of various organs are noted. There is an increased nervous irritability, and changes in the autonomic system rendering it more susceptible to certain drugs, together with a distinct stimulation of the sympathetic nervous system.

The most important effects of nonspecific protein injections in relation to therapy of infections are the changes produced in the immunity mechanisms. It has long been a well known fact that injection of a nonspecific protein into an immunized animal promptly increases the specific antibody titer against the organism or protein used in immunization. In normal animals there is a transient increased protection against infection. This was first noted by Pfeiffer, who studied the effects of nonspecific injections on the resistance of guinea-pigs to cholera. Protein injection produces an increased permeability of the blood vessels throughout the body, followed by a reversal to impermeability. The reticulo-endothelium becomes temporarily more active and later shows greatly lessened activity. Increased body temperature is a well known result of injections of foreign protein.

Protein therapy seems to have been most successful in various chronic diseases with foci of infection. Typhoid is one of the few acute diseases in which protein therapy has yielded interesting results. Petersen reports that in approximately one third of the cases after protein therapy the patients recover by crisis, and in another third there is improvement in general symptoms. Petersen explains these results on the basis of increased blood flow and permeability in the splanchnic area, which results in partial or total destruction of the bacteria. Typhoid appears to be particularly favorable for nonspecific protein therapy because of the location of the lesions in the intestinal wall, where the effects of this method are most pronounced. In other local infections or in septicemias protein injections usually have little effect and are sometimes harmful. But even in these cases clinical experience has shown that prompt and spectacular recovery may take place after some nonspecific injection. As Petersen points out, increased antibody titer, reticulo-endothelial activity, enzyme mobilization with accelerated digestion of bacteria, changes in acid-base equilibria, leukocytosis and local accumulation of leukocytes all may play a part in these cases of dramatic recovery.

It cannot be emphasized too strongly that all these nonspecific effects of the constituents of bacteriophage preparations must be taken into consideration in any thorough investigation of the therapeutic effect of the agent. It would seem likely that these effects come

133. Brouardel: Note sur les infections, septicémiques à bacilles de Friedländer, *Bull. Acad. de méd., Paris* 96: 240-242 (Nov. 16) 1926.

134. Arnold, L., and Weiss, E.: Antigenic Properties of Bacteriophage, *J. Infect. Dis.* 34: 317-327 (March) 1924.

135. Smith, G. H.: Bacteriophage and Phagocytosis; Effect on Resistant and Dead Bacteria, *J. Immunol.* 15: 125-140 (March) 1928.

136. Nelson, A. R.: Effect of Bacteriophage upon Phenomena of Leukocytosis and Phagocytosis, *J. Immunol.* 15: 43-64 (Jan.) 1928.

137. MacNeal, W. J.; Frisbee, Frances C., and Slavkin, A. E.: Mechanism of Bacteriophage Action in Staphylococcus Bacteremia, *Proc. Soc. Exper. Biol. & Med.* 30: 12-14 (Oct.) 1932.

138. Petersen, W. F.: Protein Therapy and Nonspecific Resistance, New York Macmillan Company, 1922; Nonspecific Protein Therapy, in Jordan, E. O., and Falk, I. S.: Newer Knowledge of Bacteriology and Immunology, University of Chicago Press, 1928, chap. 28, pp. 1086-1100.

into play only when the agent is injected. However, protein reactions have been reported to occur following the ingestion of peptones, and it is not improbable that in the application of broth-soaked bacteriophage dressings to an open wound or hyperemic area there is opportunity for absorption of the bacterial proteins and peptones and other constituents of the medium. As already pointed out, few investigators have taken the trouble to control their clinical trials of bacteriophage by the use of preparations heated so as to destroy the lytic agent. Until this is done the reports of successful therapeutic use of bacteriophage will always remain unconvincing.

Another alternative explanation of the prompt results of bacteriophage therapy, especially when local applications or wet dressings have been used, is the antiviral effect of Besredka. This will be discussed in a separate section.

5. *Immunization with Bacteriophage Preparations.*—It was shown by d'Herelle in his studies on hemorrhagic septicaemia of water buffaloes that bacteriophage filtrates are capable of producing immunity. This observation has been confirmed and extended by a number of investigators working with various diseases in both animals and human beings. These effects are probably due to the development of antibodies to the bacterial proteins in the lytic filtrates and are in no way directly connected with the presence of the bacteriophage except so far as the action of this agent on the bacteria makes their proteins more available as antigens. Immunizing effects in bacteriophage therapy can be expected after injection of the preparations and the lapse of a certain amount of time, probably at least four days, before antibodies appear. Effects occurring after oral administration or local application and before the end of seventy-two hours cannot be ascribed entirely to development of immunity in the ordinary sense.

Larkum¹³⁹ has taken the view that the effects of bacteriophage preparations are due not to *in vivo* lysis, except in particular cases, but to the immunizing effects of the preparations. Thus these preparations play at least as important a rôle in prophylaxis as they do in therapy. In a study of the effects of typhoid vaccination in 200 human subjects, ordinary heat killed vaccine being used in about half the number and filtrates of bacteriophage lysed cultures in the other half, Larkum¹⁴⁰ made certain observations which indicate that the lysates are better antigens. The serums of the persons receiving one dose of lysate showed agglutinin titers equal to those receiving one dose of vaccine, but the bactericidal power of the blood and the opsonic index were higher in those receiving bacteriophage. The antibodies, after six months, in those receiving one dose of bacteriophage were higher than in persons receiving one dose of typhoid vaccine and equal to those having had three doses of typhoid vaccine. No reactions of any importance occurred in the bacteriophage treated group. More recently Larkum¹⁴¹ has claimed to have demonstrated that injection of bacteriophage gives rise to antitoxins. He showed that intravenous injections of bacteriophage in either twenty-five doses of 2 cc. each or one dose of 50 cc. produce in rabbits, after a brief period, a protection against massive intravenous

injections of living staphylococcus. The serums of protected animals are said to neutralize the dermonecrotizing staphylococcus toxin. Purified bacteriophage preparations are also said to produce antitoxins. To what extent Larkum is dealing with true exotoxins in this work, as distinguished from endotoxins or bacterial proteins, is not at present clear.

Arnold and Weiss¹⁴² have also placed emphasis on the immunizing effects of bacteriophage preparations used in therapy. They published a series of experiments in 1924 which indicate that the opsonic, precipitating and complement fixing antibodies of immune serums produced by bacteriophage are antibodies to the bacterial proteins and not to the bacteriophage itself. These authors later compared the immunizing effects of living, heat killed, and bacteriophage vaccines in experimental animals. They found that bacteriophage preparations produced the most rapid rise in phagocytic index and agglutinin titer, but after a longer period the living cultures produced a higher antibody concentration. Experiments on protection showed that the bacteriophage preparations produced a degree of protection out of all proportion to the antibody titer of the serums.

Other experiments on the immunizing effects of lytic filtrates have tended to confirm this evidence that such preparations are powerful antigens. Maslakowetz and Kasarnowsky¹⁴³ prepared an antigen from toxic Shiga dysentery bacilli by bacteriophage lysis which was weakly toxic for rabbits and atoxic for guinea-pigs. The antigen protected rabbits against at least ten minimal lethal doses of living cultures or toxin. Immunization of horses with the antigen yielded a potent antiserum in about two months. Nobechi¹⁴⁴ immunized guinea-pigs against from three to ten minimal lethal doses of cholera organisms by intraperitoneal injections of lysed cultures. Oral, subcutaneous or intravenous injections failed to protect. Arloing, Josserand and Nabonne¹⁴⁵ immunized rabbits by injecting intravenously a vaccine made by lysing heavy suspensions of typhoid bacilli with bacteriophage and, later, heating at 62 C. to destroy the bacteriophage. This vaccine produced serums with high agglutination titers, whereas vaccines made in the same way from unlysed heated typhoid cultures produced no agglutinins in rabbits.

A number of experiments on immunization against plague have been done in experimental animals with bacteriophage preparations. Compton,¹⁴⁶ in prophylactic experiments on mice with plague bacteriophage, showed that absolute immunity was produced in 40 per cent of the animals by two subcutaneous injections six days apart. Prophylactic use of stock vaccine under similar conditions produced an increased susceptibility rather than an immunity. In some of the animals receiving bacteriophage vaccine a hypersusceptibility was also observed. Compton believed that the immunity observed was probably antibacterial, not protobiotic, since no bacteriophage could be detected in the excreta and blood of protected animals. Flu¹⁴⁷ observed that white mice could be immunized by subcutaneous injections of large amounts of bacteriophage, but attempts at oral admin-

142. Arnold and Weiss (footnotes 134 and 36).

139. Larkum (footnotes 131 a and 131 c).
140. Larkum, N. W.: Bacteriophage as a Substitute for Typhoid Vaccine, *J. Bact.* 17: 42 (Jan.) 1929.

141. Larkum, N. W., and Corpron, Ruth: Effect of Massive and Repeated Doses of Bacteriophage, *J. Bact.* 25: 77-78 (Jan.) 1933.
Larkum, N. W.: Production of Antitoxin by Means of Bacteriophage, *Am. J. Pub. Health* 23: 1155-1158 (Nov.) 1933, b

143. Maslakowetz, P., and Kasarnowsky, S.: Versuche der Darstellung von Antigenen mittels bakterienphagen Lysins, *Ztschr. f. Hyg. u. Infektionskr.* 108: 13-22, 1927.

144. Nobechi, K.: Sur la préparation du bactériophage pour le vibron cholérique et la classification de ces vibrations au point de vue du phénomène de la bactériophagie, *Compt. rend. Soc. de biol.* 95: 1250-1252 (Nov. 26) 1926.

145. Arloing, F.; Josserand, A., and Nahonne, A.: Pouvoir antigénique chez le lapin, des lysats de Bacilles d'Eberth obtenus avec un bactériophage approprié, *Compt. rend. Soc. de biol.* 104: 1246-1247 (Sept. 20) 1930.

istration were unsuccessful. Later he¹⁴⁶ succeeded in immunizing 91 per cent of a group of rats against 400 lethal doses of plague bacilli by two or three subcutaneous injections of concentrated suspensions of bacteria lysed by bacteriophage. The protection appeared to be much better than that obtained with other vaccines.

Unfortunately the immunizing effects of bacteriophage preparations in human beings have been little studied, but the results of the experiments with laboratory animals indicate that the bacterial proteins contained in these preparations are very good antigens and in many cases produce a prompt response. This property of lytic filtrates indicates that such preparations may be of value in prophylaxis of disease, and possibly also in chronic or recurrent conditions. In the treatment of acute diseases with bacteriophage, little benefit may be expected from the immunizing effects.

6. Local Immunization and Antivirus Therapy According to Besredka.—This section is included in order to distinguish between the effects of the bacteriophage as such and the effects of a hypothetical substance in filtrates of bacterial culture not containing bacteriophage. Whether or not bacteriophage filtrates contain the so-called antivirus of Besredka has never been adequately demonstrated. Nevertheless, certain commercial bacteriophage preparations, especially those in which the lytic principle has been added to repeatedly inoculated broth cultures, are referred to also as antivirus, and for this reason a review of the theories of Besredka is necessary.

Besredka¹⁸ published his views on the phenomenon which he called local immunization as contrasted with the ordinary or general state of immunity, which follows the injection of antigens into an animal. He and a number of other investigators cited by him found that experimental animals could be protected against fatal infections with anthrax, streptococcus or staphylococcus by injecting intradermally or even by simply applying to the shaved skin vaccines or culture filtrates of the organisms. Besredka believed that the protective effect was due to local immunity in the skin, for which these organisms have an affinity. Animals so immunized showed no demonstrable circulating antibodies.

Guinea-pigs were protected against anthrax by rubbing on the shaved skin the first vaccine of Pasteur, followed after a period of several days by the second vaccine, then later by the virulent organisms. Immunization of animals against anthrax by the ordinary methods is said to be difficult, but Besredka claims that his method of cutaneous vaccination has proved successful both in laboratory animals and in the immunization against anthrax of cattle and horses when other methods failed. Experiments are cited which support the view that when injected into the peritoneum, trachea, brain or subcutaneous tissues, anthrax vaccines fail to immunize and virulent cultures fail to infect, provided the experiment is conducted in such a way that none of the organisms are brought into contact with the skin. These experiments have been both confirmed and contradicted by other investigators.

In extending his views to local immunization of the skin and mucous membranes in staphylococcal and streptococcal infections, Besredka cites a number of experiments in which filtrates of bacterial cultures are used as vaccines. The cutaneous vaccines for streptococcus and staphylococcus are prepared by filtering

8 to 10 day old broth cultures of the organisms. Such filtrates do not contain bacteriophage but undoubtedly do contain bacterial proteins resulting from the autolysis of the organism, as well as the metabolic products and substances contained in the nutrient broth.

According to Besredka, these broth filtrates are specifically inhibitory to the growth of the organism from which they were prepared, having no effect on the growth of unrelated species. The inhibitory substance is heat stable. Intraperitoneal inoculation of these broth filtrates has no immunizing effect, but when applied to the skin or mucous membranes in the form of wet dressings or injected intradermally they produce an immunity against local skin infections with staphylococcus or streptococcus. This immunity appears very rapidly, usually after about twenty-four hours, and therefore differs in this respect from ordinary immunity.

The hypothetical substance in these filtrates which specifically inhibits the growth of bacteria and produces rapid local immunization is called by Besredka "antivirus." Besredka claims to have immunized limited areas of the skin of animals by local application or intradermal injection of these filtrates, and the entire skin by more extensive application in the same way. He believes that local immunization of the skin or mucous membranes in staphylococcal or streptococcal infections is sufficient to protect against extension of the infection and that the inhibitory substance exerts a therapeutic effect by virtue of its specific inhibitory action on the infecting bacteria. According to Besredka's theory, the skin and mucous membranes are the primary loci of infection by staphylococcus and streptococcus, the extension to the blood or other parts of the body occurring only after the primary infection in the skin has been established. He concludes that cutaneous vaccination against staphylococcus and streptococcus with the antivirus filtrates has been shown to be a much more effective method of immunization than are the ordinary methods of subcutaneous or intramuscular injection.

Besredka reports the successful treatment by physicians, using wet dressings of antivirus filtrates, of such conditions as furunculosis, varicose ulcers, sycosis, boils, osteomyelitis, and pyoderma neonatorum, all caused by staphylococcus. Streptococcal infections also successfully treated were pleural fistula, pleurisy and puerperal sepsis. Success is also reported in ocular infections. The cases of puerperal sepsis were treated by uterine tampons soaked in antivirus filtrates and the eye infections by putting drops of antivirus in the eye.

Extending his theories to the enteric diseases, especially typhoid and dysentery, Besredka postulates that in these conditions the infecting organism has an "elective affinity" for the intestine. He states that numerous experiments have demonstrated that the localization of these organisms is always in the intestine irrespective of the mode of entry into the body. This, in our opinion, is open to question. In the experiments on dysentery in rabbits the Shiga bacillus was used. Here the effects of toxin formed by this organism seem not to have been sufficiently differentiated from the effects of the organism itself. There seems little justification for the view that the finding of organisms in the intestine after intravenous or subcutaneous injection is proof of their "affinity" for this organ. Furthermore, Besredka admits that infection of rabbits with typhoid or dysentery by the more direct oral route is difficult or impossible except when an intestinal irritation is set up by simultaneous administration of bile, or giving the cultures to fasting animals.

146. Flu, P. C.: Immunisation des rats contre la peste au moyen de suspensions concentrées de bacilles pesteux virulents lysés par le bactériophage anti-pesteux, Bull. Soc. path. exot. 26: 796-806, 1933.

Besredka cites a rather extensive series of observations on immunization against dysentery by the oral route in man and experimental animals. In rabbits and mice immunization was effected by feeding living or killed organisms in large amounts. In many cases such immunized animals were resistant to injection of toxin or organisms but had no demonstrable circulating antibodies. Vaccination of man by the oral route has also been tried in several epidemics of dysentery, particularly in Europe. Besredka reports one epidemic in which the incidence of disease in 546 individuals vaccinated by mouth was 7.6 per cent, while in 586 unvaccinated controls 40 per cent contracted the disease. In another epidemic among 1,768 nonvaccinated individuals there were fifty-six cases of dysentery as compared with twelve cases among 1,000 persons vaccinated by mouth. These results are less spectacular than those involving the smaller number of cases. Other examples of oral immunization are also cited by the author, but no comparisons with the method of immunization by injection of killed cultures or toxin-antitoxin mixtures are made.

Similar experiments on typhoid and paratyphoid infections in animals are cited by Besredka to support his theory of the affinity of these organisms for the intestine. Although infection of normal animals by the oral route with typhoid bacilli is impossible, Besredka and other workers cited by him have stated that oral immunization of animals against typhoid is readily effected. In rabbits immunity is readily established when bile is given along with either the living or the dead bacteria, but no immunity follows the ingestion of living cultures by animals not previously prepared by bile. Immunization by the oral route is said to be more rapid than that induced by injection.

Numerous examples of typhoid vaccination in man by oral administration of heat killed cultures and bile are cited by Besredka. These experiments compare immunization by oral bile vaccine, and by injected heat killed vaccine in several thousand individuals. The results cited indicate that the oral method of immunization is equal in effectiveness to the ordinary method of subcutaneous injection.

More recently, several investigators have reported both favorable and unfavorable results in the treatment of various diseases with antiviral. Haslé¹⁴⁷ attempted to treat typhoid with antiviral made from 25 day old cultures of typhoid organisms heated at 65 C. without filtration. Thirty-five patients given this preparation by mouth showed no effect. Intravenous injection of heated and filtered cultures in fifteen cases produced marked reactions with pyrexia, increased pulse and blood pressure, leukopenia, and relative increase in mononuclear cells. This was followed by a fall in temperature and relief of symptoms. There was only one death in the group of fifteen cases so treated compared with a prevailing mortality of 25 per cent. These results are almost identical with those observed in bacteriophage therapy and in nonspecific protein injections in typhoid. Kurzhals¹⁴⁸ reports favorable results in the treatment of furuncle of the external auditory meatus and ascribes the effect to a local and temporary immunity. Merten and Oesterlin¹⁴⁹ report favorable results of the antiviral treatment of malignant edematous infection in

one human case and in experimental animals. Their experiments indicate that the therapeutic and prophylactic effects observed are specific. Toennissen¹⁵⁰ has also reported the successful treatment of two cases of ulcerative colitis with staphylococcus-streptococcus-colon bacillus antiviral.

Space does not permit an adequate summary of Besredka's theory of local immunization. Stated briefly, the underlying idea is that the so-called receptive cells in the skin and mucous membranes or intestine are desensitized or made unreceptive to infection by contact with the bacterial vaccines or filtrates of autolyzed bacterial cultures. This desensitization of receptive cells is brought about, in part at least, by fixation on the cells of the hypothetical protecting substance, which Besredka calls antiviral.

Besredka's observations and theories have a bearing on bacteriophage therapy in two ways: first, if bacteriophage preparations contain the so-called antiviral, therapeutic effects might be expected from this substance as a result of local application or oral administration; second, immunization by local application to the skin or oral administration of vaccines has been shown to occur, and since bacteriophage preparations contain antigenic bacterial proteins they might be expected to have some immunizing effect when applied in the form of wet dressings or even when given by mouth.

In commenting on Besredka's treatment of staphylococcal and streptococcal skin infections with antiviral, Zinsser¹⁵¹ makes the following statement: "Attempts to confirm Besredka's claims as far as animals were concerned were unsuccessful in the hands of Mallory of our laboratory, who found that in staphylococcus infections in rabbits the uninoculated broth was as effective as the bacterial filtrate." In regard to Besredka's oral immunization procedures, Zinsser says: "In experiments carried out in our laboratory, the occasional immunizing properties of the feeding procedures, though irregular, were found to be true in principle, but we found it quite impossible to determine whether the occasional immunity obtained was due to true local immunization in the sense of Besredka or to a general immunization consequent on absorption from the bowel. The latter, which we believe was the case because of the development of agglutinins, would indicate that vaccination by mouth is nothing more than a very unreliable and quantitatively uncontrollable variant of subcutaneous injection." These and similar results of other investigators indicate that Besredka's ideas may not be well founded in fact.

SUMMARY AND CONCLUSIONS

1. Experimental studies of the lytic agent called "bacteriophage" have not yet disclosed its nature. d'Herelle's theory that the material is a living virus parasite of bacteria has not been proved. On the contrary, the facts appear to indicate that the material is inanimate, possibly an enzyme.

2. Since it has not been shown conclusively that bacteriophage is a living organism, it is unwarranted to attribute its effect on cultures of bacteria or its possible therapeutic action to a vital property of the substance.

3. While bacteriophage dissolves sensitive bacteria in cultures and causes numerous modifications of the

147. Haslé, G.: L'Antiviral thérapeutique dans le traitement de la fièvre typhoïde, *Compt. rend. Soc. de biol.* 113: 730-732, 1933.

148. Kurzhals, R.: Antivirustherapie nach Besredka mit Bericht über deren Wirkung bei Gehörgangsfurunkulose, *Ztschr. f. Hals-, Nasen- u. Ohrenh.* 30: 98-104 (Oct. 22) 1931.

149. Merten, A. N. E., and Oesterlin, E. J.: Antiviral Treatment of Malignant Oedema Infections, *Ann. Surg.* 95: 101-105 (Jan.) 1932.

150. Toennissen, E.: Die Behandlung der Colitis ulcerosa mit Antiviral nach Besredka, *Verhandl. d. deutsch. Gesellsch. f. inn. Med.* 41: 274-277, 1929.

151. Zinsser, Hans: *Resistance to Infectious Disease*, New York, Macmillan Company, 1931.

organisms, its lytic action in the body is inhibited or greatly impeded by blood and other body fluids.

4. The material called bacteriophage is usually a filtrate of dissolved organisms, containing, in addition to the lytic principle, antigenic bacterial substances, products of bacterial growth and constituents of the culture medium. The effects of all these components must be taken into consideration whenever therapeutic action is tested.

5. A review of the literature on the use of bacteriophage in the treatment of infections reveals that the evidence for the therapeutic value of lytic filtrates is for the most part contradictory. Only in the treatment of local staphylococcal infections and perhaps cystitis (due to colon bacilli and staphylococci) has evidence at all convincing been presented.

6. There is no evidence that lysis or killing of bacteria by bacteriophage occurs *in vivo*, except possibly in the bladder and in walled-off spaces, where little exudate is present and where irrigation with large amounts of bacteriophage can be used.

7. The favorable results reported may have been due to the specific immunizing action of bacterial proteins in the material used and to nonspecific effects of the broth filtrates.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.

CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed.

THERAPY OF PAIN

"Next to the saving of life, the relief of pain is the physician's most important function." While it behooves the physician to be rather modest as to his ability of saving life, for the relief of pain he is well equipped. There is no pain that resists morphine; and there are so many other means of relieving pain that may be used instead of morphine—as the morphine may be worse for the patient than the pain—that there should be no case in which the physician well versed in therapeutics cannot give relief to pain and distress by properly chosen measures, not only without harm but with positive benefit to the patient. The patient has the right to expect relief of pain, for pain is in itself harmful, causing fatigue, insomnia, anorexia, depression of the circulation, psychic irritability and pessimism; and the longer pain continues, the more intolerant does one become of it.

From a teleologic point of view, pains are generally useful; from a therapeutic standpoint they rarely are. Pain may perhaps be said to be therapeutically useful when it commands immobility to a part that cannot be moved without possibility of harm, as in fractures of bones or in arthritis; but the physician should make this pain unnecessary by prompt and adequate immobilization. It is more frequently useful in diagnosis, as in acute appendicitis and in abdominal injuries in which

killing the pain may result in the patient's death because of obscuring the indications that may lead to a prompt life-saving operation. But even here it must be admitted that, the more expert the physician, the less need will he have of letting his patient suffer pain to find out what must be done for him. In most instances it is poor diagnostics as well as therapeutics to permit patients who have entered the hospital to suffer pain or distress for any length of time or until an elaborate history has been written and examination completed. The good physician should be expert enough to make reasonably adequate diagnosis promptly on admission in nearly all cases and sufficiently "therapeutic minded" to institute at once the necessary measures to make the patient more comfortable. One can get a better history and make a more satisfactory examination when the patient is not racked with pain.

Of course the mere removal of the perception of pain without taking care of the cause is often harmful to the patient. This is true not only of inflammatory and of traumatic conditions but also of those cases in which the pain or distress is a fatigue symptom. Merely relieving the pain and permitting the patient to go on with his work may lead to a catastrophe just as surely as removing a danger signal from a railroad track.

CAUSAL THERAPY

Causal therapy is therefore the prime desideratum. The pain of syphilis requires arsenic, also mercury, bismuth or iodine; malarial neuralgia indicates quinine. If, however, the causal therapy is not prompt in its pain relieving action, an analgesic should be given coincidentally.

In intrinsically obscure cases, in which causal therapy is impossible, relief of pain or distress is not only humane but also wise; for pain increases sensitiveness, which in turn makes the pain more agonizing. In such cases, nature may perfect the cure while the physician searches for the cause, keeping the patient comfortable in the meantime. When, however, a physician antagonizes a pain the cause of which is not clear, he must be honest in admitting (to himself) that he is merely practicing symptomatic therapy and he must ever sharpen his diagnostic methods and acumen so as to discover the real nature of the disease as well as to detect at the earliest possible moment when his temporizing treatment is harmful to the patient.

RESTORATIVE THERAPY

The physician should always try to understand the mechanism (pathology) by which the pain is produced and attempt to arrest or correct the departure from the normal by means of restorative therapy, which often also goes far toward relieving the pain. The "hunger pains" of peptic ulcer are promptly checked by neutralization of the gastric juice by food, alkali or mucin. In the pain of colics, atropine sulphate, from 0.5 to 1 mg., aids the effect of mere analgesics. So do the nitrites and the purines in the pains of angiospasm. Cold hydrotherapy, in addition to its intrinsic analgesic value, makes it possible, by the vasoconstriction that it produces, to secure relief of tension, pain being proportionate to tension. X-rays and massage, by favoring resolution of cellular infiltrations of recent origin, have analgesic values not adequately appreciated.

While thus aiming to cure pain by causal and by restorative therapy, one must not spurn its symptomatic relief. Pain being a trinity of psychic, physical and chemical nature, such relief is often best approached

from all these three sides simultaneously, though in certain cases any one of these may be the most important point of therapeutic attack.

PSYCHOTHERAPY

In the last analysis, pain is always psychic. Hence psychic measures must always be included in the stratagem of relief. There are a number of psychic vicious circles that may have to be broken in upon. For instance, pain creates anxiety, which concentrates attention on the affected part, and this increases the appreciation of the pain, for attention acts like a magnifying glass. Allaying anxiety in itself raises the pain threshold and makes possible the relief of pain with milder means than are required to annihilate the appreciation of a pain on which fear has fixed its watchful stare. This is how explanation and reasoning act on those whose mind is still accessible to reason. In those whom either their nature or the pain engendered panic has made incapable of reasoning, nothing but the potency of suggestion will allay the anxiety; and the physician who does not understand how and when to employ suggestion deserves to be defeated like the general who does not understand how to inspire his soldiers with the confidence of victory. Obviously, prompt and drastic relief of pain and distress has in itself a high degree of suggestive value.

The one form of pain best relieved by purely psychic means is psychalgia, which may be defined as pain perception without adequate physical or chemical causation. Such pain may be visualized as being due either to removal of the inhibitory control that the cerebral cortex exerts on the subcortical centers (e. g., the optic thalamus) or to an excessive irritability of the lower sensory neurons, so that sensations generally disregarded or merely spoken of as distresses become appreciated as pain. The diagnosis of psychalgia is suggested by absence or inadequacy of physical or chemical causes, by such stigmas of neurosis as unanatomic distribution of the pain, by the smiling avowal of "terrible" pain, as well as by the relief secured by purely psychic means. It is not admissible, however, to conclude merely on the basis of relief by psychic measures that organic causation is absent. At the most, such a result enables one to recognize a psychic contributing factor.

Psychoanalysis, in the widest sense, may enable one to recognize the symbolic nature of a pain; and the demonstration of this nexus may cure it. Grief may cause heart pain that may be mistaken for angina pectoris. Pain may be an escape mechanism, a way out of an intolerable situation; and the latter may have to be dealt with. Headache may mean "I don't want to do this." In pure psychalgia the ordinary treatment with analgesics and topical measures is a grave mistake. It merely fixes the patient's conviction of the presence of disease and focuses his attention on the treated part. "It is far easier to rub a disease into a patient's limb than to rub it out of the mind." The stratagem of neglect, which may be defined as paying no attention whatever to the complaining part while giving solicitous care to the patient as a whole, is frequently useful in psychalgias. One must ever beware of pathogenic suggestion, such as ascribing the pain complained of to a pathologic condition present but inadequate to cause the pain. Thus the diagnosis of a "tear in the womb" may make a psychalgia incurable by anything else but an operation or other adequate suggestion. Mere symptomatic relief of psychalgia, which is often easy, does not

suffice to prevent recurrence. It should be the starting point for psychic alternative therapy, for a program of mental hygiene.

Cases of psychalgia are so much more frequently encountered in private practice than in charity hospitals that experience merely in the latter does not quite qualify a doctor for complete success in the former. It has been well said that "the physician must be able to distinguish the patient who requires a pound of policy and an ounce of medicine from the patient who requires an ounce of policy and a pound of medicine."

MECHANOTHERAPY

(a) *Rest*.—As a general proposition, to which there are exceptions, pain indicates rest, especially those pains aggravated by movement. Such pain may be relieved and should be relieved by limiting that motion or making it impossible. This can often be accomplished by adhesive plaster or by light splints skilfully applied. The pain of inflammation, whether of traumatic or of infectious origin, is nature's way of enforcing rest, which is the first requisite for repair. By putting an inflamed part at rest, one not only relieves pain but also favors defense and repair. Whenever, by art, one cancels pain, one must also enforce the indicated rest by artificial means.

(b) *Posture*.—In many painful conditions, certain postures give a maximum of comfort and, as a general proposition, such postures should be secured. This may be elevation of a part to favor return circulation. It may be partial flexion of a joint to minimize tension. One must not, however, permit such a posture to continue unchanged for any great length of time, as then it becomes fixed and a possibly irremediable deformity may have been established.

(c) *Exercise*.—Prolonged immobility, even of a healthy part, renders resumption of motion painful. Hence mobilization should be started as soon as repair is well under way. At this time, movement may produce pain at first, but a continuance of the movement gives relief. In such cases the movement must at first be gentle and limited as to extent and time, so as not to traumatize tender tissue and lead to an acute inflammatory reaction. The fear should ever be present in the hospital physician's mind not to permit a patient to become permanently crippled, when he might have been saved from such a fate by appropriate mechanotherapy applied at the right time. The time and the place to apply physical therapy are generally while the patient is still in bed.

(d) *Massage*.—It is not sufficiently appreciated that massage has analgesic potency. Many a pain can be relieved by skilful rubbing. Of course, in traumatic and infectious inflammation a stage exists when the affected part must not be manipulated directly; but even here long centripetal strokes (effleurage) applied proximally to the area involved may have remedial potency by favoring drainage from and lessening tension in the affected part. This proximal effleurage is also employed as "introductory massage" to a part just recovering from acute inflammation, as the tissue thereby becomes more tolerant of direct manipulative attack. Preliminary induction of hyperemia also makes massage more acceptable and efficient.

Kneading (*pétrissage*): When tissue is squeezed, and especially when this squeezing is alternated with long centripetal strokes, there are sent onward into the return circulation fluid and other material that stagnated in the tissue; and, the valves preventing reflux, the

tissue thus treated becomes perfused with fresh arterial blood. One may visualize the effect of such maneuvers by thinking of the way in which, by squeezing it intermittently, one can greatly expedite the cleansing of a sponge immersed in water.

Friction, or a circular or elliptic movement of the overlying on the deeper tissues, is the important manipulation in the treatment of pathologic deposits remaining after the cause for their existence has subsided. It is a procedure intended to crush cellular deposits and to favor their dissipation without injuring the normal tissue; in other words, to disperse the products of inflammation. This would, of course, do harm as long as the inflammatory reaction serves to circumscribe or to fight infection. It is only when the infection has been overcome that it is permissible to attempt to clear away the débris from the battlefield more quickly and to favor prompter restoration to the normal by appropriate friction interspaced with pétrissage and effleurage. In a similar manner, absorption of a blood clot may be favored; but here also friction must not be employed too early, as it might lead to recurrence of the bleeding. A thrombosed vein should, of course, never be masséed for fear of causing embolism. It is most especially in neuralgia and in chronic myalgia that friction of the tender points or nodes is useful (nerve point massage, or "gelotripsy"). Even when friction is distinctly indicated, it may at first increase the pain; but this should shortly afterward diminish and the relief remain for quite some time thereafter. It is obvious that an understanding of pathology is required for the safe and efficient manipulative attack on abnormal tissue. Only a fully trained physician is competent to direct such treatment, and nurses should be able to administer it just as they are trained in the administration of medicines; for it is otherwise usually quite impossible for patients to receive the massage treatment at the time when it will do the most good. Whether the massage was properly applied or not may be judged by its results. Decrease of pain, of swelling and of stiffness indicates progress; increase in these means that harm has been done.

HYPEREMIA

Hyperemia is now known to have an analgesic value, and it is this knowledge that makes it possible to comprehend why so many apparently different therapeutic methods may be similarly useful in certain painful conditions.

(a) *Heat*.—Whenever there is pain, the application of heat is, next to rest, the most generally useful remedy. Whether one applies flannel or cotton wrapping, fomentations, poultices, the electric heating pad, the hot water bag, diathermy or radiant energy, the effect is essentially the same, though differing somewhat in detail of action and hence in special suitability for certain particular conditions.

Whenever there is superficial hyperesthesia, a warm covering has a soothing effect, whether it be wrapping the part in flannel or other poor heat conductor, or applying a poultice or a plaster. Belladonna Plaster has the additional analgesic value of the sensory nerve ending depressing effect of atropine. The hot water bag, the favorite domestic analgesic, suffers from the disadvantage of its weight, which may make it intolerable whenever there is much tenderness. The electric heating pad, fomentation and poultice are free from this objection. The last two mentioned are particularly indicated when the relaxing effect of warmth and mois-

ture favors a lessening of tension in the affected part: for, as stated before, pain is proportionate to tension. When relaxation of tissue is not demanded, radiant energy and most especially the incandescent light or the electric bowl heater may be the most convenient analgesic potency to be invoked. Pain in deep tissue may possibly be somewhat more effectively relieved by diathermy, but other methods of application of heat generally do quite as well. Whenever heat is employed, scrupulous care must be exercised against burns. At the conclusion of the treatment it is generally well to "fix the blood in the tissue" by a brief cold "finishing" procedure, the hyperemia "reaction" from which is much more lasting than is the hyperemia remaining after discontinuance of the heating procedure.

(b) *Counterirritation*.—The setting up of an inflammatory reaction in a healthy part of the body for the sake of affecting morbid processes elsewhere, which is

PRESCRIPTION 1.—*Rubefacient Pigment*

℞ Menthol	2.0 Gm.
Volatile oil of mustard	2.0 cc.
Alcohol	50.0 cc.

M. Label: Apply a few drops to affected area. (Must not be used in the vicinity of the eyes.)

the essence of counterirritation, while complex in its mode of action, owes part of its effect, no doubt, to the production of hyperemia. Counterirritants should never be applied to a part of the skin that is in a state of inflammation or that is liable to undergo morbid changes, as that exposed to roentgen therapy. There are two fundamentally different methods of counterirritation: that used with rubbing (liniments), and those used without rubbing (pigments, sinapisms, vesicants). In all cases the degree of irritation must be inversely proportionate to the sensitiveness of the part; a child's skin is more delicate than an adult's, a woman's skin more sensitive than a man's. The fair haired have a skin more easily damaged than that of the dark haired. The genitalia and the eyelids do not, of course, tolerate degrees of irritation that might be beneficial elsewhere.

Liniments: These, yielding a combination of the massage and hyperemia effects, which often reinforce

PRESCRIPTION 2.—*Cantharis Plasters*

℞ 6 Cantharis plasters	1 by 1 inch
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Label: Oil the face of the plaster and apply in succession to tender points for about eight hours each.

each other, are contraindicated when massage is contraindicated; i. e., whenever there is danger of dissemination of pathogenic material, whether this is blood clot, micro-organisms, or tumor cells. While liniments are less efficient than is scientific massage preceded by the application of heat, they are often the only means practically available to procure this combination effect; and, when massage is indicated, even planless rubbing is generally better than no rubbing at all; and ordinary people can usually be made to rub a part more conscientiously when they are given something to "rub in."

The official Chloroform Liniment is probably as good as any other rubefacient liniment unless the powerful effect of mustard is desired, when the Compound Liniment of Mustard of the National Formulary might be preferred.

When rubbing is tabu, as in the presence of active infection, counterirritation without rubbing should be considered. Of these, painting the skin with Tincture of Iodine once or twice a day for several days (until the skin becomes chapped) is the simplest means of

securing the effect. In neuralgia, a 4 per cent solution of menthol and of volatile oil of mustard in alcohol applied as a pigment (prescription 1) may give relief. Sinapisms may have the advantage of better dosability when employed in the following manner: One part of mustard is mixed with an equal amount of flour or, for more delicate skin, with three or four parts of flour, and this is made into a paste with lukewarm water. The dough, spread over a backing, is covered with cheese-cloth and applied to the skin for from fifteen to thirty minutes. Reapplication may be ordered every eight hours and of a strength dependent on the previous reaction. If this is deficient, the application may be made stronger; if it is excessive or if the skin is still red from the previous application, a larger proportion of flour should be added. Vesication is indicated when rather lasting counterirritation is desirable in a chronic painful condition; and it is perhaps best secured by the application to the most tender points of a succession of

PREScription 3—Benzocaine-Camphor Oil

R Ethyl aminobenzoate 20 Gm
Camphor liniment to make 100.0 cc
M Label Apply freely on gauze as dressing for painful wound or ulcer

small (1 by 1 inch) Cantharis Plasters (prescription 2) for eight hours. These small blisters need not be opened and may simply be dressed with boric acid powder and sterile gauze kept in place by a cross of adhesive plaster.

PERIPHERAL SENSORY NERVE DEPRESSION

The most direct remedial attack on the diseased part being, in general, the most desirable, the consideration of local analgesia should logically take precedence over that of general analgesia. Pain may be checked by breaking in on the sensory nerve chain at any point between the place of production and the seat of its appreciation.

(a) *Local Anesthesia*.—This should be employed whenever possible. A minute drop of phenol on a tiny pledget of cotton packed into the cavity of a carious tooth temporarily relieves toothache, as if by magic. Mere application of a local anesthetic will check the

PREScription 4—Benzocaine Cerate

R Ethyl aminobenzoate 30 Gm
Paraffin 10.0 Gm
Petrolatum 20.0 Gm
M. Label: Spread on gauze and apply to ulcer.

pain of raw surfaces. Cocaine, the most powerful of these, is by common consent taboo for this purpose because it is habit producing; and Ethyl Aminobenzoate (benzocaine, anesthesine) may be considered a representative of the least objectionable agents of this kind to be applied to painful raw surfaces; e. g., as an oil compress (prescription 3), possibly best dissolved in camphorated oil, which is in itself useful on gauze as a dressing, packing or drain in lacerated and in suppurative wounds. In painful ulcers with minimal discharge, a benzocaine cerate (prescription 4) might be useful.

The ethyl chloride spray, which has the double effect of producing local anesthesia followed by prolonged hyperemia, is easily applied, cleanly, and in appropriate cases quite efficient, especially in neuralgias.

Injection anesthesia, to be employed when the skin surface is unbroken, might be secured by procaine, which in 1 per cent solution might be used in quantities up to 40 cc. in the form of encircling infiltration; i. e., injection into the area surrounding an inflamed organ

but not into the inflamed tissue itself. Arthritic joints may be made painless by pushing the needle's point into the fascia surrounding the joint, but not into the capsule or the joint itself. The pain of hyperalgetic irradiation, such as that accompanying visceral disease, may be temporarily relieved by intradermal infiltration with procaine solution of the skin overlying the area where the pain is most intense, taking care to produce a well defined wheal of possibly 3 cm. diameter and avoiding injection into the subcutaneous tissue. A quantity of

PREScription 5—A. B. C. Liniment

R Tincture of aconite,
Fluidextract of belladonna,
Chloroform, of each, 30.0 cc
Soap liniment to make 240.0 cc
M Label: Analgesic liniment For external use only

from 2 to 4 cc of 2 per cent procaine solution generally suffices for this purpose.

Paravertebral blocks by means of possibly 10 cc of 0.5 per cent procaine solution is probably not employed as frequently as it deserves to be for diagnosis as well as treatment in severely painful visceral conditions, such as biliary or renal colic, angina pectoris or the crises of locomotor ataxia. Paravertebral block of the sympathetic nerves is also useful for relief of pain in the extremities in such conditions as Raynaud's disease, thrombo-angiitis obliterans and arteriosclerotic claudication.

Nerve destruction, most especially by means of 95 per cent alcohol injection preceded by local anesthesia with 2 per cent procaine solution, should be employed

PREScription 6—Analgesic Pigment

R Camphor
Chloral hydrate,
Menthol, of each 30.0 Gm
Alcohol to make 120.0 cc
M. Label: Paint over painful area

more frequently than it is in intractable chronic painful conditions, not only in trigeminal neuralgia and in sciatica but also in inoperable carcinoma. For the latter condition this procedure or, if the relief secured is too transient, surgical nerve section might dispense with the necessity, otherwise generally present, of making the sufferer a victim of morphinism.

(b) *Local Analgesia*.—The fact that lessening the irritability of the superficial expansion of nerves diminishes also the appreciation of deep pain is made use of not only in the form of local anesthesia but also in the application of local sensory nerve depressants that act percutaneously, such as aconite and belladonna, e. g.,

PREScription 7.—Potassium Bromide

R Potassium bromide, 30.0 Gm
Water 15.0 cc
Syrup of raspberry, to make 120.0 cc
M Label Teaspoonful in water (or milk, especially in the under-nourished) after meals and at bedtime. (Contraindicated in patients suffering from acne Watch for bromoderma)

in the form of A. B. C. liniment (prescription 5). When massage is contraindicated, a pigment composed of camphor, chloral and menthol (prescription 6) might be of use.

(c) *Cold Applications*.—These are of limited analgesic value, of possibly special applicability in deep-seated inflammatory conditions (excepting in rheumatism and in nephritis, in which conditions cold procedures are generally contraindicated). Thus the ice cap is put into requisition with the hope of diminishing acuteness of the pain produced by congestion or inflammation of the intracranial structures. In peri-

carditis the tendency of the ice bag to slow the pulse may possibly be the more important factor; in appendicitis it may be the necessity of lying perfectly still when one balances an ice bag on the abdomen. The slight degree of the penetration of the cooling effect makes cold applications relatively safe in deep-seated infections. In more superficial infections it is probably presumptuous to apply cold, for how can one tell when the inflammatory reaction is excessive? In contusions, cold applications may bring comfort; but they should certainly not be applied when there is danger of necrosis. Very hot or very cold applications or strong chemicals may cause the death of tissue hovering between life and death, which might have survived more physiologic treatment.

(d) *Roentgen Therapy*.—This relieves pain due to pressure on or tension within nerves by lesions, the involution of which these rays are capable of causing. Frequent small doses of x-rays are used to relieve pain in some of the far advanced malignant conditions. Thus, in carcinoma of the prostate with metastasis to

PREScription 8.—*Carbromal*

Rx 25 tablets of carbromal, each 0.30 Gm.
Label: One after meals and at bedtime.

the spine they are of some help. They are also used to relieve pain in inflammatory lesions about the nerve roots, the most noteworthy example of which is herpes zoster.

CENTRAL ANALGESICS

Central analgesics need be resorted to most especially in pains of general dissemination, a distribution that should also lead to search for a general cause and its treatment. To estimate the degree of pain and the degree of analgesia that will probably be required to relieve it, one should arrive at an estimate of the patient's general sensitiveness. The following simple test may be of some help for this purpose: Pressure with the thumb against the tip of the normal mastoid bone generally elicits no pain, while pressure against the styloid process generally does. In the hyposensitive individual neither pressure excites pain, while in the

PREScription 9.—*Carbromal and Phenobarbital*

Rx Phenobarbital 0.50 Gm.
Carbromal 5.00 Gm.
Mix and divide into fifteen capsules.
Label: One after meals and at bedtime.

hypersensitive both pressures do. A "severe" pain in a hypersensitive individual will respond to much milder remedies than will be required to relieve a severe pain in a hyposensitive patient.

(a) *General Sedatives*.—Hypersensitiveness as well as general algæsia ("pains all over") suggest bromide as at least a part of the therapeutic program. This is probably best disguised by Syrup of Glycyrrhiza (see Insomnia, prescription 1); but Syrup of Raspberry (prescription 7) may be more palatable to some; and it looks less "medicinal." Carbromal (prescription 8) and this in combination with phenobarbital (prescription 9) represent two higher degrees of sedation if that obtainable from bromide is inadequate. One should always inquire whether the pain interferes with sleep, not only because such pain is more likely to be of anatomic rather than of functional origin (fatigue pains do not interfere with sleep) but also because the additional use of a hypnotic (in sleep-compelling doses, see Insomnia) may be advisable to prevent the development of insomnia-induced nervous hyperirritability.

(b) *The Coal Tar Analgesics*.—These agents are effective against functional (neuralgic) pains rather than against those of organic (e. g., traumatic) causation. Before prescribing such purely symptomatic analgesics, one should determine whether the pain is continuous or intermittent. For the latter form the analgesic would be taken merely "as required." Acetanilid is the least expensive of these agents and when used with care perhaps as safe as any of them. When several 0.2 Gm. tablets of acetanilid or 0.3 Gm. tablets

PREScription 10.—*Antipyrine*

Rx Antipyrine 5.0 Gm.
Syrup 30.00 cc.
Peppermint water to make 60.00 cc.
M. Label: Teaspoonful in water every two to four hours as required.
(Price index, 12: the approximate price per dose as compared with acetanilid, 1.)

of acetphenetidin given at intervals of two or three hours fail to relieve, larger doses should not be given, because they will probably also prove ineffective and might be toxic. A maximum daily dose of 1.5 Gm. of acetanilid should not be exceeded. Amidopyrine in doses of 0.3 Gm. (tablets) given every two to four hours has been the favorite analgesic of this group. In view of recently accumulating evidence that this agent may be followed by neutropenia, it should probably not be employed without preliminary and occasionally repeated control of the neutrophil count. Its maximum single dose has been placed at 1 Gm. and the day's dose at 3 Gm. While these three first-mentioned substances are too insoluble to be suitable for administration in

PREScription 11.—*Antipyrine Suppositories*

Rx Antipyrine 3.00 Gm.
Extract of belladonna 0.10 cc.
Cacao butter 20.00 Gm.
Mix and divide into ten suppositories.
Label: One every two to four hours as required.

any other than solid dosage form, antipyrine (0.3 Gm.) is the one agent of this group that should be always administered in liquid dosage form, well diluted, as it, like other very soluble bodies, may produce gastric irritation when given in solid dosage form. Its taste is not easily disguised: peppermint (prescription 10), or Syrup of Citric Acid (lemon) having been variously recommended. It might be given in suppository form (prescription 11). Whenever antipyrine is administered, one must look out for skin eruptions that might be produced by it.

(c) "*Antirheumatics*".—Probably all sedatives are more or less antiphlogistic, i. e., have a tendency to lessen the degree of inflammatory reaction. It may be

PREScription 12.—*Acetylsalicylic Acid with Hyoscyamus*

Rx Extract of hyoscyamus 0.15 Gm.
Acetylsalicylic acid 5.00 Gm.
Mix and divide into fifteen capsules.
Label: One every hour until relieved, then every two to four hours as required.

that this effect is particularly prominent in the salicylates and in cinchophen, both of which have quite a vogue in the treatment of "rheumatic" pains, which might perhaps be more appropriately called the pains of "fibrositis," whether this nonsuppurative inflammation affects joints, muscles or nerves. While in rheumatic fever sodium salicylate is the remedy of greatest effect, acetylsalicylic acid (price index, 4), being somewhat more analgesic, is generally preferred in doses of 0.3 Gm. (tablets) every hour until the pain is relieved, then every two to four hours in other less acute fibrositic painful conditions. Its chief untoward effect is its

tendency to produce excessive sweating, which might be somewhat antagonized by a drug of the belladonna group; e. g., Extract of Hyoscyamus (prescription 12). Neocinchophen (price index, 97), which is less likely to produce diaphoresis than acetylsalicylic acid, might be preferable were it not for its high cost and for the suspicion that it may produce acute yellow atrophy of the liver. This danger is not nearly as great with neocinchophen as it is with cinchophen, the use of which

PRESCRIPTION 13.—Morphine Sulphate for Injection

R Diluted hydrochloric acid.....	0.05 cc.
Morphine hydrochloride.....	0.10 Gm.
Distilled water.....to make	10.00 cc.

Place in multiple dose ampule and sterilize.

Label: 1.0 cc. equals morphine 0.01 Gm. For hospital purposes, multiple dose ampules are much more economical and convenient than are hypodermic tablets. The addition of a small quantity of hydrochloric acid serves to stabilize the solution.

should be entirely abandoned. Neocinchophen should not be employed in patients with hepatic or biliary diseases or in patients with fever; in any case it should not be used continuously for more than three days at a time.

(d) *Opiates*.—There is no pain that resists morphine given by injection. If shock is present and severe, it should be administered by slow intravenous injection, as otherwise its effect would be late in asserting itself, which might lead one to piling on of a toxic dose before the effect can be secured. Ordinarily, hypodermic injection suffices (prescription 13). When facilities for injection are not available, sublingual administration of a crushed "hypodermic" tablet will give quicker response than swallowing the dose. In the presence of excruciating pain of acute disease, it is inhumane to experiment with other analgesics. The dose of morphine sulphate may be placed at 15 mg. for a man and 10 mg. for a woman. This dose may be repeated once in from one-half to one hour, if the pain has not been sufficiently relieved. After this a dose every four hours usually suffices to maintain the effect. Infants should not get morphine. To small children, not more than 1 to 2 mg. of morphine should be given; to children of school age, not more than from 2 to 4 mg. at a dose. Morphine is contraindicated by the presence of cyanosis,

PRESCRIPTION 14.—Acetanilid-Acetylsalicylic Acid Compound

R Extract of hyoscyamus.....	0.15 Gm.
Acetanilid.....	1.00 Gm.
Acetylsalicylic acid.....	5.00 Gm.

Mix and divide into fifteen capsules.

Label: One every two to four hours as required.

unless this is due to pleuritic pain. It is also positively contraindicated in all chronic painful conditions, unless they are malignant. In jaundice its use should be avoided, as it may cause itching or increase it.

Combinations of morphine (10 mg.) with atropine (0.5 mg.) is especially indicated in the pain of colics. Such a combination is also believed to lessen some of the untoward effects of morphine. To minimize the disagreeable after-effects of morphine, one might give every four hours, for several doses, one half of each previous dose. Hot black coffee, a laxative, and maintaining the recumbent posture for some time after awakening from the morphine sleep are also helpful.

While codeine is decidedly less habit producing than is morphine, it is a much feebler analgesic and it is also relatively much more expensive than morphine. As codeine is probably only about one tenth as efficient in relieving pain as morphine, it may cost ten times as much to secure the same effect. In a hospital in

which the patient is under complete control, its use for the relief of pain is therefore rather uneconomical.

(e) *Combination Analgesics*.—The validity of Bürgi's rule that "agents producing the same effect in different ways mutually increase their efficiency" is well illustrated by the analgesics. While there would be no sense in prescribing acetanilid with acetphenetidin, combining acetanilid with acetylsalicylic acid is likely to enhance the analgesic value but also the sudorific effects. This might be antagonized by extract of hyoscyamus (prescription 14).

While polypragmasy, the irrational combining of too many different remedies at one time, is just as objectionable as is polypharmacy (the shotgun prescription), there is validity—at least in private practice—in the maxim that "whenever possible, the physician should apply a local remedy; for if he does not, some one else will, and he may not do it as wisely." There is also wisdom in the old preceptor's advice: "Prescribe a box and a bottle"; the one intended for symptomatic relief to be used as required, the other remedy to produce more fundamental modifications, causal or restorative, so as to make recourse to the symptom remedy progressively less necessary.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
H. A. CARTER, Secretary.

EDUCATION IN PHYSICAL THERAPY IN THE STATE OF PENNSYLVANIA

FRANK H. KRUSEN, M.D.

PHILADELPHIA

Although, in certain centers, the practice of physical therapy has made remarkable strides during the past five years, widespread knowledge of the subject is still lacking. Elbert Hubbard has said: "A man is usually down on that which he is not up on." Education in physical therapy has progressed sufficiently so that the rank and file of physicians have gained sufficient knowledge of the subject to be no longer blindly antagonistic to physical therapy as a whole. Molander¹ has said: "There is lack of appreciation as to the vastness of the field of physical therapy. It ramifies through every phase of medicine."

Shaul² has pointed out that "the attempt to evaluate physical therapy as a whole should be abandoned"; that it is just as difficult to answer the question "What do you think of physical therapy?" as it is to answer the question "What do you think of radiology?" or "What do you think of internal medicine?"; that "if a distinction exists outside the minds of the uninformed, it is that physical therapy requires a more detailed knowledge of physical agencies." Physicians are now learning that there are many simple physical measures which are applicable to general practice. Gaenslen³ has pointed out that "90 per cent of the necessary work . . . so far as physical therapy is concerned can be accomplished by exercises, massage, muscle training,

1. Molander, C. O.: Physical Therapy in Teaching Hospitals, J. A. M. A. 96:1879 (May 30) 1931.

2. Shaul, E. M.: What Do You Think of Physical Medicine? Arch. Phys. Therapy 14:105 (Feb.) 1933.

3. Gaenslen, F. J.: Who Should Teach Physical Therapy? J. A. M. A. 100:1435 (May 6) 1933.

and posture work with no other equipment than can be found in the ordinary home." One might add that all that is needed is the general training of physicians in the use of such simple physical measures. Gaenslen concludes: "We are too apt to think of physical therapy in connection with injuries when as a matter of fact there is a large field for this branch of therapy in internal medicine and in general surgery as well as in the specialties."

The channels through which medical education in physical therapy has been and still further should be developed are:

1. The premedical teaching.
2. The undergraduate medical teaching.
3. The graduate medical teaching.
4. The teaching hospitals.
5. The state and county medical societies.
6. The medical journals.

Advances have been made through all these channels; much must still be accomplished, however, before the average physician can be trained in the routine use of the many valuable and simple physical measures now available for the treatment of disease.

In premedical teaching, more satisfactory courses in truly medical physics are being established to replace the courses previously offered, which were primarily of value to the engineering student. At least one premedical school in Pennsylvania is doing this, and others will probably follow.

In undergraduate medical teaching, courses in physical therapy (which is really applied premedical physics) are now being conducted. In Pennsylvania, five of the six medical schools are giving more or less complete courses in physical therapy to undergraduate medical students.

There are two vicious circles that handicap the development of physical therapeutic teaching in Pennsylvania as in other states.

(a) There is an inadequate number of trained instructors because the schools have failed to teach physical therapy; and the schools have failed to teach physical therapy because there is an inadequate number of instructors.

(b) The present organizers of medical curricula are for the most part unacquainted with physical therapeutics and hence have failed to include it in their program. As the students of the present become the curriculum makers of the future, we have a vicious circle.⁴

For these reasons, progress has been slow; nevertheless, definite steps forward in undergraduate teaching have been noted.

There are now organized, at certain medical centers, a few adequate graduate school courses for physicians who desire to specialize in this field, as well as shorter introductory courses for general practitioners who desire a brief working knowledge of the subject. These schools, however, are not readily available to all physicians.

Although slow but steady progress is to be seen in institutional education in physical therapy, there is still a very great need for postgraduate education "outside of teaching institutions."

In its most recent report,⁵ the Committee on Education of the Council on Physical Therapy says:

The committee believes that this is the field which best lends itself to early development and that furthermore there is here

a greater necessity for immediate action than under the other heads. The Committee on Education is fully cognizant of the fact that adequate education in this field of therapy can be brought about only by long range planning in respect to undergraduate education as a whole. This point is axiomatic and emphasis made in another direction is not to be interpreted as failure to visualize the fundamental need.

The situation as regards the use of physical therapy among the practicing profession as a whole throughout the United States is, however, nothing short of deplorable. Large sections of society are at present wholly without advice, not to say practical assistance, concerning measures which often spell the difference between invalidism and health. This fact is perhaps best illustrated in terms of injured or diseased joint structures but has almost equal application in a wide range of other medical and surgical conditions. The committee thoroughly appreciates that it is futile to expect an adequate grasp of the field of physical therapy on the part of the profession as a whole during the lifetime of the present generation, but it is equally satisfied that much can be done to improve conditions as they now exist.

This is undoubtedly true; and it is equally true that the profession is eager to receive instruction in this field. This is manifested by the manner in which, in the past, physicians have flocked to poorly organized commercial courses on the subject. Concerning these courses, Molander¹ wrote in 1931:

There are many short courses given by commercial concerns which naturally emphasize the products they sell. Such courses give one a decidedly wrong impression of the entire field. However, such courses cannot be condemned as much as the shortsightedness of medical schools and teaching hospitals in not making available adequate instruction in physical therapy.

Because of the work of the Council on Physical Therapy, and partly because of the establishment of more satisfactory, well balanced, authoritative and conservative courses by medical societies, a ruling was made by the American Medical Association which refuses the acceptance of advertising from commercial firms that offer such courses.

The Committee on Education of the Council on Physical Therapy has expressed the belief that "tangible and useful results" may be obtained by well organized courses of instruction given by state and county societies. It cites the very successful course given by the Philadelphia county society four or five years ago and the "subsequent more extensive activities in New York State." Still more recently, Kovacs⁶ has mentioned that "a five day seminar was held, under the auspices of the Committee on Education of the Philadelphia County Medical Society" and that "the entire series of these lectures was published in book form." This seminar, held in April 1932, gave startling proof that practicing physicians were eager for good instruction in physical therapy, since, "to the surprise of the committee, over 400 physicians registered for the course—over 60 physicians attended the course from parts of Pennsylvania outside of Philadelphia. In addition, there were 2 registrants from California, 2 from Delaware, 1 each from Florida, Illinois, Kentucky and Missouri, 8 from New Jersey, and 1 from Wisconsin."⁷ One registrant wrote: "I spent a profitable and enjoyable week, missing but one lecture, and have now some clear ideas about physical medicine, where before I was hopelessly confused."

Subsequently, a similar seminar was presented in Pittsburgh.

4. Krusen, F. H.: Teaching of Physical Therapeutics in the Medical School Curriculum, *Arch. Phys. Therap.* 14: 154 (March) 1933.

5. Unpublished report of the Committee on Education of the Council on Physical Therapy of the American Medical Association.

6. Kovacs, Richard: Physical Therapy Committees in State and County Medical Societies, *J. A. M. A.* 102: 1296 (April 21) 1934.

7. Pennsylvania Seminar on Physical Medicine, editorial, *Arch. Phys. Therap.* 13: 434 (July) 1934.

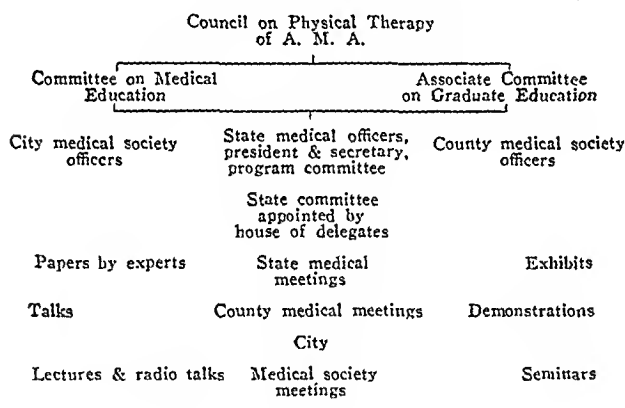
There is no reason why every county society in the country cannot present such a seminar, suiting its program to the local needs, so that throughout the United States physicians now "hopelessly confused" may gain some "clear ideas" concerning physical therapy. What is needed at present is a guiding hand: the coordinated effort of an interested group of informed physicians in each state to organize such instruction and to bring it to the physicians who have so earnestly demonstrated their desire to have it. With this thought in mind, the following resolution has been presented to the state secretary for introduction to the house of delegates of the Medical Society of the State of Pennsylvania:

Resolved, That the House of Delegates of the Medical Society of the State of Pennsylvania consider the appointment of a special committee on physical therapy, the duties of which will be to promote graduate education in physical therapy in the state of Pennsylvania.

Such committees have already been appointed in New York, California and Illinois.

Kotkis⁸ has suggested a scheme of organization for the advancement of education in physical therapy, as follows:

*Scheme of Organization for Advancement of Education
in Physical Therapy*



Kovacs⁹ has already offered "an outline of organization and plan of activities" for physical therapy committees in state and county medical societies. The Council on Physical Therapy now proposes to organize an associate committee "to promote graduate education in physical therapy."

The possibilities have been demonstrated. All that is required at present is cooperative action in promoting instructional courses at regular county and state medical society meetings throughout the land, instead of at a few isolated meetings.

Finally, much might be done to promote rational training in physical therapy by obtaining the cooperation of the editor of each state medical journal in establishing a column on physical therapy. The *Pennsylvania State Medical Journal* has done this successfully. Just as the Council on Physical Therapy has published a series of sanctioned authoritative articles on various phases of physical therapy in the columns of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, so might each state journal publish a briefer, committee-sanctioned column on more fundamental phases of physical therapy.

REPORTS OF THE COUNCIL

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS. H. A. CARTER, Secretary.

NOTICES OF REACCEPTANCE

The Council on Physical Therapy has reaccepted the following devices and products for a period of three years:

DAVIS INHALATOR. Manufacturer: Davis Emergency Equipment Company, Inc., New York. A resuscitation apparatus designed to assist in the administration of oxygen or a mixture of oxygen and carbon dioxide in various forms of asphyxia. Recommended for suffocation due to drowning, electric shock and gas poisoning.

UVIOL-JENA ULTRAVIOLET TRANSMITTING GLASS. Manufacturer: Schott & Gen., Jena. Distributors: Fish-Schurman Corporation, New York. A window glass for transmitting a portion of the biologic ultraviolet rays of the sun or other source.

NATIONAL VAPORIZERS, TYPES 1 AND 2. Manufacturer: The National Drug Company, Philadelphia. A device for vaporizing oil or aqueous solutions.

VICTOREEN r-METER. Manufacturer: Victoreen Instrument Company, Cleveland. An instrument for determining the intensity of roentgen rays at any point in the field in roentgens per minute.

FRICKE-GLASSER X-RAY DOSIMETER. Manufacturer: Victoreen Instrument Company, Cleveland. An instrument designed to measure the quantity and intensity of roentgen rays and calibrated in international roentgens.

REQUIREMENTS FOR ADVERTISING OF ABDOMINAL BELTS, CORSETS, AND SPECIAL SUPPORTS

The Council on Physical Therapy has adopted the following minimum standards for acceptance and policy pertaining to the selling and advertising of abdominal belts, corsets, and special supports recommended for therapeutic use.

- I. Misleading claims concerning the structure, material, workmanship, etc., will warrant rejection of the product.
- II. Acceptance or rejection of such products will be based in a large measure on the advertising claims of the manufacturer and on the therapeutic evidence presented. In advertising either to the public or to the profession, the following therapeutic claims are acceptable to the Council:

- A. Such products form a satisfactory method of support in certain individuals with large pendulous abdomens.
- B. Similar supports may be used in the case of large pendulous breasts.

- III. In advertising solely to the profession, manufacturers may use the additional therapeutic claims as follows:

- A. In pregnant women, where abdominal or pelvic support is needed.
- B. In cases of hernia, where support is needed.
- C. In certain definite displacements of abdominal viscera, where support is needed.
- D. In selected cases of weakness of abdominal walls, due to infantile or other forms of paralysis where support is needed.
- E. In selected cases of defective posture in connection with corrective exercises or other treatment.
- F. In selected cases of low back pain where support is needed.
- G. In selected cases of circulatory disturbances of the extremities, where support is needed.
- H. In occasional cases after laparotomy where support is indicated.
- I. In occasional cases of injury to the extremities where support is needed.

- IV. In the past, it has been customary for certain manufacturers or distributors to rebate to physicians desiring it a certain percentage of the selling price of these devices. This is definitely incompatible with medical ethics. The Council, therefore, will reject any devices sold by manufacturers who persist in this practice.

The foregoing standards apply to those manufacturers who limit the sale of their devices to direct advertising to the public and to the profession. The Council can accept these devices

8. Kotkis, A. J.: Personal communication to the author.

when any firm agrees so to limit its advertising and agrees not to use sales agents or to sell directly to the public. In the case of those manufacturers who employ demonstrators in department stores and saleswomen canvassing the devices from door to door, who use exaggerated statements for the purpose of consummating a sale, which cannot be checked or controlled either by the manufacturer or by the Council, it must be the policy of the Council that such devices cannot be accepted. The Council refuses to assume the responsibility of furthering any questionable sales methods by allowing such manufacturers or their agents to say that "this article is accepted by the Council on Physical Therapy of the American Medical Association."

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1934, p. 393).

Eli Lilly & Co., Indianapolis.

Diphtheria Toxoid, Alum Precipitated (Refined) Lilly—Prepared from diphtheria toxin by treatment with formaldehyde and precipitated with alum, washed, and resuspended in physiologic solution of sodium chloride. The product is tested for antigenic efficiency as prescribed by the National Institute of Health: guinea pigs weighing 500 Gm., given one human dose, must produce at the end of six weeks at least two units of diphtheria antitoxin in each cubic centimeter of blood.

It is marketed in packages of one immunization treatment, containing one 0.5 cc. vial, and in packages of ten immunizations, containing one 5 cc. vial of the refined toxoid.

SULPHARSPHENAMINE-ABBOTT (See New and Nonofficial Remedies, 1934, p. 82).

The following dosage forms have been accepted:

Sulpharsphenamine-Abbott, 0.1 Gm. Ampules.

Sulpharsphenamine-Abbott, 0.5 Gm. Ampules.

Sulpharsphenamine-Abbott, 0.8 Gm. Ampules.

SCILLONIN (See THE JOURNAL, Dec. 1, 1934, p. 1708).

The following dosage form has been accepted.

Coated Tablets Scillonin, 0.5 mg.

INSULIN-STEARN'S (See New and Nonofficial Remedies, 1934, p. 225).

The following dosage form has been accepted:

Insulin-Stearns, 100 Units, 10 cc Each cubic centimeter contains 100 units.

DIPHTHERIA TOXOID (See New and Nonofficial Remedies, 1934, p. 390).

Wm. S. Merrell Co., Cincinnati.

Diphtheria Toxoid—Prepared from diphtheria toxin the L+ dose of which is 0.2 cc or less by treatment with formaldehyde solution at a temperature of from 38 to 40 C. until its toxicity is so reduced that injection of five maximum human doses into guinea pigs causes no local or general symptoms of diphtheria poisoning. The product is tested for antigenic potency by injection into at least ten guinea-pigs of one human dose each; if at the end of six weeks at least 80 per cent of the animals survive for ten days the injection of five minimum lethal doses of diphtheria toxin, the toxoid is considered satisfactory. Marketed in packages of two 1 cc. vials, and in packages of fifteen immunization treatments of one 30 cc. vial.

DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1934, p. 393).

Wm. S. Merrell Co., Cincinnati.

Diphtheria Toxoid, Alum Precipitated (Refined)—Prepared from diphtheria toxin the L+ dose of which is less than 0.2 cc. The toxin is detoxified with an appropriate amount of formaldehyde solution so that the injection of five human doses, subcutaneously, into guinea pigs causes neither general nor local symptoms of diphtheria poisoning. The toxoid is refined by precipitation with a sterile solution of potassium aluminum sulphate. The precipitate is then washed with sterile physiologic solution of sodium chloride and resuspended in sufficient physiologic solution of

sodium chloride to bring its volume to that of the toxoid from which the precipitate was prepared. The finished product is preserved with merthiolate, 1:10,000, and contains less than 2 per cent of alum. The product is tested for antigenic potency by the method prescribed by the National Institute of Health: the human dose must produce in guinea pigs within six weeks at least two units of diphtheria antitoxin per cubic centimeter of blood serum. It is marketed in packages of one 1 cc. vial (one immunization) and one 10 cc. vial (ten immunizations).

TYPHOID VACCINE (See New and Nonofficial Remedies, 1934, p. 398)

Wm. S. Merrell Co., Cincinnati.

Typhoid Vaccine—A suspension of killed typhoid bacilli in physiologic solution of sodium chloride, preserved with 0.5 per cent of phenol. The product is prepared according to the method of the U. S. Army Medical School from the Rawling's strain. Marketed in packages of three vials, the first containing 500 million killed typhoid bacilli in 0.5 cc. of suspension and the second and third containing 1,000 million killed typhoid bacilli in 1 cc. of suspension, in packages of one 5 cc. vial containing 1,000 million killed typhoid bacilli per cubic centimeter, and in packages of one 20 cc. vial containing 1,000 million killed typhoid bacilli per cubic centimeter.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1934, p. 404).

Wm. S. Merrell Co., Cincinnati.

Diphtheria Toxin for the Schick Test, Diluted with Peptone Solution and Ready for Use—A diphtheria toxin made by growing diphtheria bacilli in broth, aging and diluting with peptone solution according to Bunney (*J. Immunol.* 20:71 [Jan.] 1931). The product is ready for use, no diluent being required. The diluted toxin is of such strength that 0.1 cc. (one dose) given intradermally constitutes one fiftieth minimum lethal dose for a guinea pig of 250 Gm. weight. Marketed in packages containing sufficient material for 10 and 100 tests.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

PAUL NICHOLAS LEECH, Secretary.

ACIDOPHILUS BACILLUS LIQUID-MULFORD AND MULFORD ACIDOPHILUS BACILLUS BLOCKS OMITTED FROM N. N. R.

Acidophilus Bacillus Liquid-Mulford and *Mulford Acidophilus Bacillus Blocks*, manufactured by Sharp & Dohme, Inc., were accepted for inclusion in New and Nonofficial Remedies in 1930 and 1929, respectively. The former is:

"A whey culture of *Bacillus Acidophilus* (Moro) in a whey medium. It contains 50 million viable organisms per cubic centimeter at the time of sale."

The latter is:

"A culture of *B. acidophilus* (X strain), embedded in a 2 per cent agar jelly containing milk powder, lactose, *D*-glucose and sucrose, and marketed in the form of chocolate covered cubes, each of which contains approximately 150 billion viable organisms (*B. acidophilus*) at the time of issue."

The Council is now considering the evidence for the therapeutic value of *acidophilus bacillus* preparations in general, and all the accepted brands for the present have the status of being accepted for one year only instead of for the usual three year period. In considering the material submitted by Sharp & Dohme, Inc., for the limited reacceptance of the two products named in the last paragraph, the referee found that these were not being marketed in accordance with the Council's requisites for such products. The firm was informed of this in each case and has not taken steps to make the products eligible for reacceptance. It appears that both products are considerably inferior to the Council's requirement that accepted preparations contain not less than 200 million viable *B. acidophilus* organisms at the time of manufacture and at least 100 million at the date of expiration (New and Nonofficial Remedies, 1934, p. 252). The Council's referee reported on each product as follows:

Acidophilus Bacillus Liquid-Mulford

The last period of acceptance of this product expired at the end of 1931. In November 1931 the Council voted to reaccept this product provided the firm (a) submitted labels bearing the date of manufacture, date of expiration and number of living

organisms per cubic centimeter, (b) prepared a product containing at least 100 million viable organisms per cubic centimeter at the expiration date, in accordance with the standards adopted by the Council, and (c) revised its circulars, pamphlets and labels by omitting specific use of the terms intestinal toxemia, toxic conditions due to intestinal putrefaction, and terms of this nature. This report was sent to Sharp & Dohme, Inc., Dec. 4, 1931.

In March 1932 the firm replied, sending labels, cartons and circulars which were found to be unsatisfactory because they lacked the statements required and did not indicate that the product would contain at least 100 million viable *B. acidophilus* organisms at the expiration date. In order to place this product on the same basis of acceptance as the other *Bacillus acidophilus* products, the Council voted in June 1932 to reaccept *Acidophilus Bacillus Liquid-Mulford* for a period ending Dec. 31, 1934, provided the firm made the indicated revisions in the labels, cartons and circulars, reduced the expiration period to one month unless evidence was submitted showing that a longer expiration period could be truthfully claimed, and improved the product so that it would contain 100 million viable *B. acidophilus* organisms at the expiration date.

On Feb. 13, 1934, Sharp & Dohme, Inc., replied to a letter of Dec. 18, 1933, from the secretary and sent in the current labels, cartons and circulars used for *Acidophilus Bacillus Liquid-Mulford*. At the same time there was forwarded to the Council a copy of a memorandum from the director of the firm's biologic laboratories stating his belief that the labels and advertising were in accordance with the requirements of the Council, that "the product invariably comes through with an original count of 1,000 million bacilli per cc., but a great deal of variation occurs in the keeping qualities of the individual lots regardless of time and temperature." He expressed satisfaction with the product and stated that in view of "the general favorable acceptance of *Acidophilus Bacillus Mulford* in trade channels as prepared and marketed, we prefer to continue without making any changes at present."

The labels received in February 1934 lacked a place for an entry of the date of manufacture, and claimed that at the time of sale each cubic centimeter contained "millions of *acidophilus* bacilli," in place of stating that there would be in each cubic centimeter at least 100 million of these organisms in a viable state. The cartons had the same defects. The trade package circular did not show the revisions indicated in the Council's report.

All of this material is printed in Spanish as well as in English, as the product is intended for sale in both South America and in this country.

On Feb. 28, 1934, the firm was informed of the defects of these labels, cartons and circulars and further informed that the material submitted with the firm's letter of Feb. 13, 1934, had not been revised in accordance with the material submitted on March 9, 1932, and hence did not meet the recommendations of the Council's report. To this the firm replied that if it "were to attempt to comply with the suggestions in detail, a continuance of the product on the market would prove impractical. However [it was added], we must hesitate in making it unavailable to the medical profession because of the favorable acceptance by physicians generally of *Acidophilus Bacillus Liquid-Mulford*, as now prepared and marketed."

The requirements which the firm held "impractical" are (1) improvement of the product so that it can be guaranteed to contain at least 200 million viable *B. acidophilus* organisms per cubic centimeter at the date of manufacture and 100 million per cubic centimeter at the date of expiration; (2) marking the dates of manufacture and expiration on the labels and cartons; and (3) omission of the use of the term "toxic conditions due to intestinal putrefaction." In the opinion of the Council's referee these requirements are not "impractical" and are both reasonable and possible of fulfilment.

In January and March 1934 a competent bacteriologist who has a special knowledge of *Bacillus acidophilus* examined *Acidophilus Bacillus Liquid-Mulford* as part of an investigation sponsored by the Council. His report on this preparation is as follows:

Samples purchased on the open market in January 1934 did not contain a date of manufacture. The product was guaranteed to contain "millions of viable *acidophilus* bacilli" per cc. at the date of sale. The carton of the sample purchased on January 25, 1934, bore the statement "Expiration date—Mar. 21, 1934."

The bacterial counts of *acidophilus* bacilli were as follows:

Medium	B. <i>Acidophilus</i> Counts, per Cc.	
	Jan. 25, 1934	March 21, 1934
Tomato juice agar (in air).....	41 million	17 million
Tomato juice agar (in 10% CO ₂)..	96 million	16 million
Casein digest agar (in air).....	39 million	20 million
Casein digest agar (in 10% CO ₂)..	91 million	5 million

This shows that at the date of the customer's purchase of this product in this country it was below the Council's standard by more than 100 million viable *B. acidophilus* organisms per cubic centimeter and that approximately two months later, at the expiration date marked on the carton of the sample examined, it was, at best, 80 million organisms per cubic centimeter under the minimal requirement of the Council. If, as stated, the preparation contained upward of 1,000 million viable *B. acidophilus* organisms at the time of manufacture, it is evident that great deterioration took place. The director of the firm's biologic laboratories admitted in his note of Jan. 29, 1934, that "a great deal of variation occurs in the keeping qualities of the individual lots regardless of time and temperature." The product is thus shown to be inferior to the Council's standards and subject to great and apparently uncontrollable deterioration.

Mulford *Acidophilus Bacillus* Blocks

The period of acceptance of this chocolate covered agar-*B. acidophilus* product expired with the close of 1933. In February 1934 the Council voted to reaccept the product until the end of 1934, provided the firm revised the carton, package enclosure and circular by removing the large initials "M. A. B." from the name, placed the date of manufacture and expiration date and a statement of the minimal number of viable *B. acidophilus* organisms per gram on the cartons or labels, submitted evidence that a six weeks expiration period was warranted, and revised the text of the package enclosure and circular. This report was sent to the firm Feb. 26, 1934. The firm acknowledged receipt of the report on March 5, 1934, writing: "We will write you further regarding this matter in about ninety days." Although more than ninety days has passed since then, and although the Council usually requires replies from firms within sixty days, no further communication has been received from Sharp & Dohme, Inc.

This product has recently been examined for the Council by a bacteriologist expert in work with *B. acidophilus*. His report is as follows:

Packages of *Mulford Bacillus Acidophilus* Blocks were purchased on the open market in February 1934. The labels did not contain any statement of the date of manufacture but guaranteed that at the time of sale each Block will contain "millions of viable *acidophilus* bacilli." The expiration date stamped on the carton of the sample was "March 18, 1934."

The bacterial (*B. acidophilus* per gram) counts were:

Medium	Feb. 20, 1934	March 19, 1934
Tomato juice agar (in air).....	59 million	25 million
Tomato juice agar (in 10% CO ₂)..	60 million	25 million
Casein digest agar (in air).....	58 million	21 million
Casein digest agar (in 10% CO ₂)..	51 million	19 million

The sample contained 1,400 bacterial and mold contaminants per gram of material.

It is obvious from this report that the product is considerably inferior to the Council's standards for *B. acidophilus* preparations (New and Nonofficial Remedies, 1934, p. 252).

This account of the Council's negotiations with the firm in connection with these two products reveals that Sharp & Dohme, Inc., has been dilatory and uncooperative and, after about two years of correspondence, flatly declines to meet the stipulations of the Council.

The Council voted that *Acidophilus Bacillus Liquid-Mulford* and *Mulford Acidophilus Bacillus* Blocks be omitted from New and Nonofficial Remedies because they are inferior to the

Council's standards and because Sharp & Dohme, Inc., has refused to comply with the Council's requirements relating to the improvement of the product, the labeling of the containers and the revision of the circulars, cartons, and labels.

The foregoing statement was sent to Sharp & Dohme, Inc. The firm replied:

"We have taken quite some time to consider the report which you intend to publish regarding these two products with special reference to the names and to the numbers of bacilli present at the time of sale and at the time of expiration. While we could further discuss the Council's position regarding the changes which they require we feel we would not be justified in prolonging the discussion, hence, we offer no further comments with reference to the position taken by the Council on these two products."

Although the firm did not reply to all the points at issue, it appeared quite evident that it did not intend to meet the requirements of the Council as to improvement of the product and necessary revisions of labels and advertising.

The Council reaffirmed its previous decision and authorized publication of the report.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION. **RAYMOND HERTWIG, Secretary.**



HIGHLAND 100% PURE VERMONT MAPLE SAP SYRUP

Manufacturer.—Cary Maple Sugar Company, Inc., St. Johnsbury, Vt.

Description.—Pasteurized Vermont maple syrup prepared by evaporating and filtering maple sap.

Manufacture.—Maple sap is collected by farmers from sap spouts driven about one inch into maple trees. The sap flows into buckets, is delivered to evaporating houses, evaporated to standard weight, strained hot through felt into a tank where insoluble matter settles out, and is packed in drums, which are sent to the Cary company (which provides the drums), and the syrup is tested and graded for color, flavor and density. Only the best grade, based on color and flavor, is used for Highland brand. Syrup from the drums meeting requirements is emptied into large metal tanks, thoroughly mixed, pumped into glass lined vacuum cooking tanks, heated by steam, filtered under pressure through filter cloths and paper, returned to the glass lined cooking tanks, condensed to proper density (11 pounds to the gallon), and packed hot (82 C.) in hermetically sealed glass jugs and tins.

Analysis (submitted by manufacturer).—

		Moisture-free basis
Moisture	33.2%	
Ash	0.7%	1.0%
Soluble ash		0.6%
Insoluble ash		0.4%
Alkalinity of soluble ash (cc. N-10 acid to neutralize ash of 100 Gm. sample)	52 cc.	78 cc.
Alkalinity of insoluble ash (same)	76 cc.	114 cc.
Fat (ether extract)	0.0%	
Protein (N × 6.25)	0.0%	
Reducing sugars as invert sugar	4.2%	
Sucrose (by inversion)	60.0%	
Carbohydrates (by difference)	66.1%	
Lead number (Canadian)	4.4	
Lead number (Winton)	1.6	
Conductivity (25 Gm. solids)	138	
Malic acid value	0.70	
Direct polarization @ 20°C (26 Gm.)	56.8°V.	
Invert polarization @ 20°C (26 Gm.)	20.0°V.	

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—Complies with U. S. Department of Agriculture definition and standard.

DROMEDARY GRAPEFRUIT JUICE—SUGAR SYRUP ADDED

DROMEDARY ORANGE JUICE—SUGAR SYRUP ADDED

Manufacturer.—The Hills Brothers Company, New York.

Description.—Pasteurized Florida grapefruit juice and orange juice respectively with added sugar syrup, retaining in high degree the original vitamin content.

Manufacture.—Tree ripened fruit is used. The juice is removed from the cut fruit by burring, is strained to remove coarse pulp, is tested for acidity and sweetness and is admixed with sufficient sugar syrup to produce the desired flavor, is pasteurized, is automatically canned, and is processed below 100 C. for about fifteen minutes.

Analysis (submitted by manufacturer).—

Grapefruit Juice:	per cent
Moisture	83.7
Total solids	16.3
Ash	0.5
Fat (ether extract)	0.4
Protein (N × 6.25)	0.7
Reducing sugars as invert sugar	8.9
Sucrose	4.4
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference) ..	13.4
Titrate acidity as citric acid	0.8-1.0

Orange Juice:	per cent
Moisture	84.0
Total solids	16.0
Ash	0.7
Fat (ether extract)	0.3
Protein (N × 6.25)	0.8
Reducing sugars as invert sugar	5.7
Sucrose	6.7
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference) ..	13.0
Titrate acidity as citric acid	0.8-1.0

Calories.—0.6 per gram; 17 per ounce.

Vitamins.—Biologic assay shows retention in large measure of the original vitamin C content.

Claims of Manufacturer.—Retain practically all the nutritional values of the natural fruit juices and are intended for all the dietary and table uses of grapefruit and orange juices.

BORCHERDT'S MALT EXTRACT (PLAIN)

CONTAINS 10 PER CENT GLYCERIN

Manufacturer.—Borchardt Malt Extract Company, Chicago.

Description.—Concentrated diastatically active malt extract (U. S. P.) with 10 per cent glycerin added.

Manufacture.—An infusion of crushed high diastatic barley malt is maintained at a fixed temperature for a definite time, filtered, and the filtrate concentrated in vacuum to the desired density. Ten per cent by weight of glycerin is added and the mixture packed in bottles.

Analysis (submitted by manufacturer).—

	per cent
Moisture	22.3
Ash	1.1
Protein (N × 6.25)	4.4
Reducing sugars as maltose	52.5
Dextrins (by difference)	9.
Titrate acidity as lactic acid	0.7
Glycerin	10.
Calcium (Ca)	0.02
Iron (Fe)	0.0005
Magnesium (Mg)	0.08
Phosphorus (P)	0.25
Potassium (K)	0.25
Sodium (Na)	0.09

Diastatic value (U. S. P. method).

One Gm. converts from 5 to 7 Gm. of starch into maltose and dextrins in thirty minutes at 40 to 42 C.

Calories.—3.1 per gram; 88 per ounce.

Vitamins.—One ounce contains between 56 and 60 units of vitamins B and G (Sherman and Pappenheimer).

Claims of Manufacturer.—Easily assimilable. A valuable carbohydrate supplement to milk.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 22, 1934

DINITROPHENOL IN OBESITY

Since the clinical report on the use of alpha-dinitrophenol in obesity appeared in *THE JOURNAL*,¹ interest in this product and its actions has been widespread. Unimpeded by marketing restrictions, dinitrophenol has been sold and used indiscriminately with the inevitable serious toxic effects. Reports of its toxicity have, in fact, persuaded many physicians to suspend use and final judgment until the results of further studies should be known. That this policy has not been followed by all is amply demonstrated in the figures cited by Tainter, Cutting and Stockton² in their recent critical review of the subject. Thus they state that during the previous year the Stanford Clinic supplied physicians, or patients on physicians' prescriptions, with more than 1,200,000 capsules of dinitrophenol of 0.1 Gm. each. Since the usual daily dose is about three such capsules and the average duration of treatment about three months, this corresponds to 4,500 patients treated with the drug in a year. They estimate that probably at least 100,000 persons have been treated with the drug in this country alone. This number appears sufficient for preliminary summarization and analysis.

Basically there are two paramount features to consider. There is no doubt that dinitrophenol can increase the tissue metabolism, probably by direct action on the cells and without producing the side actions that accompany metabolic stimulation by thyroid. The second important fact is that the margin between therapeutically tolerated doses and definitely toxic ones is often narrow. All studies of this drug must of necessity be grouped around these considerations.

At present the principal therapeutic interest of dinitrophenol lies in the loss of weight occurring in obese individuals as a result of the increased metabolism

produced by this drug. When taken in adequate dosage, the increased metabolic activity burns extra fat and carbohydrate without appreciably affecting the protein as indicated by nitrogen excretion. With these facts there appears to be no serious quarrel, although opinions as to the clinical efficacy vary.

Tainter and his co-workers have considered the toxic effects from the standpoint of fatalities and from the reported lesions of the skin, liver, kidneys, circulation, blood and gastro-intestinal tract. They cite three fatal cases resulting from the therapeutic ingestion of dinitrophenol. In one of these there was a definite question as to the true cause of death, since the clinical history and the course were at variance with the known actions of the drug. In neither of the other two cases was the use of the drug confined to the usual therapeutic doses.

In a group of 113 obese persons treated by dinitrophenol, skin rashes were observed in about 7 per cent. Since these skin rashes may be unpleasant or alarming in some instances, they constitute the main disadvantage, Tainter believes, in the therapeutic use of dinitrophenol. About half of the patients who have had one skin reaction are able, however, to resume the medication later without any further difficulty. With regard to liver damage it appears that ordinarily there is no demonstrable evidence of injury of this organ from the drug. In fatal cases destructive changes may occur in the liver as well as in the other viscera, but since those reported were accompanied by high fever the latter could itself account for the morphologic changes observed in the liver cells. The possibility must be left open, however, that in occasional patients an idiosyncrasy may exist which might mediate damage to the liver. Possible toxic effects on the kidney seem to be even more remote.

In considering the circulatory system Tainter and his co-authors say: "One of the most striking features of the metabolic stimulation of dinitrophenol is a lack of significant changes in the blood pressure or pulse rate, unless therapeutic doses are exceeded. That is, the metabolism may be increased by as much as 50 per cent without demonstrable changes in circulatory activity.

. . . Patients who have hypertension can be medicated with dinitrophenol like other patients. As they lose weight the hypertension is usually improved." It is perhaps malignant neutropenia occurring during dinitrophenol medication³ that has aroused the greatest professional alarm. Although Tainter and his co-workers have seen no cases of agranulocytosis and have observed no other abnormalities of the blood affecting the hemoglobin or the fragility of the red cells, they feel that the possibility of agranulocytosis must be borne in mind pending further observations.

1. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Actions and Uses of Dinitrophenol: Promising Metabolic Applications, *J. A. M. A.* **101**:193 (July 15) 1933.

2. Tainter, M. L.; Cutting, W. C., and Stockton, A. B.: Use of Dinitrophenol in Nutritional Disorders, *Am. J. Pub. Health* **24**:1045 (Oct.) 1934.

3. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine: Preliminary Report, *J. A. M. A.* **102**:1213 (April 14) 1934. Bohn, S. S.: Agranulocytic Angina Following Ingestion of Dinitrophenol, *ibid.* **103**:249 (July 28) 1934. Silver, Solomon: A New Danger in Dinitrophenol Therapy, *ibid.* **103**:1058 (Oct. 6) 1934.

There seems to be agreement at present that dinitrophenol is a drug of potential dangers when used indiscriminately. Its sale should be restricted to that ordered by the physician's prescription and its use by medical men should be carefully supervised. Probably it should be employed only when reduction of obesity is important and when ordinary dietary methods have failed.

THE NATURE AND FOOD VALUE OF BEER

Since the return of beer to a place of importance in the diets of many persons in this country, the medical profession should be well informed concerning the contents and physiologic effects of this drink.

Beer is essentially a fermented beverage prepared from an infusion of hops and malted barley, with or without unmalted cereal grains other than barley. A brief description of the essential steps of manufacture has been recently given by Mathis and Bailey.¹ The first step is the preparation of malt, for which purpose barley is usually chosen. The process consists in steeping the barley in water to facilitate germination, which is followed by drying. The development of enzymes, primarily diastase and protease, is the primary object of malting. The second essential step is the preparation of "mash." The diastase of malt is sufficient to convert more than the starch in the malt itself into fermentable sugar; hence the practice of mashing a mixture of malt with raw (unmalted) cereals. The malt and raw grains are crushed and mixed with water, and the "mash" is allowed to stand at suitable and controlled temperatures. During this process the cereal starches are converted into fermentable sugars and the proteins are in part transformed into soluble forms such as amides, peptones and albumoses. The liquid is drawn off, the mash washed and the washing added to the liquid. This product constitutes the beer wort. After the wort has been boiled, hops are added and the boiling is continued. After cooking and sedimentation, the wort is drawn off or filtered and is ready for fermentation. The final process of fermentation is produced by the addition of selected cultures of yeast and may be carried out in various ways and at different speeds. Naturally this is only a general description of the process, since each constituent and each step is part and parcel of the distinctive nature of different types and brands of beer.

One of the final products of especial importance is the alcoholic content, which has been the subject of numerous reports.² Thus soon after the 3.2 per cent beer legislation an analysis of fifty-two brands of beer was made by the New Hampshire State Board of Health and reported in *THE JOURNAL*.^{2b} The average

alcoholic strength of these samples was found to be 3.68 per cent by volume. The lowest was 3.2 and the highest was 4.1 per cent. Similarly Mathis and Bailey report the analysis of the alcohol percentage by volume of a number of beers before and after repeal of the eighteenth amendment. Of thirty-seven domestic light beers before repeal, the average alcohol by volume was 3.7 per cent, the maximum 4.03 and the minimum 3.01. Of ten light beers (many of the brands included in the earlier analysis) analyzed after repeal, the average alcohol by volume was 4.64, the maximum 5.23 and the minimum 4.02.

The food value of beer as measured by calories is not wholly dependent on the alcoholic content. For example, Lusk³ states that "a liter of German beer contains from 3 to 4 per cent of alcohol and from 5 to 6 per cent extractives. It yields 450 calories to the body, only half being derived from alcohol, the rest from dextrin and protein-like extractives. Here is a food material whose 'fattening' properties may be very highly considered." Christie⁴ has considered the same subject in relation to the nutritive value of other fluids containing alcohol. While the number of calories per ounce of the malt liquor is for the most part lower than that of an equal quantity of wines, liqueurs and spirits, the former are usually taken in much larger quantities than the latter and hence the total calory intake is generally more. Christie concludes, therefore, that light beers are ideal for the undernourished, and if the calories of beer are added to those of the usual diet there would seem to be no doubt of the practical value of his statement.

PROBLEMS OF LATENT INFECTION

In the English language the word infection may mean not only the infectious agent itself but also its entrance into the body and all the consequences of such entrance. Latent infection, generally speaking, means the residence in the body of a specific infectious agent without any manifest symptoms. The symptomless incubation period, which in certain diseases, notably measles and smallpox, is fairly definite in length, is a period of latency in infection. After complete recovery from an infectious disease the infectious agent may survive in the patient for a variable time, sometimes for years, without causing any obvious disturbances. Here the infection outlives the disease. This form of latency in infection occurs in typhoid, cholera, epidemic meningitis, diphtheria, scarlet fever and other diseases. In malaria, recurrent fever, undulant fever and septicemic infections occur symptomless intervals or periods of latency the nature of which presents many problems. There are also infections that may remain latent throughout their entire course, which may end in the

1. Mathis, W. T., and Bailey, E. M.: Beer, Bull. Connecticut Agricultural Experiment Station 363: 660 (July) 1934.

2. (a) Mathis and Bailey.¹ (b) Beer and Alcohol, Bureau of Investigation, J. A. M. A. 101: 1579 (Nov. 11) 1933.

3. Lusk, Graham: Science of Nutrition, ed. 4, Philadelphia, W. B. Saunders Company, 1923.

4. Christie, W. F.: Nutritive Value of Wines and Beers, Practitioner 129: 721 (Dec.) 1932.

complete sterilization of the patient. This form of latent infection has been studied experimentally in dengue and typhus fever. Without any manifest symptoms the blood becomes infectious and then sterile again at the same time as immunity to reinfection is established. The most common example of this category of latent infection is seen in the diphtheria carrier without diphtheria. Undoubtedly the same form of latency occurs in scarlet fever. In these as well as in other latent infections the body is subjected to the action of antigenic substances, to which it may respond by the production of new antibodies. This is illustrated clearly by the development of specific antitoxin in the blood in latent diphtheria or scarlet fever carriers. And in the latent infection of the incubation period of smallpox and vaccination the body responds almost immediately by increased sensitiveness or allergy to the variolous or vaccinia virus. Finally are mentioned the deposition in the body of various infectious agents that remain localized and latent for long periods. Here belong small tuberculous foci, latent tetanus, latent rabies and bartonella infection in rats. The conditions under which latent infections of this group become manifest are not understood any more than the conditions that lead to latency in the first place, but it is evident that, in all forms of latency of infection, processes of adaptation between parasite and host are at work.

In the acute infectious diseases, latent infection has an important epidemiologic rôle for two reasons: first, it increases greatly the number and mobility of the sources of infection, and, second, it favors the development of resistance to infection by its immunizing influence. The diseases in which latency of infection has been studied most so far seem to be yellow fever, typhus fever, diphtheria, scarlet fever, epidemic poliomyelitis and epidemic meningitis. At this time only diphtheria may be considered with some detail. It is well known that not all persons exposed to diphtheria become ill. Is that because diphtheria is not easily communicable? Not at all. The reason is that there are two kinds of susceptibility to diphtheria, susceptibility to manifest infection and susceptibility to latent infection. If diphtheria was not easily communicable there would not be so many carriers of diphtheria bacilli. It has been estimated that in large centers of population every one becomes a carrier once every three years. In the meantime, carriership or latent infection results in latent immunization against the toxin.

A question that agitates investigators in this field now is whether the antitoxin found in the blood of so many carriers is the result of latent immunization or the product of a normal "serologic ripening" independent of specific antigenic stimulation. The weight of evidence is altogether in favor of latent immunization. It is claimed that certain so-called normal or natural immune bodies develop under conditions that exclude the influence of antigenic stimuli, but it is not possible to exclude definitively the entrance into the body by

absorption from the digestive tract, the respiratory tract, the skin, or by latent infections, of antigenic substances to account for all the antisubstances found in the blood under so-called normal conditions. It has also been asserted that diphtheria antitoxin is present in the blood in people in Greenland and in Africa, where it is supposed that there is no clinical diphtheria and no diphtheria carriers, but it is pointed out clearly by Dudley¹ that the presence of diphtheria bacilli among these people cannot be excluded and that the complete distribution of antitoxic immunity in time and space cannot be explained adequately by the theory of "serologic ripening." Latent infection with the resulting immunization is an attractive field for scientific investigation.

Current Comment

SERUM AND LYMPH

The individual cells of the body exist essentially in a fluid medium. Food must be presented in solution, and waste products of metabolism must be removed in like manner. The fluid exchange in the organism therefore assumes a fundamental importance. The blood volume must be maintained, yet fluid must pass through the blood vessel walls to reach the tissue cells. The serum proteins because of their failure to diffuse readily maintain the balance of power in holding water in the vessels through their small but definite osmotic pressure. Field, Leigh, Heim and Drinker¹ have recently described the relationship between the proteins and osmotic pressure of serum and of lymph from various parts of the body. The total protein content of lymph is less than that of the serum. It appears that albumin constitutes a greater proportion of the total protein in cervical, thoracic duct and leg lymph than it does in the serum. Only in lymph from the liver was this relation reversed. When the osmotic pressure of these body fluids was related to the quantity of contained protein it was observed that, except in the case of the lymph from the liver, all the samples showed essentially the same value as did the serum. The authors believe that the composition of the lymph collected from the legs of the experimental animals during walking represents fairly well that of the capillary filtrate. It would appear that temporarily, under these conditions of muscular exercise, the difference between the colloidal osmotic pressure of the serum and that of the lymph is less than the capillary pressure, with the result that nutrient fluid more readily escapes into the extravascular spaces and reabsorption is at a minimum. These studies emphasize again the delicate fluid balance normally maintained in the organism and the highly responsive mechanism on which it depends.

1. Dudley, S. F.; May, P. M., and O'Flynn, J. A.: Active Immunization Against Diphtheria, Medical Research Council, Special Report Series, No. 195, 1934, p. 116.

1. Field, M. E.; Leigh, O. C., Jr.; Heim, J. W., and Drinker, C. K.: *Am. J. Physiol.* **110**: 174 (Nov.) 1934.

Medical Economics

A STATEMENT BY PRESIDENT ROOSEVELT ON RESPONSIBILITY FOR CARE OF THE SICK

A significant statement made by the President of the United States appears in a letter, which it was announced on December 11 he had sent to David H. Pyle, president of the United Hospital Fund in New York City. The letter was an endorsement by the President of a campaign for \$500,000 toward the free work of fifty-six voluntary hospitals.

In his opening paragraph the President said:

"While the Federal Government has necessarily stepped in to aid the states and localities in providing relief for the needy unemployed in their homes, it is impossible to make government funds available to the hospitals for the care of the sick who lack funds to pay. Yet such patients are among the most needy of all the victims of unemployment. *I have repeatedly stated my feeling that the care of the sick is a local responsibility.* All over the land communities are rising manfully to fulfil this obligation."

The italics are ours.

SOCIALIZED MEDICINE JEOPARDIZES OFFICE BUILDINGS

In a periodical called *Skyscraper Management*, Mr. Frank M. Whiston, manager of the Pittsfield Building in Chicago, presents a few considerations relative to the manner in which changes in the nature of the practice of medicine may affect the owners of large buildings:

"What owner or manager of a building having medical or dental occupancy has not had, within the past year or two, many of his tenants walk in and say that they cannot continue their office and ask that their lease be terminated, their rent be reduced to a ridiculous figure, or that an indefinite extension of credit be granted?"

"The medical profession has suffered a series of adversities which it was wholly unprepared to withstand. Every business and profession has experienced the hardships of depression—there is nothing unusual about that—but for the physicians and dentists, the effects have been cumulative and augmented by sinister developments that strike at the foundations upon which the structure of professional practice has been established."

"Corporate medicine often has political affiliations since it depends, in some measure, upon permissive legislation. And, close behind the menace of corporate medicine is, perhaps, the greater menace of state medicine.

"What such developments mean to the medical profession is all too obvious. What they mean to property that has been erected to meet the requirements of the medical profession is equally apparent.

"Granting all these things are true, the factors we, as owners and managers, are interested in primarily are those over which our tenants have little or no control because of their comparatively small influence from a numerical standpoint."

"Corporate medicine might become a politically controlled machine within city limits. It presents a grave hazard to the professional man, to us as building managers and to us as individuals. Rumbblings are heard, strong forces are at work to project into the picture a corporate medical ordinance, probably state, and possibly federal legislation, to make it obligatory upon employees to be examined and then to use the particular physician designated to them for a treatment of their ailments. The imagination does not have to run wild to visualize the possibilities in such a step, where circles are drawn in neighborhoods and you'll take the physician within your circle and like it!—it is being done in some parts of Europe today."

"Unless the control of health insurance, state medicine or whatever change in the method of payment is not left in the hands of the organized profession, it will mean the disintegration of medical buildings, so here we are and now let us see what must be done."

Association News

THE ATLANTIC CITY SESSION Special Exhibit on Diabetes

The Committee on Scientific Exhibit of the Board of Trustees has announced that arrangements are in progress for a special exhibit on diabetes in the Scientific Exhibit at the Atlantic City session. The following individuals have accepted membership on the diabetes exhibit committee:

E. P. Joslin, chairman, Boston.
F. G. Banting, co-chairman, Toronto.
C. H. Best, Toronto.
H. F. Root, Boston.
R. M. Wilder, Rochester, Minn.
R. T. Woodyatt, Chicago.

A corps of competent demonstrators will assist this committee in presenting the subject in all its phases.

Special Exhibit on Vaccines and Serums

The Committee on Scientific Exhibit of the Board of Trustees has also authorized a special exhibit at the Atlantic City session on vaccines and serums. The committee in charge is as follows:

R. C. Williams, chairman, Washington, D. C.
J. P. Leake, Washington, D. C.
W. G. Workman, Washington, D. C.

The exhibit will include the clinical factors concerned in the use of vaccines and serums and especially recent developments in connection with these products.

Special Exhibit on Nutrition

The special exhibit on nutrition will be conducted for the second year at the Atlantic City session under the auspices of a special exhibit committee as follows:

Reginald Fitz, chairman, Boston.
W. C. Alvarez, Rochester, Minn.
L. H. Newburgh, Ann Arbor, Mich.

The cooperation of various experts in nutrition will be utilized for the presentation and demonstration of the exhibit.

APPLICATIONS FOR GRANTS FOR RESEARCH

The Committee on Scientific Research of the American Medical Association invites applications for grants in aid of research on problems bearing on the clinical aspects of medicine and surgery. Inquiries may be addressed to the committee at 535 North Dearborn Street, Chicago.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

December 27. Budgeting for Health.
January 3. Housing and Health.
January 10. Diphtheria Must Go.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next broadcast will be delivered by Dr. Thomas S. Cullen. The title will be as follows:

December 25. Holiday; no broadcast.
January 1. Holiday; no broadcast.
January 8. Research in Medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

County Health Department Discontinued.—The Geneva County Health Department has been discontinued in accordance with a decision of the board of commissioners. Dr. Lucius S. Nichols was the county health officer.

Personal.—Dr. James S. Hough, Livingston, health officer of Sumter County, has been made district medical superintendent in charge of eleven counties, effective December 1.—Dr. Henry T. Donovan, Marion, has been appointed health officer of Shelby County, succeeding Dr. John M. Kimmey, Columbiana.—L. V. Phelps, formerly statistician with the New York State Health Department, has been appointed in charge of the bureau of vital statistics of the Alabama State Health Department, succeeding Mr. W. T. Fales, who resigned after ten years' service to accept a similar position with the Baltimore Health Department. Mr. Phelps' appointment was effective December 1. He is a graduate of Boston University and pursued graduate studies in the School of Public Health of the Massachusetts Institute of Technology, Cambridge.—Dr. Edward A. Thorne, Fairfield, was recently appointed health officer of Jackson County, succeeding Dr. Lucian Newman, who resigned to enter private practice in Dadeville.

ARKANSAS

District Meetings.—Dr. Ira W. Ellis, Monette, was elected president of the First Councilor District Medical Society at its meeting in Jonesboro, recently; Dr. Robert H. Willett, Jonesboro, is vice president, and Dr. Ralph M. Sloan, Jonesboro, secretary. Speakers were the following physicians:

Horace R. McCarroll, Walnut Ridge, Obstetrics at the Bedside.
Richard C. Bunting, Memphis, The Variability in Symptoms and Treatment of Encephalitis.
Lorenzo D. Massey, Osceola, The Dysenteries with Reference to Sodium Thiocyanate in Their Treatment in 1933 and 1934.
George V. Lewis, Little Rock, Infections of the Hand.
Silas C. Fulmer, Little Rock, Symptoms and Diagnosis of Heart Disease.
John E. McGuire, Piggott, Diphtheria.

At a meeting of the Third District Medical Society in Stuttgart, November 27, Drs. James S. Speed, Memphis, Tenn., discussed "Early Diagnosis of Osteomyelitis," and Joseph F. John, Eureka Springs, "Home Treatment of Peptic Ulcer." Dr. Aris W. Cox, Helena, spoke on "Foreign Bodies in the Auditory Canal" at the evening session, and Dr. Jesse D. Riley, State Sanatorium, showed lantern slides demonstrating studies of tuberculosis.

CALIFORNIA

University News.—The Alumni Association of the College of Medical Evangelists, Los Angeles, held a graduate assembly, December 9; Dr. Bernard Myers, president, clinical section, Royal College of Physicians of London, participated in the program; his subject was "Essential Thrombocytopenic Purpura Haemorrhagica." Dr. Myers addressed the faculty and students of the University of California Medical School, December 10, on the same subject.

Personal.—Dr. Anne L. Brady has been appointed city health officer of Ross to succeed Dr. George H. Willcutt.—Robert A. Millikan, Ph.D., Pasadena, was awarded the Cardinal Newman medal, November 7, for achievement in the field of physical science. Dr. Millikan is the first scientist to receive the award, which is presented annually by the Newman Foundation of the University of Illinois to "some person who has rendered some contribution to the enrichment of human life."—Dr. Paul M. Hamilton, Alhambra, has been appointed in charge of the department of contagious diseases at the Los Angeles General Hospital.—Dr. Jacob C. Geiger, health officer of San Francisco, has been elected president of the San Francisco County Medical Society.

CONNECTICUT

Personal.—Dr. Clarence E. Simonds has been appointed health officer of Windham, succeeding the late Dr. Frederick E. Wilcox.—Dr. David Leonard Lieberman has been appointed health officer of Chester, succeeding Dr. William J. Tate, Deep River.

Towns Without Physicians.—Forty-five towns in Connecticut have no physician, according to a recent compilation dealing with the location of physicians in the state. About 70 per cent of the physicians are located in Hartford, New Haven and Fairfield counties. The total number of physicians in the state is 2,027. According to the *Connecticut Health Bulletin*, the four largest cities have 48.5 per cent of the total physicians, and all other cities with more than 5,000 population have 41.6. The four largest cities claim 995 of the total, while the population group 25,000 to 49,999 claims the next largest group of physicians, with 391 of the 2,027. There are 847 physicians in cities of from 5,000 to 99,999 population. This accounts for all but 185 of the physicians, who are divided among the remaining 113 towns of the state.

DELAWARE

Society News.—Dr. John E. James, Philadelphia, addressed the New Castle County Medical Society, November 20, on "Practical Obstetrics."

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended December 8, indicate that the highest mortality rate (23.5) appears for Wilmington, and for the group of cities as a whole, 11.7. The mortality rate for Wilmington for the corresponding period last year was 14.7, and for the group of cities, 12. The annual rate for eighty-six cities for the forty-nine weeks of 1934 was 11.3, as compared with a rate of 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

Personal.—Brig. Gen. Jefferson R. Kean, medical corps, U. S. Army, retired, has been appointed a member of the commission recently authorized by Congress to consider and formulate plans for the construction on the banks of the Mississippi near St. Louis of a permanent memorial to the men who made possible the territorial expansion of the United States.

Society News.—Dr. Pol N. Coryllos, New York, addressed the Medical Society of the District of Columbia, December 12, on surgical treatment of pulmonary tuberculosis.—Speakers before the Medical Arts Society in Washington in November were Drs. Claude Moore on "Recent Developments in the Diagnosis of Gallbladder Disease" and John M. Baber, "Congenital Syphilis with Enlarged Spleen and Liver."

GEORGIA

Personal.—Dr. Horace G. Huey, Homerville, has been named chairman of the Georgia State Board of Medical Examiners for the coming year.—An oil portrait of Dr. Floyd W. McRae Sr. was presented to the library of the Fulton County Medical Society as a memorial to him. The portrait was painted by a member of the society.

Pediatric Meeting.—The second annual meeting of the Georgia Pediatric Society was held in Atlanta, December 13. The program included the following:

Dr. Gilbert J. Levy, Memphis, Treatment of Meningitis.
Dr. Robert A. Strong, New Orleans, Erythroblastic Anemia.
Dr. Wilbur C. Davison, Durham, N. C., Pediatric Therapeutics.
Dr. Albert Graeme Mitchell, Cincinnati, Studies of Nonspecific Effects on the Tuberculin Reaction.
Dr. Edwards A. Park, Baltimore, Scurvy Without Clinical Manifestations.

At the evening session the Fulton County Pediatric Society acted as host to the guest speakers and members of the Georgia Pediatric and Fulton County Medical societies.

New Buildings at Warm Springs.—The dedication of two new buildings at Georgia Warm Springs Foundation, Warm Springs, took place Thanksgiving Day as part of the general celebration participated in by President Roosevelt, the patients and the staff. The buildings represent part of the expenditure of more than \$1,000,000, which was subscribed at the charity balls held throughout the country in honor of President Roosevelt's birthday. According to the *New York Times*, the buildings are not pretentious, since most of the money was invested in an endowment or given to other institutions to further research into means to prevent infantile paralysis. One of the buildings contains more than thirty rooms for patients, parlor and recreation room. All the furnishings and decorations are devoid of hospital atmosphere.

MASSACHUSETTS

Memorial Service for Dr. Folin.—Faculty members and students of Harvard Medical School paid tribute in a memorial service, November 23, to the late Dr. Otto K. O. Folin, Kuhn professor of biological chemistry at the school since 1907. Dr. Folin died October 25 in his sixty-seventh year. The meeting was addressed by Dr. Walter B. Cannon, Higinson professor of physiology; Dr. Cyrus H. Fiske, associate professor of biological chemistry, and Dr. Henry A. Christian, Hersey professor of the theory and practice of physic. At the close of the exercises Dr. Cannon, acting for the faculty, presented a portrait of Dr. Folin to the university. Originally this portrait was to have been given in Dr. Folin's presence at a dinner celebrating his long service. In 1918 Dr. Folin was awarded an honorary degree of doctor of medicine by the University of Lund, Sweden. He graduated from the University of Minnesota in 1892 and received degrees of doctor of philosophy and doctor of science from the University of Chicago. Since 1926 he had been a member and chairman of the division of biochemistry of the National Board of Medical Examiners as well as a member of its examination committee.

Society News.—At a meeting of the New England Physical Therapy Society in Boston, October 24, Dr. John G. Kuhns, Boston, discussed the mechanics of the spine and thorax. —Dr. Channing C. Simmons, Boston, presented cases of tumors of bone in a discussion before the New England Roentgen Ray Society, October 26. —Drs. Philemon E. Truesdale and Joseph H. Marks, Fall River, discussed "Diaphragmatic Hernia and Associated Conditions" before the New England Roentgen Ray Society, November 16. —At a meeting of the Harvard Medical Society in Boston, November 13, Dr. George Pinness, Los Angeles, discussed "Gastro-Intestinal Allergy and Its Diagnosis," and Dr. Francis M. Rackemann, Boston, "New Concepts in Allergy, with Especial Reference to Eczema." —Dr. Foster Kennedy, New York, addressed the William Harvey Society in Boston, November 9, on "The Biopsychic Approach to Diseases of the Mind, Its Dependence on Neurology and General Medicine." —Dr. Hiram Houston Merritt Jr., Boston, discussed "Neurology and Neurosyphilis" before the Fall River Medical Society, November 21. —Speakers before the Massachusetts Society of Examining Physicians, November 14, included Dr. Louis Schwartz of the U. S. Public Health Service, New York, on "Diagnosis of Industrial and Nonindustrial Skin Diseases." —The New England Hospital Association will hold its thirteenth annual meeting at the Bradford Hotel, Boston, February 7-9.

MICHIGAN

Dr. Novy Retires as Dean.—Dr. Frederick G. Novy, dean of the University of Michigan School of Medicine, Ann Arbor, since September 1933, announced his retirement, effective at the close of the current semester. Dr. Novy's resignation ends forty-eight years' association with the institution. He graduated from the University of Michigan School of Medicine in 1891. He was appointed assistant in organic chemistry in 1886 and has been professor of bacteriology and director of the Hygienic Laboratory since 1902. He was a member of the U. S. Commission to investigate plague in 1901 and a member of the state board of health, 1897-1899. He has contributed much to the literature of bacteriology and related subjects.

Society News.—At a meeting of the Ionia-Montcalm County Medical Society in Belding, October 9, speakers were Drs. Arthur R. Woodburne and William J. Butler, Grand Rapids, on treatment of syphilis and management of prostatic obstruction, respectively. —Dr. Frederick C. Kidner, Detroit, discussed modern conceptions of bone tuberculosis and infantile paralysis before the Saginaw County Medical Society, Saginaw, October 30. —Dr. Earl I. Carr, Lansing, discussed "Achievements in Cancer Control" before the Wayne County Medical Society in Detroit, December 3. —Dr. Raphael Isaacs, Ann Arbor, addressed the Washtenaw County Medical Society, November 13, on diagnosis and treatment of some of the diseases of the blood-forming organs. Malcolm H. Soule, LL.D., Ann Arbor, addressed the society, October 9, on "Leprosy in the Philippine Islands." —Dr. Carl E. Badgley, Ann Arbor, addressed the Kalamazoo Academy of Medicine, November 20, on "The Importance of the Lumbosacral Joint in Low Back Disturbance." —Dr. Jacob P. Greenhill, Chicago, spoke before the Ingham County Medical Society in Lansing, November 30, on "Recent Advances in Obstetrics and Gynecology." —Dr. Daniel Budson, Detroit, was elected president of the University of Michigan Pediatric and Infectious Disease Society at its recent meeting, and Dr. David Murray Cowie, Ann Arbor, secretary. The next annual session will be held at

Ann Arbor, Nov. 22-23, 1935. —Dr. Clifford P. Clark, Flint, addressed a meeting of the Genesee County Bar Association, November 23, on medicine and law.

MISSISSIPPI

Society News.—At a meeting of the Delta Medical Society, recently, speakers included Drs. Oscar E. Ringold, Cleveland, on "Intravenous Magnesium Sulphate in Treatment of Spider Bites," and Chauncey W. Dowden, Louisville, "Differential Diagnosis and Treatment of Hyperthyroidism." —A symposium on backache was presented before the Central Medical Society, recently, by Drs. James W. Lipscomb Jr., Columbus, and Thomas H. Blake, Jackson. Other speakers were Dr. Henry Boswell, Sanatorium, on the field conservation service for tuberculosis; Lew Wallace, Laurel, relationships between druggists and doctors, and Dr. George E. Riley, Jackson, diagnosis and treatment of malaria. —The Clarksdale and Six Counties Medical Society was addressed at Clarksdale, November 14, by Drs. James D. Biles, Jr., Sumner, on "Our Greatest Curse: Purgation"; Felix J. Underwood, Jackson, "Trends in Medicine and Public Health," and Joseph A. Crisler Jr., Memphis, "Atypical and Borderline Hyperthyroidism." —Dr. Laurance J. Clark read a paper on tuberculosis before the Issaquena-Sharkey-Warren Counties Medical Society, Vicksburg, November 13, and Dr. Walter E. Johnston presented a case of mesenteric thrombosis.

NEW YORK

New Milk Code in Effect January 1.—Following a survey to determine whether milk producers who have made reasonable efforts to qualify for the sale of the new high grade of raw milk have had sufficient time to rid their herds of infectious abortion, the state department of health announces that the new regulation will go into effect January 1. The new grade, known as Special A Raw, was established by an amendment to the Sanitary Code in December 1933. The amendment provided that after July 1, 1934, the new grade was to be from herds free from mastitis and infectious abortion, and further that after January 1 in cities and incorporated villages with populations of 15,000 or more no raw milk other than "Certified" and the new grade could be sold. Later the date for the first requirement was deferred to January 1 on representations from the producers that the time was too short. Because of doubt still expressed that the time was adequate, the department made its survey. It was found that all but a few of the raw milk dealers who wished to qualify for the sale of the new grade would be able to meet the requirements by January 1, that many had decided not to undertake production of Special A Raw and had begun pasteurization, and that in a few cities groups of raw milk dealers had made no effort to meet the requirements but had apparently assumed that they would not be enforced. In view of these facts, the date remains as set.

New York City

Standard Formulary Adopted in City Hospitals.—A hospital formulary containing about 1,200 preparations has been adopted by the hospital department for all city institutions. It is asserted that this move will facilitate the work of physicians and pharmacists and will be an economy for the city.

Gifts to New York University.—Among gifts received for medical purposes during the past year by New York University are the following:

Carnegie Corporation of New York, \$43,750 for support of the medical college.

Anonymous gift of \$10,000 for support of the neurologic research laboratory.

Mead Johnson and Company, \$6,000 for vitamin research.

International Cancer Research Foundation, \$4,500 for research in cancer.

Eli Lilly and Company, the New York Foundation and an anonymous donor, \$3,756 for research in anterior poliomyelitis under direction of Dr. William H. Park.

Dr. William H. Park, \$3,000 to support the department of preventive medicine.

Lederle Laboratories, \$2,500 for experimental work in liver extract.

Josiah Macy Jr. Foundation, \$2,500 for the neurologic research laboratory fund for migraine.

Dr. Norris Awarded Academy Medal.—Dr. Charles Norris, chief medical examiner of New York City, was awarded the gold medal of the New York Academy of Medicine at its annual meeting, December 6, for distinguished service in medicine. In the citation it was affirmed that Dr. Norris's services have been of inestimable value to the city and to the medical profession and that he has been "a great factor in cleaning up the very undesirable conditions that formerly existed in the coroner's office." The academy's medal was first awarded in 1930 to Dr. Carl Koller and again in 1931 to Dr. David Marine. It was established by Dr. Samuel

McCullagh. At this meeting of the academy Dr. Eugene H. Pool was elected president for two years.

Society News.—The Baltimore Medical Club of New York held its tenth annual dinner at the Fifth Avenue Hotel, December 14. Dr. Robert P. Bay, Baltimore, read a paper on "Acute Torsion of the Omentum," and Dr. Harlow Brooks gave a travel talk on Mexico.—Dr. Morris K. Smith addressed the New York Surgical Society, December 12, on "Surgical Treatment of Toxic Goiter."—Drs. William V. P. Garretson and Robert A. Cooke addressed the Medical Association of the Greater City of New York, on "Allergy—A Neuro-Endocrine Interpretation" and "Importance of Allergy to the General Practitioner," respectively.—Drs. William Darrach, Arthur Krida and John J. Moorhead presented a symposium on "Surgical Management of Automobile Accident Injuries" before the Medical Society of the County of New York, December 21.—Drs. Russell Burton-Opitz and Alexander L. Louria, Brooklyn, addressed the International Association of Industrial Surgeons, November 30, on "Interpretation of the Electrocardiogram" and "Role of the Normal and Pathologic Heart in Industrial Medicine," respectively.—Dr. Robert B. Osgood, Boston, delivered the fourth afternoon lecture at the New York Academy of Medicine, December 7, on "Interpretation of Low Back Pain and Its Treatment," and Dr. Charles G. Kerley the fifth, December 14, on "The Handicapped Child."—Dr. William Wayne Babcock, Philadelphia, addressed the Harlem Medical Association, December 5, on "The Origin of Tumors," and Dr. William R. Williams, on "Facts and Fancies in Regard to the Common Cold."

OHIO

Faculty Changes at Cincinnati.—Thomas J. LeBlanc, Sc.D., has been advanced from associate professor to professor of preventive medicine in charge of a new department of preventive medicine at the University of Cincinnati College of Medicine. Drs. Joseph A. Freiberg and John W. McCammon were promoted to associate and assistant professor, respectively, of orthopedic surgery. Dr. Albert Faller, clinical professor of contagious diseases, resigned and was made emeritus professor.

Health Lectures for the Public.—The fifth annual series of free public health lectures presented jointly by the Cleveland Academy of Medicine and the Albert Fairchild Holden Foundation will begin January 13 with an address by Dr. Gerald S. Shibley, associate professor of medicine, Western Reserve University School of Medicine, on "The Common Cold."—Succeeding lectures will be given by Drs. Russell L. Haden, on "Anemias and Diet"; Marion A. Blankenhorn, "The Art and Science of Diagnosis," and John A. Toomey, "Stopping the Spread of Contagions."

Society News.—Dr. Mark Millikin, Hamilton, was elected president of the Union District Medical Association at its semiannual meeting in Hamilton, October 25. Speakers were Drs. Otto J. Seibert, Cincinnati, on "Intestinal Obstruction"; Charles O. McCormick, Indianapolis, "History of Birth Control," and Harry P. Ross, Richmond, Ind., "Obstetrics and the Laity."—Dr. Thomas C. Sheridan, Dayton, addressed the Warren County Medical Society, Lebanon, November 6, on eczema.—Dr. James C. Walker Jr., Dayton, discussed "Treatment of Fractures of the Forearm" before the Miami County Medical Society, Troy, November 2.—Dr. Eugene A. Ockuly, Chicago, presented a talk on "Changes in the Ureters and Kidneys During Pregnancy" at a meeting of the Hancock County Medical Society, Findlay, November 1.—Dr. Carl S. Mundy, Toledo, spoke on arthritis before the Tuscarawas County Medical Society, November 8.—Dr. Max Thorek, Chicago, addressed the Columbus Academy of Medicine, November 26, on "Advantages of Electrosurgical Obliteration of the Gallbladder Over Classical Cholecystectomy."—Dr. Hugh H. Young, Baltimore, addressed the Montgomery County Medical Society, Dayton, December 7, on "Tumors of the Bladder and Prostate."

Fifty Years in Practice.—Drs. Benjamin R. McClellan and Asa C. Messenger, Xenia, were guests of honor at a dinner in celebration of their completion of fifty years of medical practice, November 15. Dr. Walter M. Simpson, Dayton, was toastmaster. The speakers were Drs. William E. Lower, Cleveland, on "Medical Organization," and Rinaldo M. Hughey, Washington Court House, on "The Doctor and the Community." Dr. McClellan has for many years taken an active part in medical organizations, having served as president of the Ohio State Medical Association in 1906 and on many of its committees. Since 1911, with the exception of a few years, he has been a member of the House of Delegates of the American Medical Association and from 1915 to 1922 he was a member of the state medical board. Dr. Messenger was

for many years superintendent of the Old Soldiers and Sailors Orphans Home, was at one time health officer of Xenia, and since 1922 has been alternate delegate to the American Medical Association. He is a past president of the Greene County Society and of the second councilor district of the state society. The dinner was arranged by Dr. McClellan's sons, Dr. Robert R. McClellan and Mr. S. N. McClellan, and Dr. Messenger's son, Dr. Harold C. Messenger.

OKLAHOMA

Society News.—Drs. William P. Neilson, Enid, and David S. Harris, Drummond, addressed the Garfield County Medical Society, recently, on "Surgical Aspects of Dyspepsia and Vomiting" and "Tetanus," respectively.—E. L. Miley, D.D.S., Oklahoma City, addressed the Canadian County Medical Society, El Reno, November 6, on fractures of the lower jaw.—Dr. Rufus Q. Goodwin, Oklahoma City, addressed the Pittsburgh County Medical Society, October 18, on pulmonary abscess.—Dr. Philip M. McNeill, Oklahoma City, discussed treatment of pneumonia and its complications at a special meeting of the Cleveland County Medical Society, Norman, October 18.

PENNSYLVANIA

Society News.—Dr. William H. Mayer, Pittsburgh, among others, addressed the Westmoreland County Medical Society, Greensburg, December 13, on "Public Reaction to the Future of Medicine."—Dr. Frank H. Krusen, Philadelphia, addressed the Washington County Medical Society, Washington, December 12, on "Physical Therapy for the General Practitioner."—Dr. Henry H. Ritter, New York, addressed the Berks County Medical Society, Reading, recently on "Treatment of Acute Injuries of the Knee Joint."

Philadelphia

Research on Bacteriophage.—Temple University Hospital has established a new department for research on bacteriophage with Dr. John A. Kolmer in charge. Dr. Kolmer recently resigned as professor of medicine at Temple University School of Medicine.

Society News.—Speakers at a meeting of the Philadelphia Pediatric Society, December 11, were Drs. George M. Coates, on "The Tonsil and Adenoid Problem" and Joseph Stokes Jr., "Review of Certain Recent Developments in the Knowledge of Respiratory Infections."—Dr. Jacques Forestier, Aix-les-Bains, France, secretary of the French league against rheumatism, addressed the Philadelphia Roentgen Ray Society, December 13, on "Technic and Diagnosis in the Use of Iodized Oil" and "The Early Stage of Spondylitis Ankylosans."

Pittsburgh

Hospital News.—Montefiore Hospital held its annual scientific day, November 24, with Dr. Tracy J. Putnam, assistant professor of neurosurgery, Harvard Medical School, Boston, as guest clinician and speaker, on "Physiologic Surgery of the Nervous System."

Executive Secretary Appointed.—The Allegheny County Medical Society has appointed Mr. William H. Palmer executive secretary of the society, effective December 1. Mr. Palmer is a graduate of the school of business administration and has also done graduate work at the University of Pittsburgh. He succeeds Mr. Lester H. Perry, who resigned recently to join the staff of the *Pennsylvania Medical Journal*.

Society News.—Dr. William Wayne Babcock, Philadelphia, delivered the annual R. W. Stewart Memorial Address before the Pittsburgh Academy of Medicine, December 11, on "Conditions Influencing Growth and the Formation of New Growths."—Speakers who addressed the Allegheny County Medical Society, December 18, were Drs. George A. Holliday, on "Lymphogranuloma Inguinale"; David Silver, Richard C. Ritter and John A. Heberling, "End Results in Bone and Joint Tuberculosis," and Thomas A. Miller, "Pneumonia."

RHODE ISLAND

Society News.—Dr. George Blumer, David P. Smith clinical professor of medicine, Yale University School of Medicine, New Haven, Conn., addressed the Providence Medical Association, December 3, on "The Importance of Observation and Induction in Diagnosis, with Some Remarks on Mistaken Diagnoses."—Henry F. Vaughan, Dr. P.H., health commissioner of Detroit, addressed the association, November 5, on "The Family Physician and Preventive Medicine," and Dr. John E. Gordon, New York, on "Newer Aspects in the Control of Communicable Disease."

TEXAS

Society News.—Dr. Britton E. Pickett, Carrizo Springs, was elected president of the Texas Public Health Association at its annual meeting in Abilene, recently.—Drs. Robert B. Homan Jr. and William R. Jamieson addressed the El Paso County Medical Society, El Paso, recently, on syphilis of the lung and senility, respectively.—Drs. Theodore W. Kalb and Henry S. Meyer, Houston, addressed the Hardin-Tyler Counties Medical Society, Woodville, recently, on "Excretion Urography" and "The Infant Abdomen," respectively.—Dr. John Potts, Fort Worth, among others, discussed childhood tuberculosis at a meeting of the Tarrant County Medical Society, Fort Worth, recently.—Speakers at a meeting of the Mid-West Texas District Medical Society in Abilene, recently, included Drs. Arthur Bob Alexander, Spur, on "Modern Diagnosis and Treatment of Purpura Haemorrhagica"; Frederick E. Hudson, Stamford, "Relapsing Fever as Seen in West Texas"; Lee E. Parmley, Big Spring, "The High Mortality in Obstetrical Practice in the United States," and Claude B. Leggett, Abilene, "Systemic Diseases and Their Effects on the Eye."—Drs. Lawrence B. Sheldon and Harold T. Nesbit, Dallas, addressed the Morris and Titus county medical societies at a joint meeting in Daingerfield, recently, on "Gastro-Intestinal Hemorrhage" and "The Crying Baby," respectively.—The Dallas County Dental Society will hold its ninth mid-winter dental clinic at Baylor University School of Dentistry, February 4-6.

WEST VIRGINIA

Society News.—Dr. Curtis C. Mechling, Pittsburgh, addressed the Kanawha Medical Society, Charleston, October 23, on "Carcinoma of the Rectum."—At a meeting of the Mercer County Medical Society, Princeton, October 11, Dr. Earl Bennette Henson, Charleston, discussed poliomyelitis and backache and Dr. Weldon M. Harloe, Matoaka, poliomyelitis.—Dr. Joseph Earle Moore, Baltimore, addressed the Parkersburg Academy of Medicine, October 4, on "The Wassermann-Fast Patient."—Dr. James A. McClung, Richwood, was elected president of the Hospital Association of West Virginia at the annual meeting in Morgantown, October 5. Among speakers were Drs. Theodore K. Oates, Martinsburg, on "Sterilization of a Particular Class of Patients" and John E. Ofner, Weston, "Sane Hospitalization and Treatment of the Insane."—Drs. Brinley John and William L. Madera, Morgantown, addressed the Monongalia County Medical Society, November 13, on "Postoperative Paralytic Syphilis" and "Radiation Therapy of Acne Vulgaris," respectively.—Dr. Clint W. Stallard, Montgomery, addressed the Fayette County Medical Society, Oak Hill, November 9, on "Acute Fractures of the Spine."

WISCONSIN

Veteran Physicians Honored at Dinner.—Nine members of the Milwaukee County Medical Society who have practiced medicine for fifty years were guests of honor at a dinner given by the society at the Milwaukee Athletic Club, December 4. They were Drs. William P. Jobse, James J. Cavaney, Leopold Schiller, William H. Washburn, Arthur J. Puls, Charles Zimmermann, James A. Bach, William Sweemer and John W. Fisher. Speakers who felicitated the guests were Drs. Rock Sleyster, Wauwatosa, member of the Board of Trustees, American Medical Association; Charles R. Bardeen, dean, University of Wisconsin Medical School, Madison; Eben J. Carey, dean, Marquette University School of Medicine; Thomas J. O'Leary, Superior, president of the State Medical Society of Wisconsin, and Charles Fidler, president of the Milwaukee County Medical Society. Dr. Arthur T. Holbrook presided and Dr. Bach responded to the tributes.

Society News.—Drs. Sumner L. S. Koch and Loyal Davis, Chicago, addressed the Dane County Medical Society, Madison, November 15, on "Surgical Repair of Injuries Involving Tendons of the Upper Extremities" and "Diagnosis and Treatment of the Injuries of the Peripheral Nerves of the Upper Extremity," respectively.—Dr. John L. Garvey, Milwaukee, was a speaker at the meeting of the Ninth Councilor District Medical Society, Wausau, November 15, on "Problems of Neurology of Interest to the General Practitioner."—Among speakers at the annual meeting of the Grant County Medical Society, Lancaster, October 25, were Drs. William D. Stovall, Madison, on "Present Status of Immunization Against Certain Communicable Diseases" and Donovan F. Ward, Dubuque, Iowa, "Treatment of Appendiceal Abscess."—Dr. George W. Hall, Chicago, addressed the Rock County Medical Society, Beloit, October 23, on diseases of the nervous system.—Drs. Rock Sleyster, Wauwatosa, and George H. Ewell, Madison, addressed the Washington-Ozaukee Counties Medical

Society, Cedarburg, in October on "The Patient with Chronic Complaints" and "Diagnosis and Treatment of Common Diseases of the Rectum and Anus," respectively.—Drs. Alexander T. Nadeau and Clarence H. Boren, Marinette, addressed the Marinette, Florence and Menominee Counties Medical Society, Marinette, November 15, on "Complications of Scarlet Fever" and "Ulcerative Diseases of the Intestines," respectively.

GENERAL

Personal.—Willard Earl Givens, superintendent of schools of Oakland, Calif., has been appointed secretary of the National Education Association, succeeding J. W. Crabtree, who has reached the retiring age. Mr. Givens has been in educational service as teacher and superintendent of schools in Indiana, California and Hawaii since 1906.

Licenses Lost.—Dr. Harriet L. Palmer, Cambridge, announces that her certificate of registration in medicine has been lost. Dr. Palmer, who in private life is Mrs. Bryant, was graduated from Boston University School of Medicine in 1907 and was licensed to practice the following year. Dr. Dorothea May Moore, also of Cambridge, reports that her Massachusetts license has been lost.

Congress on Gastro-Enterology.—The First International Congress on Gastro-Enterology is being planned for Aug. 8-10, 1935, at Brussels, Belgium, under the presidency of Dr. J. Schoemaker, The Hague. The secretary general is Dr. George Brohee, Rue de la Concorde, 64, Brussels. Dr. Max Einhorn, New York, is forming an American committee of which he is chairman and Dr. DeWitt Stetten, New York, secretary.

National Academy of Sciences.—At the autumn meeting of the National Academy of Sciences at Cleveland, November 19-21, papers of medical interest included the following:

Dr. Carl J. Wiggers, Cleveland, Further Observations on Systolic and Diastolic Coronary Flow Under Natural Conditions.
Dr. Anton J. Carlson, Chicago, Criteria of Alcohol Intoxication.
Dr. Alan R. Moritz, Cleveland, Arteriolar Changes in Essential Hypertension.
Dr. Julius M. Rogoff, Cleveland, Present Status of the Adrenal Cortex Problem.
Dr. Torald H. Sollmann and Nora E. Schreiber, Cleveland, The Fate of Mercury in Acute Bichloride Poisoning.

Changes in Status of Licensure.—The Florida State Board of Medical Examiners recently reported the following action:

Dr. Richard B. McFeeters, Cross City, license restored.

The Massachusetts Department of Registration in Medicine reports the following action:

Dr. Oscar Hurovitz, Roxbury, license suspended, November 15, for three months because of gross misconduct in the practice of his profession, as shown by deceit in the case of a patient treated by him in connection with automobile accident liability insurance.

Grants for Research.—The American Academy of Arts and Sciences included among its grants for research the following for medical purposes: Dr. Bret Ratner, New York, \$375 to aid his experiments on asthma in the guinea-pig at New York University and Bellevue Hospital Medical College, and Clarence C. Little, Sc.D., and Charles V. Green, Ph.D., Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, \$750 for care of experimental animals and the preparation and study of microscopic sections of tumors in their work on cancer research.

Results of Examination.—Twenty-five candidates were examined by the American Board of Otolaryngology at its meeting in San Antonio, November 13. Seven were conditioned or failed. During 1935 examinations will be held in New York, June 8, in connection with the meeting of the American Medical Association, and at Cincinnati in the fall, during the meeting of the American Academy of Ophthalmology and Otolaryngology. Prospective applicants for certificates should address the secretary, Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, for application blanks.

News of Epidemics.—An outbreak of fifteen cases of infectious jaundice was recently reported from Greene County, Ohio, centered in Jamestown and Ross township.—Three hundred children in Muscatine, Iowa, were reported to be ill of measles, November 26. In Canton, Ill., 500 children were out of school as a result of an epidemic of measles, it was reported, November 26.—An outbreak of typhoid was reported in November in Lexington, Ky., where eleven cases were found in the vicinity of a spring.—Scarlet fever was widespread in Champaign-Urbana, Ill., in November, causing health and school officials to take special precautions.

Women Physicians' International Meeting.—The triennial meeting of the Medical Women's International Association will be held in Edinburgh in 1937. Subjects for discussion will be "Cancer in Women and Its Prevention" and "Abor-

tion." At the meeting in Stockholm in August 1934 Dr. Alma Sundquist, Stockholm, was elected president. At that meeting subjects discussed were birth control, on which Dr. Marie P. Levinson Warner, New York, led discussion for the Americans, and effects of physical culture on the development, structure and functions of the female body, on which Drs. Bertha Van Hoosen, Chicago, and Bertha S. Stuart Dymont, Stanford University, Calif., led the discussion. About 200 medical women from eighteen countries attended, including thirty from the United States.

Obstetric Meeting.—The Pacific Coast Society of Obstetrics and Gynecology held its annual meeting, November 21-22. The first day was devoted to clinics at the Alameda General Hospital, Oakland, and the second to a scientific program at the Del Monte Hotel, Del Monte. Speakers included:

- Dr. Albert L. Mathieu, Portland, Early Diagnosis of Chorion Epithelioma.
- Dr. C. Frederic Fluhmann, San Francisco, Ovarian Injury as a Cause of Uterine Bleeding.
- Dr. Frank C. Ainley, Los Angeles, The Vomiting of Pregnancy.
- Dr. Norman H. Williams, Los Angeles, The Use of X-Rays in Obstetrics.
- Dr. Clarence A. DePuy, Oakland, Sustained Analgesia in Late Malignancies.
- Dr. Thomas F. Wier, San Diego, Pituitrin and Nausea in Labor.
- Dr. John A. Sperry, San Francisco, Uterine Fistulae.
- Dr. Emil J. Krahulik, Los Angeles, The Rupture of the Membranes Before the Onset of Labor.
- Dr. Karl L. Schaupp, San Francisco, A Study of Prenatal Care from Two Five Year Periods at San Francisco Hospital.
- Dr. Henry A. Stephenson, San Francisco, Critical Analysis of Maternal Mortality.

Medical Program of Science Association.—At the ninety-fifth meeting of the American Association for the Advancement of Science in Pittsburgh, December 27 to January 2, Section N, on the Medical Sciences, will have meetings Thursday, Friday, Saturday and Monday mornings and Monday afternoon. A leading feature of the program will be a symposium on poliomyelitis, in which participants will be Drs. Maurice Brodie, New York; John A. Kolmer, Philadelphia; William Lloyd Aycock, Boston; Noel Paul Hudson, Chicago; Earl B. McKinley and Randall Thompson, Sc.D., Washington, D. C. Two sessions will be devoted to a symposium on "The Chemistry and Metabolism of Sulphur-Containing Compounds of the Body." Dr. Cyrus C. Sturgis, Ann Arbor, Mich., vice president for the section, will deliver his official address at a general session Thursday afternoon; his subject will be "Review of the More Important Recent Advances in the Study of Blood Diseases." Dr. William A. White, Washington, D. C., will speak Thursday evening at Carnegie Music Hall. His subject will be "Man the Great Integrator."

Society News.—Dr. Thomas A. Burcham, Des Moines, was chosen president elect of the Radiological Society of North America at its annual meeting in Memphis, December 3-7. Dr. Lloyd Bryan, San Francisco, was installed as president and Dr. Donald S. Childs, Syracuse, N. Y., reelected secretary. The place of the next meeting has not been decided. Among features of the meeting was the Carman Lecture honoring the memory of the late Dr. Russell D. Carman, Minneapolis, a former president of the society. The lecture was delivered by Dr. Byrl R. Kirklín, Rochester, Minn., on "Some Phases of Radiological Diagnosis of Gastric Cancer."—Dr. Morris Fishbein, Chicago, editor of *THE JOURNAL*, will speak at the annual luncheon of the American Student Health Association at its annual meeting in New York, Thursday, December 27, on "The Nature of Medical Organization." Among other speakers will be Drs. Esmond R. Long, Philadelphia, on "Tuberculosis in College Students"; Abraham A. Brill, New York, "The Psychiatric Approach to the Problem of Homosexuality"; and Theophile Raphael, Ann Arbor, "The Mental Hygiene Department of the University of Michigan." The meeting will continue through Friday. Dr. Fishbein will preside at the evening banquet, at the Waldorf-Astoria, of the Phi Delta Epsilon Medical Fraternity, which will hold its thirty-first annual conclave in New York, December 29.

CANADA

Control of Medical Broadcasts.—The Canadian Radio Commission is working with the Department of Pensions and National Health in controlling broadcasts of "patent medicines," the *Canadian Medical Association Journal* reports. The department censors all script submitted, but there is no routine check of the broadcasts to determine whether the censored script is followed. It was suggested that physicians report to the commission apparent breaches of the permissible latitudes.

Gift for Convalescent Home.—The Toronto General Hospital is to receive a bequest of about \$300,000 from the widow of the late Dr. George A. Bingham to build and maintain a home for convalescent patients as a memorial to him.

Dr. Bingham, who died in 1922, was professor of clinical surgery and clinical anatomy at the University of Toronto Faculty of Medicine. Mrs. Bingham's will, recently filed for probate, also gave \$2,000 to the Hospital for Sick Children, \$1,000 to the Home for Incurable Children, \$25,000 for the equipment of a hospital at Matheson, Ont., and \$5,000 to the Alumni Federation of the University of Toronto for needy students in the Faculty of Medicine.

New Hospital Dedicated.—The dedication of the new Jewish General Hospital of Montreal took place October 8. Honor guests were His Excellency, the Earl of Bessborough, governor general of Canada; the Hon. L. A. Taschereau, prime minister, Province of Quebec; the Hon. L. Athanase David, Provincial Secretary of the Province, and the mayor of Montreal, M. Camillien Houde. The new hospital, begun in 1932, was recently completed at a cost of about \$1,250,000. The following physicians have been appointed to the staff of the new institution: Drs. Joseph Kaufmann, medicine; Edward W. Archibald, surgery; James Robert Goodall, gynecology; Alton Goldbloom, pediatrics; Abraham O. Freedman, otolaryngology; Jacob Rosenbaum, ophthalmology.

Faculty Changes.—Dr. John A. Gunn, Winnipeg, became professor of surgery this year at the University of Manitoba Faculty of Medicine, succeeding Dr. Brandur J. Brandson, and chief surgeon of the Winnipeg General Hospital. Dr. Brandson retired with the title of professor emeritus in surgery and Dr. Charles Hunter, professor emeritus in medicine. Dr. George I. Boyd, assistant professor of anatomy, resigned to go to Leeds University, England, and was succeeded by Dr. Larus A. Sigurdson as lecturer.—Dr. Samuel Ernest Whitnall, chairman of the department of anatomy at McGill University Faculty of Medicine, Montreal, has resigned to become professor of anatomy at the University of Bristol, England.—Dr. Ray F. Farquharson, Toronto, succeeded Dr. Robert D. Rudolf, head of the department of therapeutics and assistant in medicine at the University of Toronto Faculty of Medicine. Drs. Neil E. McKinnon and William F. McPhedran are new assistant professors of hygiene and epidemiology and of medicine and clinical medicine, respectively.

Society News.—The laboratory section of the Canadian Public Health Association held its annual Christmas meeting, December 20-21, at the Royal York Hotel, Toronto. Among the speakers were Dr. George W. McCoy, director, National Institute of Health, U. S. Public Health Service, Washington, D. C., on amebic dysentery.—Dr. Allan R. Dafoe, Callender, Ont., was guest speaker at a meeting of the Academy of Medicine of Toronto, December 4; his subject was "A Medical Fairy Tale."—Dr. Austin B. Schinbein addressed the Vancouver Medical Association, December 4, on "Tumors of the Breast."—The Western Ontario Academy of Medicine furnished the program of the Toronto Academy of Medicine, November 6, with the following speakers, all of London: Drs. Frederick J. H. Campbell, "Undulant Fever"; H. Murray Simpson, "Treatment of Lung Abscess"; Earle M. Watson, "Wheat Germ Oil (Vitamin E) Therapy," and Madge T. Macklin, "Is the Increase in Cardiovascular Renal Disease Real?" Dame Janet Campbell, London, England, addressed a special meeting, November 16, on "Developments in Community Health Work as it Affects the Medical Profession."

Government Services

Rear Admirals in Medical Corps

Captains John B. Dennis and Charles St. John Butler have been recommended for appointment to the grade of rear admiral in the medical corps. They will fill the vacancies created by the retirement of Rear Admiral Charles P. Kindleberger and Rear Admiral James C. Pryor within the next few months, according to *Military Surgeon*.

New Head of Children's Bureau

Miss Katherine F. Lenroot, who has been acting chief of the Children's Bureau of the Department of Labor since the resignation of Miss Grace Abbott July 1, was appointed permanently by the President, December 1. Miss Lenroot, a daughter of former Senator Lenroot of Wisconsin, has been on the staff of the bureau for twenty years and assistant chief since 1922. She served as research secretary of the delinquency committee of the White House Conference on Child Health and Protection and was chairman of the United States delegations to the fifth and sixth Pan-American child congresses. She is at present president of the National Conference of Social Workers.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 24, 1934.

The Scientific Detection of Crime

A scientific laboratory is to be added to the equipment of the Metropolitan Police College, where candidates for the higher posts undergo training. The main function of the officer in charge of the laboratory will be to assist in the investigation of criminal cases, to give instruction in scientific methods of crime detection to the students of the college, and to undertake research work. Dr. James Davidson of Edinburgh University has been selected for this appointment. At first there was a difference of opinion whether the resources of a scientific laboratory should be restricted to meeting the needs of cases under investigation or also to teach young officers taking courses at the college. Similar laboratories in other parts of the country are in the main used for problems in connection with crimes calling for scientific solution. It has been decided, however, that Dr. Davidson's services will be available when research or experiment is required, and detectives will have the benefit of his services when engaged on cases.

The Change in the Treatment of Mental Defectives

At a conference of the Central Association for Mental Welfare, Sir Leslie Scott, the president, contrasted the present treatment of mental defectives with that of the past. This association when instituted twenty-one years ago had \$50 in the bank; today its income is \$75,000 a year in the form of grants and payments by government departments and local authorities. There was a disposition of a large section of the public to look on all problems of mental health with aversion, and it had been difficult to get local authorities to understand that the problem of mental defectives was of national importance. The necessity of making life inside an institution like life outside had been realized. The medical superintendent went outside to visit clinics and hospitals, and into institutions came teachers of crafts, leaders of Girl Guides and of Scouts, and instructors of games and physical exercises, bringing new ideas and preserving contact with the mentally normal. Many of the patients went regularly on parole and spent a holiday in camp, which had developed into holiday homes and tours. Clubs were one of the remarkable developments of recent years and had been developed in many large centers for youths and elders, and there were hostels for working boys and girls from which, after being trained in institutions, they could go out to daily work. All progress seemed to be in the same general direction, away from the old theory of incarcerating defectives in asylums or segregated groups and toward a policy of bringing them as much as possible in touch with their normal fellows.

VOLUNTARY STERILIZATION OF DEFECTIVES

Sir Hilton Young, minister of health, a guest of the association at a luncheon, suggested that it should bring the advantage of its experience to bear on the difficult question of voluntary sterilization of the unfit. The report of the departmental committee in favor of voluntary sterilization supplied the raw material, and it would be of great value if public opinion might be informed and a national conscience created in that matter and so enable the government to take action. Sir Leslie Scott said that the attitude of the association toward sterilization was one of general support to the recommendations of the departmental committee. It had joined in forming a joint committee to make those recommendations known throughout the country and to consider the best way in which they could be passed into law.

Vacuum Packing an Alternative to Cold Storage

An alternative to the cold storage system for the transport of perishable foodstuffs over great distances without deterioration was explained at a luncheon attended by the New Zealand high commissioner and the agents general of New South Wales, Victoria, Queensland, Tasmania and West Australia. The system that has the trade name of Vacpac has been tried in all climatic conditions for four and one-half years, and regular consignments of butter, cheese, honey, meats, fruit pulp and fruit juices have been successfully transported from New Zealand to London, India, China and elsewhere for three years. The goods are packed by a vacuum process, which does not involve heating or the use of preservatives, the cases being then conveyed as general cargo and not in cold storage. It is claimed that the foodstuffs reach the consumer in the same state of freshness as when packed, unaffected by climatic changes or by such risks as loss of flavor, aroma or color. On the other hand, the maturing of cheese, for example continues unchecked. Also when the goods are unpacked the rate of deterioration is below normal. Vacuum-packed products cost a little more than those transported by other methods, but they bring higher prices.

While the principle of food preservation by exclusion of air and moisture is not new, it has been adapted for the first time to transport across the world. The system is at present confined to New Zealand, which has three factories, but it is now proposed to make it available for all the food-producing countries in the empire. Sir James Parr, high commissioner for New Zealand, a country that has sent more butter to the English market than any other country in the world, viewed the new venture with interest.

The Drug Traffic: Growth of Clandestine Factories

At a meeting in Geneva of the Advisory Committee on Traffic in Drugs of the League of Nations, it was stated that although the steady flow of drugs from licensed factories into illicit traffic had much decreased, clandestine factories were springing up and becoming a more abundant source of supply than the authorized factories used to be. The committee during its present session will study the institution of a specialized police force for the detection and closure of these clandestine factories and the effective combating of illicit traffic. It discussed the issue of passports and visas to notorious traffickers. Some of these move about freely, and it has not been possible to limit their travels and prevent them from setting up clandestine factories in countries where the abundance of raw material would render these factories particularly dangerous.

Cotton Spinners' Cancer: Specification of a Safe Oil

Important work has been done at the research laboratories of the Manchester Cancer Committee under the direction of Dr. C. C. Twort with a view to prevention of the disease known as mule spinners' cancer (due to irritation of the scrotum with the lubricating oil used). Dr. Twort has devised a standard specification for safe mineral lubricating oil, based solely on its physical characters. Mineral lubricating oils should have a refractivity below 5,520, when the specific gravity is above 0.985, or a refractivity below 5,550, when the specific gravity is below 0.985. In calculating the refractivity the density at 60 F. is used. It appears that some mineral oils are much more carcinogenic than others, and all of them except white oils and spirits have to be viewed as potentially carcinogenic. Dr. Twort can now arrange the chief world supplies of oil according to their cancer generating powers. The least harmful oils are Russian, and those from Pennsylvania and Texas come next, while the Scottish shales are highest, more than forty-five times as potent as the Russian. But oils of varying potency can be obtained from every single area, so that too much stress must not be laid on the origin.

PARIS

(From Our Regular Correspondent)

Dec. 20, 1934.

Bacillema in Tuberculosis and Other Diseases

During the last few years, the Vienna bacteriologist Loewenstein has published a number of observations in which he reported that in certain diseases, heretofore not considered as of tuberculous origin, cultures made from the blood yielded positive results. Tubercle bacilli were found, according to Loewenstein, in such diseases as acute and chronic rheumatism and dementia praecox.

Two papers have appeared here recently, one by A. Saenz of the Pasteur Institute and another by Debré, Saenz and Broca, in which it is shown that the majority of the positive blood cultures were due to errors in technic. Saenz has paid especial attention to the question as to how these errors arise. In his article in the June *Annales de l'Institut Pasteur*, Saenz states that, so far as culture mediums for isolation of the tubercle bacillus are concerned, the medium of Loewenstein as well as that of Petragani are preferable to all others.

The use of a 20 per cent solution of sulphuric acid, to destroy organisms producing contamination of the cultures and thus to permit the tubercle bacillus to develop, does not affect the vitality of the human, bovine or avian type of the bacillus of tuberculosis. An important source of error has been that many investigators who report positive results in blood taken from diseases heretofore considered as bearing no etiologic relation to tuberculosis base their reports on finding microscopic colonies after scraping the surface of the medium when no macroscopic growth is present. Such colonies contain acid-fast bacilli, but the latter are only groups of dead bacilli, which can be found in the rubber tubing or in the various solutions that have been employed in preparing the culture medium or stains.

Saenz maintains that results can be interpreted as positive only when the colonies develop after being reinoculated on other tubes and also if they give positive results in guinea-pig inoculation or on reinoculation from the first inoculated guinea-pig into others.

Colonies that appear very late are not tubercle bacilli, as stated by Loewenstein, but paratubercle bacilli. In cultures made from the blood of 500 cases of from various forms of tuberculosis there were ten (1.2 per cent) in which there was macroscopic growth. Of these ten, there were three due to saprophytic acid-resistant bacilli which did not possess the characteristic pathogenic properties of the tubercle bacillus when inoculated into guinea-pigs.

Of fourteen cases in which the blood of infants and adolescents was studied at the period of earliest invasion by the tubercle bacillus, six were found faintly positive, one on the Loewenstein culture medium and five only on guinea-pig inoculation. The finding of the bacilli in the blood precedes clinical evidence of localization in the lymph nodes, lungs and spleen. Cultures from the blood in ninety cases of acute and chronic rheumatism and from ten cerebrospinal fluids were all negative.

Guinea-pigs must be kept under observation for a period of six months after inoculation. In the six cases in which positive results were obtained in guinea-pigs inoculated with blood from cases clinically diagnosed as tuberculosis, the culture was negative. This shows the superiority of guinea-pig inoculation in cases in which the culture is negative.

The early invasion of the blood by tubercle bacilli in children is composed of relatively few bacilli and has no prognostic significance.

Reorganization of the Pasteur Institute

The death of Professor Roux, director, a few days after that of Professor Calmette, assistant director, has necessitated a complete reorganization of the executive committee of the

Pasteur Institute. The institution has grown to an incredible degree since its foundation by Pasteur, who gathered around him distinguished workers such as Roux, Calmette, Metchnikoff and Yersin. At the time the laboratories began to expand and increase in number, the clinical side developed as the result of the discovery of serotherapy. The work of Roux on diphtheria antitoxin and of Calmette on the various aspects of tuberculosis are only two of the numerous achievements of this remarkable band of investigators, following closely the brilliant example of their leader, Pasteur.

Dr. Louis Martin has just been appointed director and Dr. G. Ramon assistant director. The former was a co-worker of Roux in diphtheria research and is well known for his investigations on other subjects, such as icteriohemorrhagic spirotrichosis, trypanosomiasis and the experimental production of tuberculous meningitis in rabbits. Ramon discovered the method of utilization of diphtheria antitoxin (after treatment with formaldehyde and heat) for purposes of immunization as anatoxin. The executive committee now includes men who were all pupils of Pasteur, such as Bordet, Bertrand, Yersin, Borrel and Mesnil. With such a distinguished group to aid Martin and Ramon, the institute will be assured its rank as one of the leaders in the world of research.

Center for Citrated Blood for Transfusions

In Bordeaux a center has been established in the public hospitals in which flasks containing 300 cc. of blood, kept in liquid form with sodium citrate solution, is placed at the disposal of physicians in place of grouped donors. The blood can be used, if kept in a refrigerator, during a period of two weeks or even longer, after it has been received from professional donors or from volunteers. One thus has always a thoroughly tested and grouped blood, ready in case of emergency.

BERLIN

(From Our Regular Correspondent)

Oct. 15, 1934.

Population Movement in Germany

The population statistics recently compiled for the first quarter of the year 1934 are interesting. The preliminary numbers were:

	First Quarter 1934	First Quarter 1933
Marriages	138,438	94,686
Viable born	281,024	246,915
Stillborn	8,215	7,601
Dead (but not stillborn, including infants up to age of 1 year)	193,134	221,374
Excess of birth over death rate	87,890	25,541

The sparse increase in the frequency of birth, which became visible first in the cities in the second half of 1933, had grown into a noteworthy increase from the beginning of the year 1934. In rural districts only a slight increase in the incidence of births was found.

Statistics on viable born infants per thousand inhabitants for the complete year show:

Quarter	1913	1932	1933	1934
First	27.2	16.0	15.2	17.2
Second	26.8	15.4	14.9	
Third	27.3	14.6	14.6	
Fourth	26.3	14.1	14.0	
Average	26.9	15.1	14.7	

The decline in the incidence of induced abortions is cited as the main cause of the constant increase in the number of births.

The increase in marriages during the second quarter of 1933 definitely contributed to the great increase in births during the first quarter of 1934; the marked increase in the incidence of marriage in the third quarter of 1933 might have also aided the 1934 birth rate to a slight degree. Whether this is actually a revival of the people's will to propagate will be definitely determined on the basis of the exact total number of births

recorded during the course of years of marriage. The excess of the birth rate over the death rate came to 87,890 in the first quarter of 1934; that is, 5.4 to every 1,000 inhabitants. As a result of the increase of births and the simultaneous decline in mortality, the excessive birth rate was three and one-half times as large as in the first quarter of 1933, in which it came to 25,541; that is, 1.6 to every 1,000 inhabitants. Additional statistics have been compiled for Berlin. The birth incidence for Berlin in July 1934 amounted to 13.9 to every 1,000 inhabitants, in July 1933 to 8.6, thus a rise in the lapse of a year amounting to 63 per cent. This would have been considered impossible until recently, since Berlin (together with the scarcely larger numbers of Vienna) lead the world cities in a low birth rate; Paris and London had half as many more, New York double as many births, Moscow and Tokyo two and one-half times as many. There is also a striking difference in the birth rate for the total number of large cities in Germany: It was 10.7 in July 1933 and 15 in July 1934. Whether the danger of a dying population, which unquestionably existed, has been set aside cannot be answered with any degree of positivity. But in the light of Germany's birth rate for the year 1934 it may be said that there is no longer any danger of a dying population. At the same time it has been taken into consideration that the death rate grows as a result of an increase in the middle and advanced age groups. The total number of large cities, including Berlin, show a birth incidence of only 40 per cent, and rural communities an incidence of 35 per cent, as opposed to the previously mentioned 60 per cent birth incidence of Berlin. According to Prof. Julius Wolf, the birth rate for the year 1934 amounted approximately to 20 per thousand inhabitants as opposed to 14.7 in 1933, so that Germany is again ahead of France and England by a ratio of 16 to 15. The birth rates for Italy (23:1,000) and Poland (26:1,000) are even higher but are beginning to decrease. The number of illegitimate births showed no change during the rise in the birth rate whereas the number of legitimate births naturally rose. The number of illegitimate births in the large cities of Germany amounted to 1.4 per thousand inhabitants from January to July 1934, to 1.3 per thousand in the same period of 1933, and to 1.5 per thousand in the same period of 1932.

The number of marriages in the large cities during the first quarter of 1934 was considerably greater than in the rural districts. In communities of 15,000 or more inhabitants, approximately 26,500, or 58 per cent, more marriages were performed in 1934 than during the preceding year, whereas in the other communities the number came to only 17,200, or 35 per cent.

During the first quarter of 1934 the rate of mortality was significantly lower than in the first quarter of 1933, because the grip epidemic during the latter year had resulted in so many deaths; the regression amounts to 26,560, or 13.3 per cent. To every thousand inhabitants there were only 10.7 cases of death. (The rate for 1933 was 12.4 to 1,000); 6,450 persons less died of grip in 1934 than in the first quarter of 1933 (only 1.5 to every 10,000, against 10.4). Also the number of cases of death from bronchitis and pneumonia went back to 2,300 (9 against 11.3 to every 10,000 inhabitants), the same as in cardiac diseases, in which 900 less cases of death were recorded than in the first quarter of 1933. Likewise there are fewer cases of death due to senile debility and tuberculosis. Furthermore, the mortality due to death and homicide, which is essentially more important than the figurative effect, decreased from 215 to 101.

The Number of Tooth Brushes Among Students

The public health office of the German Hygiene Institute of Dresden recently made an extensive inquiry in German schools on how many students possess tooth brushes. The results are as surprising as deplorable. Of 7,000 schools with 900,000 students, 42.4 per cent owned their own tooth brushes, 18.2 per

cent had a family tooth brush and 39.4 per cent had none. To this must be added that close to 5,000,000 school children at least do not use their own tooth brush.

Investigation of Incidence of Death in Syphilis

The official German statistics on the causes of death in the reich contain only a small fragment of the actual number of deaths due to syphilis, because of the difficulty of diagnosis and of determining the exact cause of death and because the physician frequently refuses to reveal the confidence of his patient. Consequently the only way at present to determine definitely the death rate of syphilis is to compile the total results of the most reliable investigators. This was done by Dr. H. Gottschalk of Berlin, of the German Society for the Prevention of Venereal Diseases. Thus, for example, Nuremberg, following the model set by Switzerland since 1925, had a confidential death record, in which physicians reported the contributory causes of death. The combined record of the causes of death in Magdeburg for the years 1926 to 1930 was not limited to the primary diseases but extended to the secondary diseases and attempted to clarify indefinite diagnoses by means of inquiries into each individual case. In addition to this a careful report on necropsies was made at the Rudolf Virchow Hospital of Berlin. The greatest difficulty lies in determining how often syphilis is the immediate cause of death in cases in which it is found side by side with other primary diseases. By taking this difficulty carefully into account, the death rate for acquired syphilis gathered from the metropolitan sources mentioned may be cited as from 3 to 4 to each 10,000. A careful determination of the German death rate for syphilis comes to 15,000. According to the Magdeburg statistics, the number of deaths due to congenital syphilis for Germany as a whole amounts to from 3,000 to 4,000 annually.

SOUTH AFRICA

(From Our Regular Correspondent)

CAPE TOWN, Nov. 2, 1934.

The Annual Medical Congress

The twenty-eighth South African Medical Congress was held at Pretoria, October 1-6. Pretoria, the administrative capital of the union, is at this time of the year at its best. Its heat and humidity are always trying, but in October neither is too great to inconvenience visitors, who are always thrilled by the amazing beauty of the blue jakaranda trees, which line the principal streets and are just beginning to blossom. A congress at such a center is distinguished less by the excellence of the papers and the keenness of the discussions than by the social amenities, and this year's gathering was no exception. There was so much to see that the sections and the plenary meetings were badly attended. A feature of this year's meeting was the part taken in the discussions by the staff of the Veterinary College at Onderstepoort, an institution made famous by the researches of Sir Arnold Theiler. His disciples have been inspired by his zeal and have evolved an admirable department for the study of comparative medicine. They showed numerous pathologic and bacteriologic preparations, exhibiting the various stages of lesser known anemias in wild animals. Dr. A. Pijper, another research worker, showed his preparations illustrating tick-bite fever and the results of his successful attempts to inoculate this disease. The president of the congress, Sir Edward Thornton, chief medical officer of health for the union and secretary to the department of public health, in his address dealt with the public health and foreshadowed developments in health legislation in the near future. It is doubtful whether the present government is likely to grapple with public health difficulties of importance, for it has so far proved itself a wholly opportunist administration not greatly interested in anything but the desire to retain power. Public health, unfortu-

nately, has never been a matter of political interest, and it is unlikely that it will ever be seriously considered unless the union is fortunate enough to get an administration that has the knowledge and the energy to disregard the prejudices and jealousies of the provinces and to regard the problems on a broad, scientific basis. Sir Edward tactfully pointed out these truths when he remarked that national health cannot be obtained unless and until the people assent to it, and that it certainly cannot be secured, still less imposed, by parliament or the local or central authorities unless the people understand the necessity for it.

Payment of Hospital Staffs

In former letters I have referred to the resolution by the medical association that honorary staffs should be paid for services rendered to pauper patients in all government hospitals except the two large teaching hospitals at Cape Town and Johannesburg. The resolution was passed on to the branches with a hint that the time is now opportune to enforce payment. There has been some hesitancy in strongly and effectively backing up the policy that has been decided on. This is due to the fact that many practitioners cannot get away from the feeling that they would be acting contrary to the tradition and spirit of the profession by asking for payment for services given to the sick poor. It is not generally recognized that the sick poor are a charge on the state here and that the doctor, being a taxpayer, not only already does his fair share toward their support but is additionally taxed in free service and special professional taxation. However, these arguments are now making some impression, and the majority of hospital boards are quite willing to meet the profession on this matter. In two provinces, too, the provincial administrations that are entrusted with hospitalization are willing to concede payment. In the Cape Province, however, the administration refuses to recognize the principle of payment, although in practice it already pays certain members of honorary staffs for work formerly done by these members gratuitously. It is suggested that a basic charge of £1 be made for every pauper inpatient and that the sum total of these charges be divided among the honoraries for them to do with it as they please. It is impossible, however, to formulate a general scheme applicable to the whole union, and for that reason the association has wisely left branches free to discuss the matter from the local point of view and to make such suggestions as seem to fit their peculiar circumstances. Meanwhile opinion in the profession is hardening in favor of some sort of state medical service. In view of the sparse white population and large native areas, some kind of subsidized medical service seems inevitable in the near future.

A Journal of Scientific Research

The medical association has recently published the first number of the *Quarterly Scientific Journal*, which is an extension of the ordinary medical journal, devoted wholly to articles on original research work. The first issue, which contains ten articles, reaches a high standard. Among the articles that show proof of original research are Dr. Cheetham's on premature artificial systoles in the baboon, Dr. I. Shore's on the spinous processes of the cervical vertebrae found in the skeletons of the European and the South American native, and Dr. McCay's on the treatment of bacillary dysentery by bacteriophage. It is proposed to issue the quarterly for the present at least as a number of the bimonthly journal, but in course of time it will no doubt obtain an independent existence.

Personals

The paleontologist Dr. Robert Broom has been elected an honorary member of the Medical Association of South Africa, an honor that he shares with four other colleagues. Dr. Broom, the only medical F.R.S. in this country, practiced as a general

practitioner for many years after resigning the professorship of zoology at the University of Stellenbosch. He is no longer in practice, having recently been appointed curator of the paleontological department of the state museum at Pretoria. Incidentally, Dr. Broom is an authority on the English artist Constable, of whose work he possesses some admirable examples.

The University of the Witwatersrand has conferred the degree of Dr. Litt. honoris causa on Dr. C. Louis Leipoldt, in recognition of his work as an Afrikaans poet and playwright. He has published some ten plays and four volumes of verse, which have been well received by the critics, and his work has been instrumental in obtaining for Afrikaans the recognition that it lacked for many years. He is lecturer in pediatrics at the New Somerset Hospital, Cape Town, and one of the officials of the medical association.

Deaths

Dr. F. A. Saunders of Grahamstown, one of the oldest practitioners, died in August; he took a great interest in military matters, fought as a combatant in several Kaffir wars, and commanded a regiment in the Boer war.

Dr. D. M. Maciver, died of streptococcal septicemia in August; he was a general practitioner who qualified in Aberdeen in 1898.

Dr. E. S. Towert, a senior practitioner, who qualified at Edinburgh in 1890, died at Johannesburg.

Dr. P. R. Zinn, originally an American citizen, who qualified as an M.D. in New York in 1914, died at Cape Town; he practiced in the country but had sold his practice two years ago with the intention of proceeding overseas to specialize.

ROME

(From Our Regular Correspondent)

Oct. 15, 1934.

Draining the Marshes in Agro Pontino

Prof. Giuseppe Sanarelli, senator, and director of the Institute of Hygiene of the University of Rome, has studied the new sanitary conditions in Agro Pontino. He reports the results of two observations in the *Rassegna italiana* and in the *Annali d'igiene*. Returning to Agro after an absence of six years, Professor Sanarelli found it completely transformed, the tremendous work of draining the marshes having been long under way. The draining of the marshes has built a foundation for the new province of Littoria. More recent medical studies have cast light on the way in which malarial lands may be reclaimed, and modern knowledge of entomology has made possible the long stay of thousands of workers in localities infested with malaria mosquitoes.

Fear was expressed that the Pontine region may continue to be infested by malaria despite the costly work of hydraulic, agrarian and reclamation work in this territory. According to Professor Sanarelli, it would be an exorbitant pretension to believe that individual cases of malarial infection could be avoided during protracted work in a territory which has been malarial for centuries and in which during recent years approximately 80,000 workers have labored in shifts. From official studies quoted by Professor Alessandrini, director of the public health service in Agro Pontino, it shows that in August 1933 the cases of malaria were 2.09 per cent and the mortality in relation to the population was 0.3 per thousand.

Missiroli and his collaborators have recently demonstrated that reclamation operations in malarial zones, by occasioning changes in the hydrographic aspect as well as in the physico-chemical constitution of the soil, thereby producing great modifications in the local flora and fauna, little by little also modify the growth of the anopheline larva. As a result of this the anopheline species that are wont to feed on human blood, such as *Anopheles maculipennis*, *A. labranchiae* and *A. elutus*, are gradually replaced by other anopheline species, such as

A. maculipennis-typicus, *A. atroparyus* and, above all, *A. maculipennis-messae*, which thrive on beasts and have little contact with man. The study of various species of anopheline mosquitoes has therefore cleared up the hitherto inexplicable matter of how simple variations or artificial telluric modifications, by changing the local anophelism, cause either the total disappearance or singular persistence of malarial epidemics in some regions, especially the northernmost regions of Italy and of Europe. Recent entomological studies have thus corroborated the truth of the old saying "the plow conquers malaria."

Commemoration of Bartolomeo Eustachio

Professor Visco, director of the Institute of Physiology of the University of Rome, presided at the commemoration of Bartolomeo Eustachio. After reviewing the development of the natural studies by the philosophers of Greece up to the fifteenth century, he showed how the concept of biology was gradually formed. He illustrated the state of knowledge on this subject during the century of Leonardo da Vinci. Bartolomeo Eustachio stands out in the field of anatomy and physiologic research. A great scientific dissension existed between him and Andrea Vesalio, which for more than fifty years divided European biologists into two fields of bitter dispute. Professor Visco found from his examination that the figure of Eustachio dominated that of Vesalio. While the latter appears only as a man of his century, Eustachio stands with Leonardo da Vinci and Galileo in anticipating modern biology.

National Congress of Stomatology

The Italian Stomatologic Federation held its National Congress in Milan and Como under the direction of Professor Lippo. Prof. Amedeo Perna of the University of Rome read a paper on "The Force of Italian Odontologic Legislation and Its Influence on the Process of Odontologic Legislation Throughout the World." The following resolution was adopted: That professional practice except in cases of dire need be exclusively the property of those who possess the title of specialist, as approved of by the specialized postgraduate schools. Professor Palazzi of Pavia presented a paper on "Biology, Constitution and Metabolism in Diseases of the Dental Pulp and in Paradental Diseases." The literature on this subject was very poor, with the exception of a recent work by Fischer of Hamburg. It was in 1922 that Graeff was able to find the anatomic signs of sepsis in an inferior premolar of a patient who had recurrent endocarditis. Such infections have taken a particular turn toward constitutional diseases of metabolism and those of microbic etiology. Professor Pende, senator and clinical physician of Genoa, spoke on the relation of endocrinology and dental alterations. He states that dental diseases cannot be understood without a sufficient knowledge of the constitution of the subject. This constitution, as is well known, is dominated by the function of the sympathetic nervous system. Thus the study of the action of hormones on the dental system is of fundamental interest to the understanding and reasonable treatment of diseases of the teeth. The most definite action is that of the thyroid, of the genitalia, and of the insular tissue of the pancreas. A good set of teeth corresponds to a well functioning thyroid in conformation, disposition and vitality; when the thyroid functions poorly, the teeth are irregular, poor in enamel and subject to caries and to incrustations of tartar. But when the action of the genital hormones is taken into consideration, contrary to what most authors believe, it is not the functional insufficiency but the hyperfunction that is harmful to the preservation of the teeth. Thus, with respect to the pancreas, metabolic disorders such as hyperglycemia and the tendency to diabetic adiposis constitute an early sign of paradentosis with early denudation of the teeth. The treatment of the area predisposed to caries or

to other dental diseases derives practical importance from these conceptions. The author does not believe in the so-called recalcifying treatment but only in treatment that reinstates the hormone equilibrium and the acid-base equilibrium of the organism. Prof. Roberto Mori of the University of Rome dealt with forensic hygienics of dentistry, enlarging on the subject of the loss and weakening of teeth in relation to the dispositions of the laws in force and to industrial accidents. The author stated that the evaluation by the expert of the damage derived from lesions or loss of teeth should be regulated by law.

Diseases of Sulphur Mine Workers

Sorge and Columba of Catania have done research on diseases of the respiratory organs of workers in sulphur mines. They found that, of 150 persons examined, 129 showed roentgenologic signs of pneumofibrosis, progressing from the hilus to the periphery of the lung. In most cases the lesions were limited to a thickening of the hilar shadows and of the vasculo-bronchial striae; in some, basal thickening was found, whereas others showed a diffuse micronodulation, recalling the classic signs of silicotic pneumoconiosis. Thirteen roentgenograms showed pleural involvement of a productive fibrotic type. Parenchymal changes consisting principally in emphysema and in bronchiectasis are associated with interstitial lesions. According to Sorge and Columba, interstitial lesions are due to inhalation of powder, while the parenchymal lesions are due to inhalation of sulphuric vapors. Considered as a pneumoconiosis, the disease of sulphur mine workers is particularly benign in character both in its gradual development and in the total lack of predisposition to pulmonary tuberculosis.

Dr. Novaro Is Dead

Dr. G. F. Novaro, a senator and professor emeritus of surgical clinics, died in Diano Marina. He was the first to perform, in Italy, hysterectomy in cancer of the uterus, the operation of the vesicovaginal fistula and the transplantation of the ureters into the rectum and on the bladder. He was director of the Istituto di Clinica Chirurgica of Siena, then of the same institute in Bologna and finally in the same institute in Genoa. He made important contributions to surgery, on the removal of cerebral tumors, the removal of the maxilla by the intra-oral route, and resection of the thyroid.

Marriages

WILLIAM VICTOR BRANFORD, Dillon, S. C., to Miss Lucile Love Bryant of Nichols at Fredericksburg, Va., November 29.

MARY SUE TIPTON MULLINS, New York, to Mr. Edwin Charles Jolliffe in London, England, August 29.

DOUGLAS B. KENDRICK JR., Atlanta, Ga., to Miss Dorothea B. Reynolds of Hagerstown, Md., November 17.

AUBREY BERNARD LEE, Birmingham, Ala., to Miss Ruby Nelle Parmer of Quincy, Fla., November 19.

JOHN D. LAMON JR., Albuquerque, N. M., to Miss Mabel Cahoon of Roswell, N. M., September 6.

JACK CHARLES WARBURTON, Paterson, N. J., to Miss Marguerite Zeller of Plainfield, November 24.

ROBERT GRAHAM FERRELL JR., Milledgeville, Ga., to Miss Nida McGehee of Macon, November 3.

JAMES B. GILLESPIE, Urbana, Ill., to Miss Ruth H. Brown of Norwich, N. Y., November 10.

LOUIS ROCCO PANIGROSSO, Raritan, N. J., to Miss Geraldine Iannaconi of Brooklyn, July 4.

JOHN A. WERTZ, Manning, S. C., to Miss Eunice Orr of Pendleton, November 29.

WILLIAM H. MAYER to Miss Virginia Sutton, both of Pittsburgh, November 3.

LESLIE H. REIMERS, Chicago, to Miss Margy Ebaugh of Akron, recently.

Deaths

Theobald Smith, Princeton, N. J., director emeritus of the Department of Plant and Animal Pathology, Rockefeller Institute for Medical Research, died, December 10, of carcinoma of the intestine and heart disease, aged 75. Dr. Smith was born in Albany, N. Y., July 31, 1859. He attended Cornell University, where he received the bachelor of philosophy degree in 1881, and then entered Albany (N. Y.) Medical College, where he graduated in 1883. In 1884 he was appointed director of the pathologic laboratory in the Bureau of Animal Industry of the U. S. Department of Agriculture, Washington, D. C., where for eleven years he investigated infectious diseases of animals. He was also professor of bacteriology at Columbian University, now known as George Washington University, Washington, D. C., from 1886 to 1895, at which time he was called to be director of the pathologic laboratory of the Massachusetts State Board of Health, a position he held for twenty years. During this time he also served as professor of comparative pathology at Harvard University. From 1915 to 1929 he was director of the department of animal pathology at the Rockefeller Institute for Medical Research and since

1901 was a member of the board of directors of the institute. Dr. Smith was a member and past president of the American Association of Pathologists and Bacteriologists and past president of the National Tuberculosis Association; a member of the American Society for Experimental Pathology, the National and American Academies of Arts and Sciences and the Association of American Physicians; honorary member of the Société de pathologie exotique, Paris, France, Royal Academy, Denmark, Reale Istituto, Lombardo, Italy, Swedish Medical Society,



THEOBALD SMITH, M.D.
1859-1934

Medico-Chirurgical Society, Royal College of Physicians, Edinburgh, and the Royal Society of Medicine, London; honorary fellow of the Society of Tropical Medicine and Hygiene, London, and the Pathological Society of Great Britain and Ireland.

Dr. Smith's contributions to medical science have been varied and of far-reaching importance. The research for which he was probably most widely known was his differentiation of the human tubercle bacillus from the bovine tubercle bacillus, a study that has been vastly important through the years of effort for the control of tuberculosis. In the field of anaphylaxis, he and others demonstrated that dead bacteria may produce immunity to disease, a discovery that has been important in the development of vaccines against typhoid fever and some other infectious diseases. He investigated the cause of deaths in experimental laboratory animals used in the standardization of diphtheria antitoxin after having been given a second dose of serum a few weeks after the first dose, which observation has come to be known as the "Theobald Smith phenomenon." Thus he brought to the attention of scientists the existence of hypersensitive conditions. In his research on Texas fever in cattle, he discovered that the disease is due to a protozoon and that it could be carried to cattle in other areas by means of a tick, *Boophilus bovis*. His work on Texas fever proved that insects may be the intermediate agencies in the spread of some infectious diseases and thus he opened the way for the explanation of the causes of transmission of such diseases as yellow fever and African sleeping sickness. Early in his scientific career, he described a bacillus that was associated with cases of hog cholera. He studied the causes of diseases among some of the smaller domestic animals and devised methods for controlling some diseases that formerly eliminated whole flocks. He also experimentally produced scurvy in laboratory animals and thus opened a field of study in human health and disease that has been carried on by many others. Dr. Smith was awarded honorary degrees from a number of universities in this country and abroad and was the recipient of the Mary Kingsley, Kober, Flattery, Trudeau, Sedgwick, the

Holland Society and the Gerhard medals. His scientific work, however, has been even of greater importance than the honors that have been bestowed upon him would indicate.

Edward Baldwin Gleason @ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1878; professor of otology, University of Pennsylvania Graduate School of Medicine; formerly professor of otology, Medico-Chirurgical College of Philadelphia and at his alma mater; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Otological Society; ex-visiting laryngologist to the Philadelphia Hospital; surgeon in charge of the nose, throat and ear department, Northern Dispensary; author of "Diseases of the Nose, Throat and Ear"; aged 80; died, November 30, of cardiorenal disease.

Daniel Joseph Healy, Lexington, Ky.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1896; member of the Kentucky State Medical Association; professor of bacteriology, 1910-1919, and for many years professor of agricultural bacteriology, Kentucky University, and research bacteriologist to the Experimental Station; health officer of Lexington, 1900-1901; pathologist to the Eastern Kentucky Asylum for the Insane, 1897-1899, and the Central Indiana Asylum for the Insane, 1899-1900; superintendent of the Kentucky Institute for Feeble-Minded Children, 1909-1910; aged 61; died, November 24.

John Livingston Crofts, Newport, N. Y.; Albany (N. Y.) Medical College, 1900; member of the Medical Society of the State of New York; past president of the Medical Society of the County of Herkimer; served during the World War; county coroner; health officer of the town and village of Newport and the towns of Norway and Ohio since 1924; school medical inspector of several districts; medical director of the Herkimer County Hospital; aged 56; died suddenly, November 1.

Elam H. Stevenson, Fort Smith, Ark.; Eclectic Medical Institute, Cincinnati, 1879; member of the Arkansas Medical Society; past president of the state board of health; formerly member of the Eclectic Board of Medical Examiners; on the staffs of St. Edward's Mercy Hospital and Sparks Memorial Hospital; aged 78; died, November 20, of angina pectoris and acute dilatation of the heart.

Philip Benedict McLaughlin @ Sioux City, Iowa; Kentucky School of Medicine, Louisville, 1897; past president of the Woodbury County Medical Society and the Sioux Valley Medical Association; served during the World War; fellow of the American College of Surgeons; surgeon to St. Joseph's Mercy Hospital; aged 61; died, November 3, of arteriosclerosis.

Joseph Binder @ Jersey City, N. J.; University and Bellevue Hospital Medical College, 1915; served during the World War; attending obstetrician and chief of the second division at the Margaret Hague Maternity Hospital and visiting obstetrician to the Greenville, Fairmount and Christ hospitals; aged 44; died, November 27, of coronary thrombosis.

David Moulton Gardner, Northampton, Mass.; Boston University School of Medicine, 1900; member of the American Psychiatric Association; veteran of the Spanish-American and World wars; on the staff of the Veterans' Administration Facility; aged 63; died, November 7, of cerebral hemorrhage and tumor of the pituitary gland.

James Franklin Paddleford, Miller, S. D.; Kentucky University Medical Department, Louisville, 1904; member of the South Dakota State Medical Association; served during the World War; since 1919 superintendent of the county board of health; at various times county coroner; aged 65; died, November 18, of myocarditis.

Milton Edward Weaver, Perkasi, Pa.; College of Physicians and Surgeons, Baltimore, 1904; member of the Medical Society of the State of Pennsylvania; aged 53; died, November 14, in the Easton (Pa.) Sanitarium, of pernicious anemia and an injury of the hip received in an automobile accident.

Charles Louis Mattfeldt, Catonsville, Md.; University of Maryland School of Medicine, Baltimore, 1886; member of the Medical and Chirurgical Faculty of Maryland; past president of the county board of health and formerly county health officer aged 67; died, October 27.

Thomas N. Millikin @ Waynesburg, Pa.; Jefferson Medical College of Philadelphia, 1885; past president of the Greene County Medical Society; on the staff of the Greene County Memorial Hospital; aged 75; died suddenly, November 10, of disease of the coronary artery.

John Charles Macgill @ Catonsville, Md.; University of Maryland School of Medicine, Baltimore, 1891; member of the board of directors of the Spring Grove State Hospital;

aged 64; died, November 16, in the Johns Hopkins Hospital, Baltimore, of pneumonia.

Francis Marion Hubbard, Commerce, Ga.; Atlanta Medical College, 1888; member of the Medical Association of Georgia; past president of the Jackson-Barrow Counties Medical Society; aged 86; died, November 9, of pulmonary edema and heart disease.

Charles F. Palmer, Chambersburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1878; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the Chambersburg Hospital; aged 87; died, October 29.

William S. Strode, Lewistown, Ill.; Rush Medical College, Chicago, 1884; formerly member of the board of health; Civil War veteran; past president of the school board; aged 86; died, November 5, near Tucson, Ariz., of cerebral hemorrhage.

William Cornelius Callanan, Buffalo; University of Buffalo School of Medicine, 1884; formerly medical school inspector; on the staff of the Buffalo Hospital of the Sisters of Charity; aged 76; died, December 1, of coronary thrombosis.

John Dunn, Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1886; member of the Medical Society of Virginia; emeritus professor of otolaryngology, Medical College of Virginia; aged 71; died, November 7.

William T. Bertrand, Coloma, Mich.; Louisville (Ky.) Medical College, 1894; member of the Michigan State Medical Society; formerly village president; aged 76; died, November 9, in the American Legion Hospital, Battle Creek.

Henry Seymour Clark, New York; Jefferson Medical College of Philadelphia, 1883; member of the Medical Society of the State of New York; aged 78; died, November 11, of paralysis agitans and cerebral arteriosclerosis.

Frank Elbert Smith Ⓢ Decatur, Ill.; Chicago College of Medicine and Surgery, 1913; fellow of the American College of Surgeons; chief surgeon to the Wabash Hospital; aged 51; died, November 7, of lethargic encephalitis.

Robert S. Walker, Ottawa Hills, Ohio; Detroit College of Medicine, 1891; member of the American Urological Association; aged 64; died, November 12, in the Mercy Hospital, Toledo, of carcinoma of the lung and liver.

William W. Hoggatt, French Lick, Ind.; Kentucky School of Medicine, Louisville, 1896; member of the Indiana State Medical Association; served during the World War; aged 68; died, November 27, of uremia.

Arthur B. Freeman Ⓢ Rockville, Mo.; University of Louisville (Ky.) School of Medicine, 1886; past president of the Bates County Medical Society; aged 75; died, November 11, in Nevada, of heart disease.

Charles Wellington Clendenan, North Tonawanda, N. Y.; University of Toronto Faculty of Medicine, 1890; member of the Medical Society of the State of New York; aged 70; died, October 30, of heart disease.

Fielden Straughn Dailey, Tunnel Springs, Ala.; Medical College of Alabama, Mobile, 1871; member of the Medical Association of the State of Alabama; Civil War veteran; aged 87; died, October 29.

Clarence Austin Bicking Ⓢ Pittsburgh, Baltimore Medical College, 1913; formerly on the staff of the Presbyterian Hospital and Dixmont (Pa.) Hospital; aged 49; died, November 21, in Chicago, of heart disease.

Singleton Husted, Los Angeles; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; aged 80; died, October 25, of bronchopneumonia and chronic nephritis.

George Alvin Hughes, Edwardsburg, Mich.; University of Michigan Medical School, Ann Arbor, 1882; aged 80; died, November 15, in the Elkhart (Ind.) General Hospital, of gangrene of the leg.

Earl Eugene Boyd, Central City, Neb.; Lincoln Medical College of Cotner University, 1906; served during the World War; formerly mayor; aged 61; died, November 5, of cerebral hemorrhage.

Melvin Ticknor Stone Ⓢ Troy, N. H.; Dartmouth Medical School, Hanover, 1880; formerly member of the state legislature and school board; aged 80; died, November 23, of cerebral hemorrhage.

George Michael O'Neil, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1906; aged 54; died, November 11, in the Charity Hospital.

Henry Vance Clymer, Fairfield, Calif.; Willamette University Medical Department, Salem, Ore., 1890; member of the California Medical Association; aged 71; died, October 4.

Roscoe C. Duncan, Poole, Ky.; Kentucky University Medical Department, Louisville, 1906; aged 59; died, November 19, in a hospital at Louisville, of heart disease and asthma.

Emmet L. Ashley, Bigspring, Tenn.; Chattanooga Medical College, 1903; aged 60; died, November 18, of injuries received when the automobile in which he was driving overturned.

William Francis Clute Ⓢ Clare, Mich.; Detroit College of Medicine, 1905; aged 53; died, November 12, in the Bay City (Mich.) Samaritan Hospital, of erysipelas.

William H. Harris, Athens, Ga.; Meharry Medical College, Nashville, Tenn., 1893; aged 67; died, November 12, of injuries received in an automobile accident.

Rezin L. Armstrong Jr., Pleasant Hill, La.; University of Louisville (Ky.) School of Medicine, 1879; aged 77; died suddenly, November 4, of myocarditis.

Clara B. Glines Cross Ⓢ Omaha; Bennett Medical College, Chicago, 1913; aged 52; died, September 29, in the Douglas County Hospital, of lobar pneumonia.

William A. Knell, Baltimore; University of Maryland School of Medicine, Baltimore, 1905; aged 50; died, November 14, of carcinoma of the omentum.

Henry Creasey, Detroit; Saginaw (Mich.) Valley Medical College, 1900; aged 66; died, November 13, in the Receiving Hospital, of cerebral hemorrhage.

A. Leo Franklin Ⓢ Cumberland, Md.; University of Maryland School of Medicine, Baltimore, 1902; aged 54; died, November 19, of heart disease.

Frank Powell Dickinson, Fredericksburg, Va.; University College of Medicine, Richmond, 1899; aged 76; died suddenly, October 31, of heart disease.

Edward Philip Day, Boston; Medical School of Maine, Portland, 1898; member of the Massachusetts Medical Society; aged 66; died, October 31.

Nicholas N. Jensen, Orlando, Fla.; St. Louis College of Physicians and Surgeons, 1891; aged 71; died, October 27, of pernicious anemia.

W. L. Gevedon, Grassy Creek, Ky. (licensed in Kentucky in 1894); Civil War veteran; aged 95; died, October 22, of chronic nephritis.

James William Mulick, Elma, Iowa; Rush Medical College, Chicago, 1899; aged 67; died, November 8, of cerebral hemorrhage.

Frank S. Van Kirk, Langeloth, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 65; died, October 17.

Lemuel Eugene Thornton, Riceboro, Ga.; Atlanta (Ga.) College of Physicians and Surgeons, 1901; aged 57; died, October 21.

George Miller Gilchrist Ⓢ Groton, N. Y.; Albany (N. Y.) Medical College, 1898; aged 58; died, August 25, of coronary thrombosis.

Aguilas Cheval, St. Hilaire Village, Que., Canada; School of Medicine and Surgery of Montreal, 1886; aged 72; died recently.

Charles Edward Davies, Wishart, Mo.; St. Louis Medical College, 1881; aged 81; died, October 11, of carcinoma of the stomach.

Benjamin H. Mackall, Barnesville, Ohio; Medical College of Ohio, Cincinnati, 1870; aged 90; died, November 10, of senility.

William Henry Smith, Oakland City, Ind.; Kentucky School of Medicine, Louisville, 1893; aged 63; died, November 11.

Nelson J. Hyatt, Orange, Calif.; State University of Iowa College of Medicine, Iowa City, 1881; aged 78; died, September 27.

John H. Wahl, Reading, Pa.; Medical College of Indiana, Indianapolis, 1888; aged 75; died, November 9, of pneumonia.

John Harold French Ⓢ Hartford City, Ind.; Toledo Medical College, 1913; aged 44; died, November 12, of heart disease.

Marc Henry Crocker, Oakland, Calif.; Oakland College of Medicine and Surgery, 1920; aged 37; died, October 20.

John W. Buchanan, Folkston, Ga.; Kentucky School of Medicine, Louisville, 1882; aged 73; died, in November.

Joseph S. Claypool, Pine Village, Ind. (licensed in Indiana in 1897) aged 85; died, November 24, of heart disease.

Bureau of Investigation

R. N. TROTSKY

A Deportable Alien with Many Aliases and a Criminal Record

The story that follows regarding one R. N. Trotsky—if that should be his real name—gives another interesting example of how a persistent and smooth-working impostor can continue to ply his trade in spite of the fact that the man is a deportable alien with a criminal record.

R. N. Trotsky, *alias* Ray Anthony, *alias* Bob Lukan, *alias* Romano Trosky, *alias* Bob Anthony, is a Russian, born in 1894, height 5 feet 8 inches, weight 162 pounds, with a medium dark complexion, blue eyes and black hair. He is said to have deserted the Russian government in 1920 and fled to America without a passport, dodging the federal officers in the meantime.

The man poses as a physician and has claimed to be a graduate of some Russian university. No evidence has ever been submitted to indicate that this man was ever graduated by any reputable medical school anywhere. Certainly he has never been licensed to practice medicine anywhere in the United States, yet he has persistently violated the medical practice acts of various states, has served time in a state prison for abortion, has been charged with forgery, and was sent to Leavenworth for a year and a day for violation of the Dyer Act (transporting stolen motor cars across state lines) and has been guilty of other forms of swindling.

THE GOVERNMENT RECORD

In the record of the Division of Investigation of the United States Department of Justice, Trotsky's number is 169270. A brief but illuminating history of this person is given in a transcript of the record of this branch of the U. S. Department of Justice:

In 1921 he was charged with selling mortgaged property in Minneapolis and put on six months' probation.

In 1923 he was sentenced to forty days in the workhouse at Minneapolis on a bad check charge.

In 1927, under the name Ray Anthony, he was wanted in Minneapolis for murder.

In 1928 he was arrested by the Police Department of Austin, Texas, under the name of "Dr. Bob Lukan" for violation of the Dyer Act. He was held for the federal charge and was sentenced to the United States Penitentiary at Leavenworth under the name Romano Trosky (No. 30353) for a year and a day.

In 1929, under the name of Romano N. Trotzky, the Police Department of San Angelo, Texas, investigated him on suspicion of violating the state medical practice act; he was released. In the same year at El Paso, Texas, still under the name of Dr. Romano Trotzky, he was charged with swindling and was turned over to the United States authorities. Also in 1929, under the name of Romono Trotsky, he was sent to the Minnesota State Prison at Stillwater to serve an indeterminate sentence, maximum four years, for the crime of abortion. He was received at the prison in December, 1929, and was discharged in March, 1931, and taken into custody by the United States Immigration Service for deportation. His full sentence expired Dec. 6, 1932.

In March, 1931, the Chief Patrol Inspector at El Paso, Texas, arrested the man under the name of Romano Trotsky on the charge of an illegal operation. He appears to have been sentenced to fifteen months' imprisonment, but was released at El Paso on his own recognizance pending orders for deportation, and was to report daily to the inspector in charge at El Paso.

In August, 1932, under the name of R. N. Trotzky, he was arrested by the sheriff at Twin Falls, Idaho, on the charge of practicing medicine and surgery without a license. He was sentenced to four months' imprisonment and to pay a fine of \$100.

THE A. M. A. RECORD

So much for the federal record. The first information that is to be found on this man in the files of the Bureau of Investigation of the American Medical Association is in a letter

received in August, 1925, from a lay correspondent who wanted to know whether a man going by the name of Romano Douglas Anthony was a licensed physician. The correspondent stated that this man was practicing medicine at 225 Walker Building, Minneapolis, but that inquiries at the State Board of Medical Examiners of Minnesota and the Department of Registration and Education of Illinois failed to show that he was licensed in either state. We notified our correspondent that no man of this name, so far as the complete records of the American Medical Association showed, was a graduate of any reputable medical school or licensed to practice anywhere in the country.

The next report came in a letter from Dr. W. Albert Cook of Tulsa, Okla., who wrote that a "Dr. Robert Trosky" had applied to him for a position as an assistant, claiming to be a graduate of the University of Petrograd and to have done hospital work in Minneapolis and Albany. The man mysteriously disappeared a few days before Dr. Cook wrote, and was said to have left numerous bad checks in the hands of business men. Dr. Cook was notified that no man of this name was on record as a graduate or a licentiate, and an item was published in the "Oklahoma Medical News" of THE JOURNAL, July 30, 1927.

Later in the same year—in December, 1927—a letter was received from Dr. Howard S. Browne of Ponca City, Okla., asking THE JOURNAL to publish a warning about a man who had gone under various names but always as a doctor—Romano Makorski Lukangok, *alias* Lukan, *alias* McCormick, *alias* Bob Anthony. Dr. Browne described the man as a Russian who had come to Ponca City about three weeks previously, calling himself Dr. Bob Anthony and stating that he was planning to locate in Ponca City. He gave a story of having formerly been with the Ford Motor Company Hospital and the Manhattan Eye and Ear Hospital, and claimed to be a graduate of a Russian medical school. After staying in Ponca City for about three weeks and getting into the graces of a few well-known people, he was reported to have left town between days with a Cadillac touring car that didn't belong to him, and leaving behind him, as the doctor put it, "several hot checks and unpaid bills about the city." THE JOURNAL published a warning again in the "Oklahoma Medical News" in the issue of Dec. 17, 1927.

Publication of this news item in THE JOURNAL brought a letter from Dr. R. H. Graham of Wichita Falls, Texas, stating that he had just read the item and recognized the "Dr. Bob Anthony" as an impostor who had been in Wichita Falls for about three months during the summer of 1927 where he had run about the same course that he had in Ponca City, writing worthless checks, owing bills, and leaving town with a mortgaged car.

After driving this car—a Cadillac—to Louisiana and other points, he was unwise enough to go to Austin, Texas. On Feb. 2, 1928, city detectives R. D. Thorp and Rex Fowler of Austin arrested Trotsky—who was still going under the name "Dr. Bob Lukan"—in possession of the stolen car, and he was charged with violation of the National Motor Vehicle Theft Act. He was held under \$5,000 bond, and on June 13 of that year pleaded guilty and was sentenced to serve one year and a day in the United States Penitentiary at Leavenworth, Kan. It was while he was in Austin that the police department of that city took the photograph that is reproduced with this article.

After getting out of the United States Penitentiary, he was arrested on July 25, 1929, in San Angelo, Texas, but was released. On Sept. 18, 1929, he was again arrested in El Paso, Texas, charged with theft. The charge was *nolle prossed* and he was turned over to the United States authorities. They apparently turned him over to the authorities in Minnesota, where he was wanted on the charge of abortion. He was sentenced, as has already been stated, to the Minnesota State Prison, being discharged in March, 1931, when he was again taken into custody by the United States immigration authorities for deportation.

The next that the Bureau of Investigation of the American Medical Association heard of this man was in August, 1932, from an attorney in Flagstaff, Ariz., who stated that R. N. Trotzky had been charged with murder as the result of the death of a patient following an illegal operation, and that he (the attorney)

had been asked to take the case, but before doing so had wanted to know something of the man's record. The attorney was furnished with such records as the Bureau of Investigation had up to that time. As a result, the attorney declined to represent Trotsky. However, whoever did represent him got an acquittal.

In February, 1933, a letter was received from Dr. D. F. Harbridge, Secretary of the Arizona State Medical Association, enclosing a notice from Dr. J. W. Bazell, Secretary of the Navajo-Apache County Medical Society, relative to Trotsky. The county society reported that the man had attempted to practice medicine in Winslow, having arrived in that city in July, 1931, and representing that he was a graduate of European medical schools, had a license to practice in Arizona, and was a specialist in eye, ear, nose and throat surgery. The local men soon discovered that Trotsky had no license or credentials or diploma, and the county attorney of Navajo County filed a criminal complaint against Trotsky, charging him with practicing medicine without a license. He was tried and convicted. Another complaint charging the same crime was filed against him, and while out on bond pending the hearing on the second charge, he skipped from Winslow to Flagstaff. Dr. Bazell stated further that it was understood that Trotsky at the time that this letter was written (February, 1933) was lecturing from Station KSL at Salt Lake City, Utah, where he was posing as an eye, ear, nose and throat specialist.

The next heard about Trotsky was in a letter from Dr. J. N. Davis, Secretary of the South Side Medical Society, Kimberly,



R. N. Trotsky, alias Bob Anthony, alias Ray Anthony, alias Bob Lukan, alias Romano Trotsky. This man is a deportable alien who has persistently violated the medical practice act of various states, has served time in the Minnesota State Prison for abortion, went to the federal penitentiary at Leavenworth for a year and a day for violation of the Dyer Act, and has been charged with forgery and other forms of swindling.

Idaho, who wrote for any information the Bureau of Investigation might have on a "Dr. R. N. Trotsky," who, Dr. Davis stated, was now located in Twin Falls, Idaho, where he was posing as an eye, ear, nose and throat specialist. Dr. Davis said that Trotsky claimed to be a cousin of Leon Trotsky and also claimed "to have practiced at Leavenworth, Kan." The latter claim indicates that Trotsky has some sense of humor, when one remembers the year and a day that this swindler spent in the United States Penitentiary in that city.

Dr. Davis was sent all the information that the Bureau of Investigation had on Trotsky. The Twin Falls authorities acted and on August 21, 1933, under the name of Robert N. Trotsky, the impostor pleaded guilty to a violation of the medical practice act and was sentenced to serve a four months' term in the county jail and pay a fine of \$100. Judge W. A. Babcock, who sentenced Trotsky, said in open court:

"I am sorry it is impossible under the law dealing with this offense to remove the defendant farther from society because of his past record as a menace to society. Reports from the United States department of justice show that he has been convicted and served time at least twice for other and more serious crimes."

TROTSKY'S LATEST

This brings the Bureau of Investigation's record of Trotsky down to the present. On September 21, this year, the Santa Cruz County Medical Society at Nogales, Ariz., wrote to the Bureau of Investigation for information regarding Trotsky. The society was immediately sent by telegraph and air-mail

such information as was available, and was asked for details regarding Trotsky's activities in Nogales.

Incidentally, it is worth recording at this point that in the fall of 1926 Trotsky turned up at Phoenix, Ariz., under the name of Dr. Lukan. So skillfully did he play his cards there that a local hospital took him on to its staff as a paid intern. He was in Phoenix nearly six months, leaving with a Cadillac car to which he did not have a clear title.

It appears that Trotsky came to Nogales about August 1. Learning that the man was an illegal entrant into this country, as well as an illegal practitioner of medicine, the Santa Cruz County Medical Society, through its president and secretary, confronted Trotsky and the local physician with whom he was associated with these facts on September 10.

On September 14 the county attorney addressed a letter to Trotsky, sending copies thereof to the physician with whom he was associated and to the president of the county medical society, in which Trotsky was told to refrain from practicing medicine until he was properly licensed to do so, and further informing him that by practicing medicine in the office of the physician already referred to, he was jeopardizing that man's license. Trotsky apparently paid no attention to the letter, but continued to practice. On September 21 the county society received a letter from Dr. J. H. Patterson, Secretary of the Arizona State Board, stating that Trotsky did not have an Arizona state license nor had he ever made an application for a license (although Trotsky had declared that such an application had been made). Dr. Patterson further notified the county society that Trotsky had served at least one term in prison, and he advised the society to have the county attorney prosecute Trotsky without delay.

As a result, a complaint was drawn up and a warrant issued for Trotsky's arrest. He was arrested September 21 and released on bond. Since that time he has been arrested twice more on similar charges, and once for disturbing the peace. On the latter charge Trotsky pleaded guilty and was sentenced to serve five days in jail, which he served. On one of the former charges he was found guilty and sentenced to sixty days in jail. A verbal notice of appeal was given and bond was placed at \$300. The court case at Nogales was briefly described in a Tucson paper in part as follows:

"NOGALES, ARIZ., Nov. 5.—(Special).—Dr. R. M. Trotsky of Nogales, a nephew of Leon Trotsky, former Russian Red leader and himself a refugee from the Soviet, was found guilty in a local court of practicing medicine without a license from the state board of medical examiners.

"The prosecution was conducted by Cecil Edwards, a deputy attorney general from Phoenix and three local attorneys, E. R. Thurman, James V. Robins and Nasib Karam. Dr. J. H. Patterson, state secretary of the state board of medical examiners, also aided in the prosecution. Duane Bird represented Trotsky and immediately filed notice of appeal. . . .

"Evidence was introduced by the Santa Cruz Medical society and the attorney general's office at the trial that Trotsky had been convicted of several felonies involving malpractice in other states and Dr. Patterson testified that Trotsky had never applied for a license to the state board at Phoenix. . . .

"Judge Charles E. Hardy sentenced Dr. Trotsky to 60 days in the county jail after finding him guilty of the charges."

Following the trial, and while he was out on bail, Trotsky appears to have staged a somewhat theatrical episode, presumably for the purpose of gaining sympathy. On November 16 he appeared at the home of a man who lived about two miles north of Nogales and asked for aid, saying that he had been shot in the arm. He was said to be suffering from a wound in the fleshy part of the upper left arm, and he was taken to the office of a local physician for treatment. Trotsky's story, according to the local paper, was that he "had been taken for a ride by a pair of strangers." The newspaper report of the case states that powder burns surrounded the bullet holes, showing that the shot had been fired at close range. The same paper—*Nogales International*—stated that Trotsky is said to have declared that he did not know the exact spot where the shooting occurred! The paper added:

"Dr. Trotsky has been in the limelight here considerably recently as a result of having been arrested for practicing medicine without a license and disturbing the peace. He was found guilty of the first charge and pleaded guilty to the latter. On the first charge he was given a 60-day jail sentence and on the latter a 5-day jail sentence."

Thus the case stands. We understand that appeals have been made to Senators Carl Hayden and Henry F. Ashurst and Congresswoman Isabella Greenway to learn whether something cannot be done to expedite the deportation of Trotsky. The man's record is a disgrace.

Undoubtedly the secret of this criminal's ability to get away with crimes from petty swindling to abortion lies in the fact that he is good-looking, makes a good appearance, has brains, and, more and above all, colossal assurance and impudence.

Correspondence

TANNIC ACID TREATMENT OF BURNS

To the Editor:—In *THE JOURNAL*, November 17, page 1556, Dr. J. A. Hagemann refers to a suggestion regarding the use of tannic acid in burns made in 1890. In discussions of the use of tannic acid in the treatment of burns, it is usual to credit its use to a comparatively recent recommendation. An early publication which advocated its use seems to have been overlooked.

In April 1871, Dr. W. H. Searles of Warsaw, Wis., published a short article entitled "Tea-Leaves as an Application to Burns and Scalds." The article appeared in the *Chicago Medical Examiner*, April 1871, page 207. This was the journal edited by Dr. N. S. Davis Sr. As the article is brief, it may be quoted entire:

Some few years since I accidentally found that a poultice of tea-leaves, applied to burns and scalds, afforded immediate relief, and I determined to give it a more extensive trial when opportunity should present, and which soon occurred.

It was in a case of a child 14 months old. Upon examination I found the entire anterior portion of the body, arms and legs blistered and deeply burned from a kettle of hot water which the child had upset upon itself. The case, to say the least, was unfavorable for the success of any remedy.

I prepared a large poultice, softening the leaves with hot water, and, while yet quite warm, applied it upon cotton-wool, over the entire burned surface.

Almost like magic, the sufferings abated, and, without the use of any other anodyne, the child soon fell into a quiet sleep.

In a few hours I removed the application, and reapplied where it was necessary. I found the parts discolored and apparently tanned. The acute sensibility and tenderness had nearly disappeared, and the little patient passed through the second and third stages under far more favorable circumstances (symptoms) than was at first anticipated, making a recovery in about two weeks. Since then, on several occasions, I have had reason to commend tea-leaves, till now I have come to prefer it above all other remedies in the first stage of burns and scalds. I think it must recommend itself to the profession, not only on account of its intrinsic worth, but also by reason of its great convenience, being so readily obtained.

I am not aware that any mention has been made thus far of this article in this connection, and I hope that others will find it as useful in their hands as the writer has.

Dr. W. H. Searles graduated from the Chicago Medical College (later Medical Department of Northwestern University) in 1865. He was one of the first specialists (eye, ear, nose and throat) to practice in Wisconsin. He died in 1914, aged 75 years.

GEORGE H. WEAVER, M.D., Chicago.

PALILALIA IN CONNECTION WITH HABIT SPASM

To the Editor:—Your editorial of December 1 interested me very much. For many years I have occasionally observed palilalia in children at the age of puberty, in boys much more frequently than in girls. The histories always revealed that this condition was preceded by "habit spasm" or tic of several weeks or months duration. The word-repetition is generally explosive in character and offensive in meaning (coprolalia), the expressions quite frequently relating to sex. The cases are usually of long duration and best managed away from home, preferably in a private sanatorium for nerve disorders.

HERMAN B. SHEFFIELD, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TUBERCULOSIS IN NURSES

To the Editor:—I am told that it has been the experience at many tuberculosis hospitals that the nurses who at the start of their service at the hospital have negative tuberculin tests are most likely to acquire active tuberculosis. Please give references in the literature. Can you give me the names of any hospitals which have adopted a rule that only nurses with positive tuberculin tests be accepted? Please omit name.

M.D., New York.

ANSWER.—If no differentiation is made in the types of disease developed, the answer must be yes, since the first infection type of tuberculosis is the only possible way that a negative reactor can respond to an initial exposure. The proportion of negative reactors who are exposed and who develop the first infection type of tuberculosis has been cited in numerous references in the literature. There is no available study covering a sufficiently long period to encompass the entire course of the disease which contrasts the outcome of positive and negative reactors on entrance to schools of nursing.

Heimbeck of Oslo (*Med. Klin.* 29:1731 [Dec. 27] 1933) found that approximately 50 per cent of the girls who entered the Ullevål Hospital as probationers reacted negatively to the tuberculin test. Before they graduated, however, 100 per cent reacted positively, thus showing that in line of duty tubercle bacilli had been transmitted to their bodies and had set up tubercle formation. Thus, the first infection type of tuberculosis had been produced in the body of each girl who was previously negative to the tuberculin test. A careful search for the focus revealed it in the lung in some cases, in most of which it had the characteristics of the first infection type of disease and caused no symptoms. In a few, however, a reinfection type of disease, such as pleurisy with effusion, meningitis and pulmonary tuberculosis occurred. In other cases the only manifestation of the first infection type of tuberculosis, aside from the positive tuberculin reaction, was erythema nodosum. In the majority the location of the first infection type of lesion was not determined. Thus, Heimbeck observed these negative reactors as they first became infected with tubercle bacilli and recorded the manifestations of disease, which he was carefully seeking. The group of girls who entered his institution positive to the tuberculin test had already gone through these manifestations in the development of their first infection type of disease before he saw them.

Geer showed that from 65 to 70 per cent of the probationers in the Ancker Hospital in St. Paul had not been contaminated with tubercle bacilli, as evidenced by the negative tuberculin test on entrance, but all reacted positively to the test after having taken a tuberculosis service and before graduation. In approximately 5 per cent of these girls, pleurisy with effusion made its appearance or parenchymal lesions were demonstrated.

Myers, Diehl and Lees (*THE JOURNAL*, June 23, 1934, p. 2086) have found that the incidence of positive tuberculin reactors among probationers in hospitals in Minneapolis varies from approximately 14 to 40 per cent. In those hospitals with special tuberculosis services which the students are required to take, approximately 100 per cent react positively to the test during the senior year. In a few of their cases, the first infection type of lesion has been demonstrated by the x-ray film and in a small percentage pleurisy with effusion, erythema nodosum and other conditions have been present. In the majority of the students who became positive to the tuberculin test, no phase of the examination is sufficiently refined to detect the exact location of the lesion to date. In other schools, where tuberculosis services did not exist but where the occasional case of tuberculosis was admitted, they have shown that there is a definite increase in the incidence of positive reactors among the student nurses before graduation but that it is by no means as marked as in the schools with tuberculosis services. They contrast the results in schools of nursing with those in a school of education, where they found approximately 23 per cent of the entering students reacting positively to the tuberculin test, whereas after four years in school there had been an increase of only 4 per cent in the positive reactors.

Shipman and Davis (*Am. Rev. Tuberc.* 27:474 [May] 1933), after nearly a decade of observations on tuberculosis among students of nursing, found that between 6 and 7 per cent of

the students in the University of California Hospital developed clinical tuberculosis during training, while an additional 4 per cent had developed the disease between graduation and the time the study was reported. They found that the majority of nurses who reacted negatively to the tuberculin test as probationers remained negative throughout their training. This they believed was due to the fact that there is very little tuberculosis among the patients in the University of California Hospital.

Ross (*Canad. M. A. J.* 22:347 [March] 1930) has shown that during their training or within one year after graduation about 6 per cent of the nurses in Manitoba fall ill with tuberculosis. This, he found, was far beyond the proportion in which women of the province in general, or any other class of women, fall ill from tuberculosis.

Jones (*Tubercle* 15:59 [Nov.] 1933) made a study of tuberculosis among nurses in a New Zealand hospital. He found that approximately 3 per cent of the girls in training fall ill from tuberculosis each year. He then compared this incidence with that of girls from teacher training colleges who did not come in contact with tuberculous patients. Among them he found but little tuberculosis. He concluded that girls of this age (19 to 25) remain in excellent health while they are subjected only to healthful conditions but that when they are exposed to tuberculous patients all become positive reactors to tuberculin and 3 per cent each year develop clinical tuberculosis.

Ferguson (Special Bulletin of the Saskatchewan Anti-Tuberculosis League, 1934) has shown that in Saskatchewan the incidence of tuberculosis among nurses in training is twelve times the incidence of the disease in the general population and is eight times the incidence found among normal school students, mostly females and of approximately the same age.

In interpreting the results of various authors who have studied tuberculosis among nurses, one must realize that two types of tuberculosis develop in the human body, the first infection and the reinfection type. The former begins to develop on tissues that are not allergic to tuberculin. The natural defense mechanism of the body brings it under control and has it so encapsulated before allergy can be detected that it does little or no harm in most cases. It is so benign that most persons who have it do not know when it developed. This is the type of tuberculosis that formerly was prevalent among children; but through antituberculosis measures many children now escape it and reach young adult life free from contamination with tubercle bacilli. If they later come in contact with tubercle bacilli, as many students of nursing do, and are not adequately protected against exposure to patients suffering from tuberculosis, they take tubercle bacilli into their bodies. These bacilli find lodgment on tissues that are not allergic and there the tissues react as to a foreign body, in short, the reaction is not specific, and the result is not different than it would have been had their first infection occurred in childhood. In a fair percentage of these cases whether in infancy, childhood or young adult life soon after infection occurs and when allergy is high, erythema nodosum develops. While not all cases of erythema nodosum are due to tuberculosis, careful observers are of the opinion that it is often an allergic manifestation and should always lead one to seek at least the first infection type of tuberculosis. In the majority of these cases there is no external manifestation aside from the positive tuberculin reaction.

In the case of the reinfection type of tuberculosis, the story is quite different. Here tubercle bacilli find lodgment on allergic tissues and a specific reaction follows. This consists of acute inflammation, and if the bacilli are not brought under control in a short time there is necrosis of the tissue as well as stimulation of fixed tissue cells, resulting in fibrosis. This is what is designated "clinical tuberculosis." It is the type that results in most of the illness and death from tuberculosis in the human family. Obviously, it can develop only in the bodies of persons whose tissues have previously become allergic to tuberculin through the presence of the first infection type of tuberculosis. This type of disease may develop soon after the first infection type renders the tissues allergic or at any subsequent time in life, depending on whether tubercle bacilli are taken into the body from outside sources or whether tubercle bacilli are set free from the foci of first infection already present. In a small number of nurses who become infected for the first time, bacilli are carried to the visceral pleura soon after the first infection occurs, and there on allergic tissue they produce pleurisy with effusion. Likewise from a first infection focus located in or near the central nervous system tubercle bacilli are carried into the ventricles of the brain or directly into the subarachnoid space and on this allergic tissue

they produce diffuse tuberculous meningitis. Again the regional lymph nodes, which drain the first infection focus and become a part of the picture of the first infection type of disease, may rupture into a blood vessel and miliary disease results. And so on with numerous other possibilities, once bacilli are lodged in the body. It is possible that the danger of rupture of capsules of primary foci and the rupture of regional lymph nodes involved with tuberculosis is greater soon after the lesions have developed than in subsequent years, since in infancy and early childhood, in places where large numbers of infants are contaminated, tuberculous meningitis and miliary tuberculosis are prevalent and in recently infected students of nursing, pleurisy with effusion is quite common. However, Sweany on the basis of pathologic examinations (*Am. Rev. Tuberc.* 27:559 [June] 1933) has suggested that nature may defeat her purpose in that she first encapsulates tubercle bacilli and in subsequent years resorbs the capsule, thus setting free tubercle bacilli. Therefore there is both an immediate and a remote danger from the first infection type of disease. Moreover, at all times there is the danger of tubercle bacilli from exogenous sources entering the body and finding lodgment on allergic tissues.

Thus, a large percentage of the cases of tuberculosis reported among students of nursing previously negative to the tuberculin test are only those of the first infection type of disease. In previous times they would not have been known to exist, but now with the tuberculin test and other phases of examination they are detected when no symptoms or physical signs are present. Even those who developed erythema nodosum probably as a result of a high degree of allergy would not have been diagnosed tuberculous, because it is only recently that the close association between this condition and the first infection type of tuberculosis has been generally recognized. A few of these students after developing the first infection type of disease and becoming allergic have developed chronic pulmonary tuberculosis, pleurisy with effusion, tuberculous meningitis, miliary tuberculosis, and other forms of the reinfection type of disease, just as one would expect. At the same time, wherever observations have been made among those who entered the institutions positive to the tuberculin test some of these have developed the reinfection clinical forms of the disease.

Unfortunately, after the first infection type of tuberculosis produces allergy there is no way of determining how much contamination enters the body from exogenous sources. It seems reasonable to believe, however, that if all the uncontaminated students become infected during their training, those who are already contaminated when they enter are reinfected. It is a well established fact that tubercle bacilli, whether from endogenous or exogenous sources, are rather quickly fixed in the tissues, where they lodge by inflammation or otherwise. Unlike many pathogenic micro-organisms, they are not destroyed but survive over long periods and often eventually produce clinical tuberculosis. Thus, a period of years may intervene between the reinfection and the development of illness, a period that is not covered by the duration of the course in nursing. Therefore, bacilli sown while in training may result in serious disease years after students have graduated. In fact, Shipman and Davis have found that most of the nurses who developed clinical tuberculosis during training were positive reactors on entrance to the school.

For any hospital to adopt the policy of admitting to its school of nursing only girls with positive tuberculin reactions, either consciously or unconsciously, would be to avoid the issue. Obviously, there would be no way to determine how much contamination that institution transmitted to its students. It would not be in a good position to solve its own problems.

No hospital is on record as having adopted the policy of admitting to its school of nursing only girls with positive tuberculin reactions. Moreover, if the tuberculosis control program continues, such a hospital would soon find itself without student nurses, as the incidence of positive reactors, already low, is definitely decreasing among girls of the student nurse age. Since there is no possible way of securing a tuberculosis-proof nurse, the other alternative of providing as nearly as possible a bacillus-free environment for the nurse must be accepted. The negative reactor comes to the hospital without any exposure to tuberculosis. She must go through the first infection stage of the disease after exposure before the development of clinical tuberculosis, while her positive reactor classmate has only one possible step left, that of the development of the reinfection and clinical type.

SUSPECTED CARDIOVASCULAR SYPHILIS

To the Editor—A man, aged 56, consulted me for loss of weight, tiredness and fatigue. He weighed 140 pounds (63.5 Kg.), from 172 pounds (78 Kg.) three years ago. He gave a history of syphilis at the age of 20, with oral treatment for five years, presumably iodide and mercury. He also had gonorrhea. Physical examination is entirely negative except for an apical systolic murmur with intermittent drop beats and a murmur at the aortic area. The blood pressure is 165 systolic, 90 diastolic. The prostate is moderately enlarged. The urine is normal. There is no apparent sign of central nervous system involvement. He has been married, divorced, and has one child. I should like to know whether or not to begin treatment. He seems to have lived fairly successfully with his syphilis for thirty five years, which apparently involves only the cardiovascular system. If treatment is indicated, what is the best course? What is the probable infectiousness of the man? Please omit name.

M D, California.

ANSWER—From the information supplied, it is quite impossible to make the diagnosis of cardiovascular syphilis or, indeed, to be sure that the patient has syphilis. Serologic observations in the blood and spinal fluid are not supplied. An apical systolic murmur is not characteristic of cardiovascular syphilis except so far as it may be due either to relative mitral insufficiency or to the transmittal of an aortic systolic murmur, nor are ventricular extrasystoles more frequent in cardiovascular syphilis than in any other type of heart disease. The timing of the aortic murmur in this patient, that is, whether systolic or diastolic, is not stated, nor are details given which might permit the differentiation between arteriosclerotic and syphilitic aortic regurgitation, if the latter valvular defect is actually present. Before treatment is undertaken this patient should have a blood Wassermann test checked by flocculation tests, an examination of the spinal fluid, including cell count, protein estimation, quantitatively titered Wassermann test and colloidal gold, mastic or benzon tests, carried out in a reliable laboratory, and a teleroentgenographic and fluoroscopic examination of the cardiovascular stripe, to measure the aortic width and to rule out the possible presence of an aneurysm.

The blood Wassermann reaction is positive in from 95 to 98 per cent of all patients with untreated cardiovascular syphilis.

If further study of the case indicates that cardiovascular syphilis is the correct diagnosis, the patient should be treated. His treatment should be carried out in accordance with the principles and drugs given in chapter 21 of the monograph "The Modern Treatment of Syphilis," by Joseph Earle Moore, or in chapter 20 of the second edition of "Modern Clinical Syphilology," by Stokes.

This patient is not infectious in any of the ordinary contacts of life, the only possibility of infectiousness (and this is remote) lying in the transmission of the disease by seminal infection.

HYPERTHYROIDISM IN PREGNANCY

To the Editor—B G., aged 24, became pregnant. She was a primipara with no previous pregnancies or abortions. The pregnancy continued normally until the eighth month, when an attack of tachycardia developed. The tachycardia apparently was relieved by colonic flushing and the patient again appeared normal as to bowel movements, blood pressure and urinalysis. Two weeks later there was a rise in blood pressure from 118/60 to 150/72, and a four plus albuminuria. The pulse at this time averaged 90 per minute. A gain of 45 pounds (20 Kg.) had been accomplished during pregnancy. Preeclamptic treatment had been instituted without results. Therefore, after consultation it was decided that a cesarean section be performed, and a healthy male child weighing 8 pounds (3,628 Gm.) was delivered. Following delivery the mother's condition seemed normal except for a fever, which persists and varies from 98.8 to 102.6 F. accompanied by a corresponding tachycardia. After numerous careful physical examinations, I have been unable to elicit anything except a faint mitral blow. The pelvis is normal. The baby is 4 weeks old. Treatment at present consists of one tablet of digifoline every four hours, alcohol sponge baths, a balanced nutritious diet and rest in bed. Any suggestions as to treatment or diagnosis will be appreciated. Please omit name.

M D, Chicago.

ANSWER—Most of the symptoms in this case are highly suggestive of hyperthyroidism. When tachycardia develops during pregnancy, especially if it is associated with an elevation of the blood pressure and other symptoms, an aberration in thyroid function should be considered. Usually these symptoms can be relieved by the administration of compound solution of iodine, five drops three times a day for one week, repeated for another week after an interval of seven days. Should there be a recurrence of the symptoms, the solution should again be prescribed. The pronounced albuminuria and the excessive gain in weight are indications of toxemia but in many if not most cases of toxemia there is an associated disturbance in the function of the thyroid gland. The high fever is most likely not due to the thyroid unless there is an acute thyroiditis, but this condition would present manifest symptoms. At least one reading of the basal metabolic rate should be taken immediately. If the rate is high, appropriate treatment

should be instituted. If the mitral blow is present now and was not present during pregnancy, this fact and persistent fever should make one think of an endocarditis. Some of the symptoms, such as albuminuria, fluid retention and elevation of blood pressure, may be due to an acute nephritis. Therefore the urine should be studied microscopically.

VAGINAL BLEEDING IN NEW BORN

To the Editor—One is not apt to be too keenly interested in certain conditions until it strikes home. Heretofore I have paid no attention to vaginal bleeding in the new born. I consulted several pediatricians, who gave congruous advice, viz., to ascertain the bleeding and coagulating times and unhesitatingly to administer subcutaneously or intramuscularly 20 cc of parental whole blood. This led to further inquiry among nurses in charge of maternity wards and those of many years' experience as well as mothers. From them I learned that the bleeding starts usually on the second day, lasting from three to eight days. The amount is from a stain to a streak or a clot or several clots on the diaper. It is dark and usually mixed with mucus. The nurses say that the baby is menstruating and do not call the attention of the physician to it. There were no other abnormal signs in the cases recalled by the nurses. In the recent four cases that I had, traumatism was not a factor. The deliveries were easy, occurring in a secundipara, two tertiparas and a quadripara. There was no history of bleeders. Two of these four were consanguineous marriages (first cousins). Please discuss etiology and also when treatment is indicated. Kindly omit name.

M D, New York.

ANSWER—The type of bleeding from the vagina described can be demonstrated to arise from the uterus by vaginal examination with an ear speculum. The character of the discharge is rarely free bleeding but rather a more or less intimate admixture with mucus. It usually manifests itself on the sixth or seventh day, occasionally the fourth or fifth, and ordinarily lasts one or two days, rarely over three or four. The uterus in these cases undergoes hyperemia and subepithelial hemorrhages similar to the condition preceding usual menstruation. The ovaries show no sign of function. Within three weeks the uterine changes undergo regression and the organ becomes smaller. A distinction should be made between this occurrence and "precocious menstruation," which occurs later but reappears periodically. The bleeding in new-born infants is due to some type of hormone. It may be present in the pregnant woman's circulation, spilling over to the infant in adequate doses, or it may arise from the placenta, according to Halban. The appearance of "witch's milk" in the new-born also testifies to the presence of such hormones. More striking evidence is furnished by a phenomenon similar to the uterine changes in the female which occurs in the prostate of the male. Here, too, hyperemia, hemorrhage and secretion have been demonstrated, and transitory hematuria sometimes appears as a counterpart to the vaginal bleeding of the girls. Still further evidence of the hormone etiology is the frequency of edema of the penis and scrotum and enlargement of the testicle of the new born male when trauma and other conditions can be excluded. The condition itself requires no treatment, but other causes of vaginal bleeding must be excluded that may require attention, such as the hemorrhagic diathesis, sepsis, trauma and malignant conditions.

INFLAMMATION OF PROSTATE AFTER GONORRHEA

To the Editor—A man, aged 26, contracted gonorrhea about three years ago. The first day of discharge he visited a physician, who treated him by advising the use of a syringe daily of silver nitrate, together with methenamine internally. He received no massages or soundings. After seven weeks he omitted all treatment, because the discharge had disappeared. For six months he used oil of sandal, until pain in the perineum appeared, which, although not constant, troubled him. He also states that with each bowel movement there was a marked discharge of a thick mucoid substance from the penis. He visited another physician at this time, who said that the smear showed no gonococci. For seven weeks massage was done twice weekly and a sound passed once weekly. The discharge lessened, as well as the severity of the pain. After three months without treatment he began to have pain in the perineum, and a chronic discharge following each bowel movement. At present he is receiving massage twice weekly, with a silver nitrate injection, and washing out of the bladder once weekly, but the pain still continues. I would be thankful for further advice in this case.

M D, Rhode Island.

ANSWER—Any treatment outlined for this patient should depend on further studies, but from the available history certain diagnostic possibilities present themselves. The persistence of perineal pain is strongly suggestive of infection involving the prostate and seminal vesicles, and it is only by examination of the prostatovesicular fluids on repeated occasions that this may be determined. Calibration of the urethral canal should likewise be carried out to make known urethral strictures, should they exist. Should these studies reveal no abnormality, one's attention is drawn to a possible presence of a

verumontanitis, which is occasionally encountered and may give rise to obscure but exceedingly annoying pain.

Treatment if directed toward an existing prostatovesiculitis should consist of weekly massage followed by the through and through irrigation of 1:4,000 potassium permanganate solution or 5 per cent silvol solution, depending on the degree of infection as evidenced by the character of the urine. Progressive dilation of the urethra followed by one of the foregoing solutions is required should a stricture be demonstrated. If reasonable evidence of a verumontanitis exists, gratifying results frequently follow the use of massage and one of the dehydrating agents, such as 5 per cent sulphonated bitumen in glycerin, which should be instilled into the posterior urethra by means of a Guyon or an ordinary small rubber catheter at weekly intervals.

The importance of a urethral discharge appearing with each bowel movement should not be overestimated. The mechanical factors operating during defecation may readily result in the expression of normal prostatic fluid if the fecal material is bulky and hard. It is well to note in this case that with treatment so prolonged and varied a neurotic element may enter into the patient's subjective symptoms.

DELAYED POST-TONSILLECTOMY HEMORRHAGE

To the Editor:—Can you tell me just what takes place in delayed post-tonsillectomy bleeding? In my experience this has been a very annoying complication and I have been at a loss to determine why it should occur. I encounter it most frequently in children that are normal in every respect, that have a normal bleeding and clotting time, a very slight bleeding at the time of the operation, and without evidence of any post-operative infection. This bleeding usually starts about the seventh post-operative day and is so slight that it is recognized only when the patient vomits dark red blood. A bluish dark clot is found filling one tonsil fossa, and until this is removed the bleeding recurs at intervals within a few hours to one or two days. Wiping out the clot stops the bleeding and I have never found the use of any hemostatic to be of any value. I have never felt that infection played any part in the majority of these accidents. Is it probable that there is some enzyme in the saliva that plays some part in this delayed bleeding? Rarely do these patients bleed extensively at the time of the operation and I have never seen a fatal accident. In my past experiences it has been the most disturbing part of a tonsillectomy, as I have found it impossible to predict or prevent. I would appreciate any information that you might have on this subject.

M.D., Kansas City.

ANSWER:—Even though no definite signs of infection of the tonsil fossa can be seen, the bleeding that occurs from four to ten days after operation is usually due to sloughing of a small portion of the wound and the opening thereby of a small vessel. The whole condition probably results from infection of the wound by secretions in the mouth or throat. Trauma in the way of eating substances that have sharp edges, such as nuts, or undue exercise, may cause bleeding.

We do not know of any data regarding the action of any enzyme in the saliva itself that causes changes in the wound surface resulting in bleeding. It is possible that at times the use of catgut for ligatures may cause this delayed bleeding if the catgut is not promptly absorbed. When plain, fine catgut is used, the ligature usually opens within twenty-four to thirty-six hours and the catgut disappears. If, by chance, chromic catgut is used, the absorption will be greatly delayed and the ligature may act as a foreign body, producing inflammatory reaction in the tissue.

It is quite true that the delayed bleeding often occurs in cases in which the tonsils are smoothly removed and at the time of operation there is only slight bleeding. We are unaware of any procedure that can be used at the time of operation that will prevent late postoperative bleeding.

HAZARDS OF ALUM AND BORAX INDUSTRY

To the Editor:—Can you give me any information or tell me where I could find any on occupational hazards of workers in alum and borax plants? Is there any evidence especially from postmortem examinations that long exposure to dust from such plants is apt to cause bodily changes such as pulmonary fibrosis or polycythemia? Please omit name.

M.D., California.

ANSWER:—Belief that borax and alum (aluminum and potassium sulphate) possess industrial toxicity is chiefly predicated on knowledge of the action of these substances after accidental ingestion. During the last ten years a number of fatalities have arisen from intake of these chemicals mistaken for saline cathartics. The cases from borax outnumber those from alum. Borax produces a prompt salivation, vomiting, abdominal colic, diarrhea, delirium, cyanosis, and edema of the respiratory tract, culminating in early collapse. If the amount ingested lies below that producing prompt death, there may arise, in addition to some of the foregoing, hematuria, albuminuria, nephritis, cystitis and so on. The toxic action of alum after ingestion centers

about gastro-intestinal inflammation. For years the use of alum-containing baking powders has been held up to criticism.

In industry, alum may be accepted as a source of dermatitis, particularly when the exposure provided is to alum solutions. The dermatitis produced is characterized by maceration of the skin. The dust from both borax and alum inhaled in large amounts over long periods will produce a low grade fibrosis connected with a bronchiolitis. The roentgenogram will not reveal a characteristic picture such as is associated with silicosis but will resemble the hazy films sometimes found in workers long exposed to mineral acid vapors or alkali dusts. These statements are not based on actual observations but on the current concept that all dusts are in some measure harmful to the lung tissues and in time will stimulate the formation of more fibrosis than normal.

BURNING OF TONGUE AND CANKER SORES

To the Editor:—A widow, aged 45, American, complains of burning and painful tongue of about four weeks' duration. Original examination disclosed an irregular grayish area about 15 by 5 mm. in size on each side of the tongue at about the area of the molars. Although there is no infiltration present, I have diagnosed these to be leukoplakia. In addition, the patient complains of some burning arising from several small fissures on the dorsum of the tongue near the tip. Physical examination is essentially negative, with the exception of a moderately acid reaction in the mouth and a faint albuminuria. The patient has been referred to a dentist, who removed any dental irritations present. There has been some subjective improvement on alkaline therapy, which changed the salivary reaction to the alkaline side and the use of one-half strength alkaline aromatic solution twice daily. In the past few days I have noted a new feature; namely, a small ulcer about 2 to 3 mm. in diameter located just proximal to the left leukoplakia. May I have your suggestions as to diagnosis and treatment. Kindly omit name.

M.D., California.

ANSWER:—It is assumed, though not specifically stated, that there is no infiltration in connection with the small fissure mentioned. If this is true, the condition is probably a mild form of scrotal tongue, a congenital malformation. Burning sensations in connection with such fissures are most often neurotic. The small ulcer, if it has no infiltration of its border, is most probably a canker sore and should clear up after cauterization with a crystal of silver nitrate. Canker sores occur frequently from slight digestive disorders, sometimes apparently as a sensitization to some food. Some consider them a form of herpes simplex; but that has not been proved.

The treatment mentioned is excellent. Great care should be taken not to frighten the patient by discussing the possibility of cancer, unless it is necessary in order to obtain her cooperation. Many patients, particularly women, with this symptom complex are cancer phobes, and their fears should be allayed as much as possible, the physician assuming the responsibility, by frequent examinations, of detecting any tendency to infiltration at its incipience, and giving prompt and energetic treatment.

TABETIC PAINS AFTER TREATMENT

To the Editor:—I am treating a case of syphilis. After each intravenous injection of arsenic the patient is all right for about five hours. He then gets a slight headache and within an hour is suffering from such excruciating pain in the right half of the face and forehead that it is necessary to give him morphine. This state of affairs usually lasts from thirty-six to forty-eight hours, during which time he will have had several hypodermic injections. Thereafter he is entirely comfortable until he is given another intravenous injection. On one occasion I gave him an intramuscular preparation of arsenic and that was followed by the worst attack of pain he had ever had. The amount of arsenic given does not seem to bear any relationship to the degree of pain. Salicylates, diathermy, and so on, are useless. He is not a morphine addict. Can you suggest any treatment whereby the patient can be adequately treated for his disease without having to go through such agony? He is also being given a bismuth compound intramuscularly, but this does not inconvenience him at all. Please omit name and address.

M.D., Ontario.

ANSWER:—Exacerbations of tabetic pains after intravenous or intramuscular injection of arsphenamine or its derivatives is a fact well known to all syphilologists. It is not known, however, whether this is due to direct toxic action on damaged nerve centers, circulatory disturbances in the central nervous system, or a toxic action on the liver, causing it to set free a histamine-like substance.

Tabetic pains may be temporarily increased by fever therapy, intraspinal therapy or acute or chronic infections as well as by arsphenamine. Tryparsamide does not cause such reactions. Moore mentions pain in the teeth and gums as part of a nitritoid crisis (Moore, J. E.: *Modern Treatment of Syphilis*, Springfield, Ill., and Baltimore, Charles C. Thomas, 1933, p. 76).

The patient should be studied further to discover any central nervous involvement, and further treatment should be governed by the results. Morphine is tabu. It does more harm than the

benefit that has been derived from the injection of the arsenical. No more arsphenamine should be given until the patient has been given a course of bismuth compounds. Then a small dose of neoarsphenamine may be tried and further injections given if it causes no disturbance.

TRAUMA TO SKULL AND OPHTHALMIC INFLAMMATION

To the Editor:—A man, aged 21, received a blow on the head by a falling jar, producing a temporal laceration. Twenty-four hours later an inflammation of the eye appeared on the same side, which in three days developed into an iridocyclitis. Roentgenograms were negative. A woman, aged 40, received an injury from a falling sign, which produced a laceration in the temporal region, and twenty-four hours later an inflammation of the eye appeared on the same side. Within a few days this developed into an acute iridocyclitis. Roentgenograms were negative. In neither of these cases was the patient unconscious, and all other physical observations were negative. Please advise if in your opinion there could be any causal relation, from a pathologic and medical standpoint. Please omit name.

M.D., California.

ANSWER.—It is difficult to understand what connection there could be with such trauma as described and an iritis unless there was some trauma, even a blunt one, to the eyeball. A blunt injury might have caused a thrombosis of the long posterior ciliary artery (producing clinically Wagemann's classic experiment on a rabbit's eye). The local hyperemia may have been caused from a blow and any bacteria that may have been in the blood stream may have appeared in the eye in greater numbers and lighted up an infection, which took the form of an iritis. Fracture of the bones of the orbit may have produced an injury leading to this condition. A detachment of the retina must be ruled out, as this condition is frequently followed by iritis, though rarely in less than six weeks. An injury to a branch of the fifth nerve, which supplies the cornea, might produce a keratitis or an ulcer, and an iritis may be secondary to that. The history does not mention any corneal involvement.

CARE OF TEETH IN PREGNANCY

To the Editor:—Will you please give me the latest theories regarding the protection of the mother's teeth during pregnancy: (1) any drug to be given; (2) any special articles in diet?

LEROY L. BELT, M.D., Marblehead, Ohio.

ANSWER.—It is important for every expectant mother to have her teeth examined and cleaned at least twice during her pregnancy. If the dentist finds defects that he can remedy, it is perfectly safe for him to correct the abnormalities. But he should not do more than is absolutely necessary. He may fill (using temporary fillings), clean and pull teeth but not make gold fillings, inlays or bridge work, which require a long time and which cause a good deal of discomfort.

In many pregnant women the teeth decay and loosen and in practically all of these women this abnormal process may be corrected by eating an abundance of calcium (chiefly in the form of milk), phosphorus (chiefly in the form of eggs), cod liver oil, halibut liver oil, viosterol, fresh fruits, vegetables, butter and whole grain cereals. These foods will help not only the mother's teeth but also the teeth of the unborn child. Likewise an abundance of sunshine is essential in order to enable the body to utilize the calcium and phosphorus that are eaten. The teeth should, of course, be carefully brushed at least twice a day and dental floss used to remove particles of food lodged between the teeth. If the gums have a tendency to bleed, they should be vigorously massaged with the fingers two or three times a day.

Many obstetricians prescribe as a routine the daily use of halibut liver oil with viosterol during the entire period of pregnancy. In addition, pregnant women are advised to drink a quart of milk a day in order to be certain that they secure enough calcium.

INJECTION TREATMENT OF HYDROCELE

To the Editor:—In *THE JOURNAL*, July 21, is an abstract on treatment of hydrocele from an article in the *Presse médicale*. Are the eighteen cases treated with Vendel's solution (double chlorhydrilactate of quinine and urea in glycerin) the first cases reported? If not, what further can you say about this treatment, favorable and unfavorable? Where can Vendel's solution (preferably ready to inject) be obtained? If this solution cannot be obtained, where can double chlorhydrilactate of quinine and urea be obtained? Please omit name.

M.D., New York.

ANSWER.—The injection treatment of hydrocele is by no means new. In the July 28 issue of *THE JOURNAL* a brief discussion of this topic can be found in *Queries and Minor Notes*. In the article quoted by the correspondent, the sclerosing substance is not 10 per cent quinine and ethyl carbamate as customarily used but 25 per cent quinine dihydrochlorlactate

in glycerin. The author does not offer any proof that this solution is superior to the aqueous solution of quinine, but it is possible that the dehydrating action of glycerin may add to the destructive effect on the lining of the sac and also retard absorption from the site of injection.

Attention must be called to the fact that 6 cc. of a 25 per cent solution of quinine, used by the author, represent 1.5 Gm. of quinine, which may produce toxic symptoms. The solution is not on the market in this country but can undoubtedly be procured through drug companies that import French products. As other sclerosing products, such as 5 per cent sodium morrhuate, are easily available and are nontoxic, the effort expended in procuring this solution would hardly be worth while. The best treatment of a hydrocele, except in special instances of debility or refusal of operation, is still surgical.

SYPHILIS IN A CHILD

To the Editor:—At the age of 5 months a child developed a rash. Wassermann tests on the entire family revealed positives in the mother and the child (the only one). The father was persistently negative even after several provocative examinations. Treatment of the child consisted of biweekly injections (intramuscular) for five months. The preparations used are unknown to me. The rash is gone and the child appears well. No repeated Wassermann test was done. My questions are these: If early congenital syphilis is to be treated like early acquired syphilis (Beckman), was this treatment, despite the apparent well being of the child, sufficient? Does the criterion of a minimum of one and one-half years of adequate treatment (Stokes, Cole, Moore, O'Leary, Wile, Parran, Vonderlehr and Usilton, *THE JOURNAL*, April 21) hold good here? In view of the undoubted difficulty of intravenous medication in an 11 months old child, would you suggest alternating courses of sulpharsphenamine (which can be given intramuscularly) and a bismuth preparation? Are there any other suggestions you could make concerning the management of this case? I am assuming that the mother, who received five months of biweekly intravenous and intramuscular treatments, was insufficiently treated.

M.D., New York.

ANSWER.—It is not clear from the inquiry whether the child in question is still serologically positive on the blood or not. This information in general is essential to a decision as to treatment. It is not intended that the treatment standard described in the paper by Stokes and his collaborators in *THE JOURNAL*, April 21, is to be applied arbitrarily to infants who develop eruptive manifestations of syphilis. Intramuscular medication with alternating courses of sulpharsphenamine and a bismuth compound would be satisfactory in a case of this sort, and the treatment should be carried through at least eighteen months. The reason for permitting the use of sulpharsphenamine here is the superior tolerance of the infant and young child for this preparation, which in general is not to be commended for adults. The serologic controls and observation through a period of many years apply to this case, and it should be emphasized that a spinal fluid examination with all four tests on which a diagnosis of neurosyphilis may depend should be performed at an early date. Juvenile dementia paralytica, if recognized by serologic criteria before degenerative changes have taken place, is apparently much more responsive to treatment by modern methods than has been generally thought.

PERSISTENT URETHRAL DISCHARGE AFTER GONORRHEA

To the Editor:—A white man, aged 32, contracted gonorrhea in 1928. He has been treated by several doctors since then, quite regularly. He received a fairly intensive course of treatment, consisting of irrigations, internal antiseptics, prostatic massage, sounds, vaccines and rest. His chief complaint is a persistent slight penile discharge, with passage of shreds in the urine. The patient, physically, is in good health. Smears fail to show gonococci but do show numerous leukocytes and gram-negative cocci, presumably staphylococci. The prostate is normal in size and not boggy or tender. The first glass of urine shows shreds, while the second glass is clear. A 26 F. catheter passes without difficulty. The Wassermann reaction is negative. Naturally, after six years of treatment, the patient is quite disgusted and I am writing to inquire as to any suggestions for further treatment you might make. Kindly omit name.

M.D., Pennsylvania.

ANSWER.—The persistence of urethral discharge in this patient may be due to several things. First, it is possible that the patient has a congenital stricture of the external urethral orifice and that this interferes with drainage, although a No. 26 French catheter passes without difficulty. Second, he may have granulations in the anterior urethra, which can be demonstrated readily with a diagnostic bougie.

If either of these conditions is present, the patient should have a meatotomy and thereafter sounds should be passed, beginning with a No. 26 and increasing one number a week.

It is possible that the discharge is due to the presence of infected glands, wherefore a urethroscopic examination is in order. If infected glands are found, they should be destroyed

through the endoscope with a high frequency current. If the entire anterior urethra is normal, one must look for persistent infection in the prostate gland or seminal vesicles or both. This can best be determined by massage of the prostate and vesicles and examination of the expressed fluid.

OPTIC ATROPHY IN SYPHILIS

To the Editor—I am treating a patient who has neurosyphilis and who has been through a period of almost complete loss of mentality. At present he has gained weight and strength under antisyphilitic treatment, which treatment now consists of hismith sodium iodide (intravenously) and liver extract. Optic atrophy with gradual loss of vision has developed. Is there any form of treatment that will in any way hold in check this form of optic degeneration? An ophthalmologist states that there is almost total loss of vision in the right eye, with about 50 per cent loss in the left eye.

GEORGE T. COLEMAN, M.D., Marshall, Texas

ANSWER—In the majority of cases the atrophy, such as here described, progresses to complete blindness despite therapeutic measures. In a few instances the course of the atrophy can be arrested, temporarily at least, by febrile therapy. Malarial inoculations have been used in some of these cases with satisfactory results reported, in other cases, shock producing foreign proteins, such as typhoid vaccine, have yielded satisfactory results, in a few, puncture of the lateral ventricle with injection of arsenaminized serum or corrosive mercuric chloride directly into the ventricle has arrested the progress. But none of these measures are certain of producing results, particularly if the atrophy is fairly well advanced.

PTOSIS OF UPPER EYELIDS

To the Editor—A man of about 50, without discoverable defects other than a deflected septum, consulted me because of ptosis of both upper lids. This condition had been coming on for two years and had got to the point where it interfered with his livelihood as a carpenter. There was no family history of anything of this nature, his general muscular system was excellent, and there was no way in which he could obtain compensation through malingering. The orbicularis oculi were apparently normal, and the patient was able to open his eyelids by using his own levators, and occasionally had to augment those muscles by wrinkling his forehead. I advised him to get lid supports to attach to the temples of his glasses after the manner devised by Dr. Burch of St. Paul and pictured in Atkinson's book on eye disease. If there is anything further you might have to advise, or any comments to make, I shall be glad to hear from you.

M.D., Kansas

ANSWER—Unless this patient has had a positive Wassermann reaction or a history of syphilis or has had influenza, it is difficult to know what may be the cause of the ptosis. Of course, a minute hemorrhage in that part of the third nucleus supplying the levator palpebrae might have occurred. For the latter two conditions no treatment is of avail. The patient should have a test for syphilis. If this is negative the Eversbusch operation (shortening the levator palpebrae) may be considered. Spectacles are of little value in such cases.

CARE OF SKIN AROUND FECAL FISTULA

To the Editor—One of the most bothersome things that physicians are called on to take care of is the treatment of the skin during the discharging period of a fecal fistula, whether from the large or the small intestine, but of course much more with the latter. There are few conditions, largely because they extend usually over a long period, that give the patient more discomfort and the physician and nurse more worry and anxiety than this condition.

I have had some personal experience with this, and as a result ran the gamut of all types of applications. I could find with but little benefit ointments, grease, powders, mucin paste, mercurochrome crust, methylene blue paint. Bronze powder is a good protector but has practically no effect after the erosion has taken place and is consequently of little use in the passageway from the skin to the intestine, which is particularly a source of a great deal of discomfort. During the course of these investigations, I happened to remark that it felt like a burn and my wife asked me why I did not treat it like a burn and use tannic acid, which I have been doing with more comfort than with all of the other treatments put together. This is used as a 10 per cent spray and allowed to dry, a heat lamp being used to accelerate the drying and several coats applied. Of course, it does not last a great while, but ordinarily two or three applications a day will carry one through and relief is instant.

Following an article by Dr. Guido, I used tooth normal hydrochloric acid, but the discomfort from the irritation of even this weak solution on the nerve ends in these raw spots was quite intense and it is hardly practical for an ambulatory patient, for to be effective the dressing should be changed frequently and kept moist with the acid solution. Along the lines suggested by Dr. Guido that the benefits come from neutralizing the discharge, and because of the constant irritation plus the digestive action on the skin, I began using boric acid powder and boric acid powder incorporated in zinc oxide, about 10 per cent strength, which I have found to be very effective in preventing this disagreeable irritating effect of the discharge.

GEORGE A. PRATT, M.D., Neenah, Wis

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA Montgomery, Jan 7. Sec, Dr J N Baker, 519 Dexter Ave, Montgomery

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIOLOGY Written (Group B candidates) The examination will be held in various cities throughout the country, April 29 Oral (Group A and Group B candidates) New York, June 10 Sec, Dr C Guy Lane, 416 Marlborough St, Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written (Group B candidates) The examination will be held in various cities of the United States and Canada, March 23 Final oral and clinical examination (Group A and Group B candidates) Atlantic City, N J, June 10 11 Group B application lists close Feb. 23 and Group A application lists close May 10 Sec, Dr Paul Titus, 1015 Highland Bldg, Pittsburgh

AMERICAN BOARD OF OPHTHALMOLOGY Philadelphia, June 10 Application must be filed at least sixty days prior to date of examination Sec, Dr William H Wilder, 122 S Michigan Blvd, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY New York, June 8 Sec, Dr W P Wherry, 1500 Medical Arts Bldg, Omaha

ARIZONA Phoenix, Jan 23 Sec, Dr J H Patterson, 320 Security Bldg, Phoenix

CALIFORNIA Reciprocity San Francisco, Jan 16 Regular Los Angeles Feb 4 7 Sec, Dr Charles B Pinkham, 420 State Office Building, Sacramento

COLORADO Denver, Jan 18 Sec, Dr Wm Whitridge Williams, 422 State Office Bldg, Denver

CONNECTICUT Basic Science New Haven, Feb 9 Prerequisite to license examination Address, State Board of Healing Arts, 1895 Yale Station, New Haven

DISTRICT OF COLUMBIA Basic Science Washington Dec 27 28 Medical Washington, Jan 14 15 Sec, Commission on Licensure, Dr W C Fowler, 203 District Bldg, Washington

ILLINOIS Chicago, Jan 22 24 Superintendent of Registration, Department of Registration and Education Mr Eugene R Schwartz, Springfield

IOWA Des Moines Jan 35 Dir, Division of Licensure and Registration, Mr H W Greife, Capitol Bldg, Des Moines

MINNESOTA Basic Science Minneapolis, Jan 23 Sec, Dr J Charney McKinley, 126 Millard Hall University of Minnesota Minneapolis Medical Minneapolis, Jan 15 17 Sec, Dr E J Engberg, 350 St Peter St, St Paul

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II The examinations will be held in medical centers where there are five or more candidates Feb 13 15 Ex Sec, Mr Everett S Elwood, 225 S 15th St, Philadelphia

NEBRASKA Basic Science Omaha, Jan 8 9 Dir, Bureau of Examining Boards, Mrs Clark Perkins, State House Lincoln

NEVADA Reciprocity Feb 4 Sec, Dr. Edward E Hamer, Carson City

NEW YORK Albany, Buffalo New York and Syracuse, Jan 28 31 Chief, Professional Examinations Bureau, Mr Herbert J Hamilton, Room 315 Education Bldg, Albany

NORTH DAKOTA Grand Forks, Jan. 1 4. Sec, Dr G M Williamson, 4½ S 3d St, Grand Forks

OREGON Portland, Jan 2 4 Sec, Dr Joseph F Wood, 509 Selling Bldg, Portland

PENNSYLVANIA Philadelphia, Jan 8 12 Dir, Bureau of Professional Licensing, Mr W M Demison, 400 Education Bldg, Harrisburg

RHODE ISLAND Providence, Jan 3 4 Dir, Public Health Commission, Dr Lester A Round, 319 State Office Bldg, Providence

SOUTH DAKOTA Pierre Jan 15 16 Dir, Division of Medical Licensure Dr Park B Jenkins, Pierre

WASHINGTON Basic Science Seattle, Jan. 10 11. Medical Seattle, Jan 14 16 Dir, Department of Licenses, Mr Harry C Huse, Olympia

WISCONSIN Madison, Jan 8 10 Sec, Dr Robert E Flynn, 401 Main St, LaCrosse

WYOMING Cheyenne, Feb 4 Sec, Dr W H Hasset, Capitol Bldg, Cheyenne

New Hampshire September Report

Dr Charles Duncan, secretary, Board of Registration in Medicine, reports the oral, written and practical examination held in Concord, Sept 13-14, 1934. The examination covered 10 subjects and included 70 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Nine physicians were licensed by reciprocity and three physicians were licensed by endorsement. The following schools were represented:

School	PASSEO	Year Grad	Per Cent
McGill University Faculty of Medicine		..(1933)	91
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Georgetown University School of Medicine		..(1933)	New Jersey
Harvard University Medical School		..(1930)	Maine
Tufts College Medical School		..(1932)	Maine
(1933) Massachusetts, Vermont			
Dartmouth Medical School		(1910)	Mass
Columbia Univ. College of P and S		(1898)	New York
Hahnemann Med Coll and Hosp of Philadelphia		(1932)	Penna
Woman's Medical College of Pennsylvania		(1899)	New York
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Minnesota Medical School		..(1926) N B M Ex	
Woman's Medical College of Pennsylvania		..(1933) N B M Ex	
McGill University Faculty of Medicine		(1931) N B M Ex	

Oklahoma September Report

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held in Oklahoma City, Sept. 11-12, 1934. Four physicians were examined, all of whom passed. Five physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Northwestern University Medical School.....	(1933)		1
Harvard University Medical School.....	(1932)		1
University of Pennsylvania School of Medicine.....	(1932, 2)		2

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College.....	(1903)		Alabama
University of Arkansas School of Medicine.....	(1933)		Arkansas
Johns Hopkins University School of Medicine.....	(1930)		Maryland
Washington University School of Medicine.....	(1931)		Missouri
Meharry Medical College.....	(1933)		Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Michigan Medical School.....	(1933)		N. B. M. Ex.

Ohio June Examination

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports the oral, written and practical examination held at Columbus, June 5-8, 1934. The examination covered 10 subjects and included 85 questions. An average of 75 per cent was required to pass. Two hundred and thirty candidates were examined, 224 of whom passed and 6 failed. Forty-four physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medicine.....	(1934)		85.2
Yale University.....	(1927)		79.7
Loyola University.....	(1934)		75.3, 78.1
Northwestern University Medical School.....	(1934)		80.1*
Harvard University Medical School.....	(1934)		81.2, 83.6
Tufts College Medical School.....	(1932)		76.2
Creighton University School of Medicine.....	(1933)		77.5
Cornell University Medical College.....	(1932)		76.1
Ohio State University College of Medicine.....	(1934)		76.1

76.8, 77.1, 77.6, 77.9, 78.2, 78.9, 79, 79.4, 79.4, 79.4, 79.8, 80, 80.1, 80.4, 80.5, 80.5, 81.1, 81.1, 81.1, 81.2, 81.2, 81.3, 81.3, 81.3, 81.4, 81.4, 81.4, 81.4, 81.5, 81.5, 81.6, 81.7, 81.8, 81.9, 81.9, 81.9, 82, 82, 82.1, 82.1, 82.2, 82.2, 82.3, 82.5, 82.7, 82.7, 82.9, 82.9, 83, 83, 83.2, 83.3, 83.3, 83.5, 83.6, 83.7, 83.8, 83.8, 83.8, 84, 84, 84, 84.1, 84.2, 84.4, 84.4, 84.4, 84.5, 84.6, 84.6, 84.7, 84.7, 85.2, 85.3, 85.5, 85.6, 85.6, 85.6, 85.7, 85.8, 85.9, 86.4, 87.2, 88.8

University of Cincinnati College of Medicine.....	(1934)	75.7*
76,* 76.8,* 76.8,* 76.9,* 77,* 77,* 77.1,* 77.2,* 77.2,* 77.6,* 77.6,* 77.8,* 77.9,* 77.9,* 77.9,* 78.2,* 78.3,* 78.3,* 78.4,* 78.5,* 78.7,* 78.9,* 79,* 79,* 79,* 79.3,* 79.6,* 79.6,* 79.7,* 80.2,* 80.3,* 80.3,* 80.3,* 80.4,* 80.4,* 80.6,* 80.7,* 80.7,* 80.7,* 80.8,* 80.9,* 81,* 81,* 81.1,* 81.2,* 81.2,* 81.9,* 81.9,* 82,* 82.1,* 82.1,* 82.1,* 82.8,* 82.8,* 82.8,* 83.1,* 83.4,* 83.5,* 83.5,* 83.7,* 83.7,* 83.8,* 84.1,* 84.3,* 84.5,* 84.8,* 85.1,* 85.2,*		

Western Reserve University School of Medicine.....	(1932)	77.9,
(1934) 76.1, 77, 78.4, 78.4, 78.7, 78.7, 78.7, 78.8, 78.9, 79.1, 79.2, 79.2, 79.7, 80, 80.1, 80.2, 80.3, 80.6, 80.6, 80.7, 80.8, 80.8, 81.1, 81.1, 81.2, 81.2, 81.6, 81.6, 81.7, 81.8, 81.8, 82, 82.1, 82.2, 82.3, 82.4, 82.6, 82.8, 83.1, 83.3, 83.3, 83.4, 83.5, 83.6, 83.7, 83.8, 84.1, 84.1, 84.6, 84.6, 84.8, 85.2, 85.8		
Hahnemann Medical College and Hosp of Philadelphia.....	(1933)	84.4
Jefferson Medical College of Philadelphia.....	(1934)	78.9
University of Pittsburgh School of Medicine.....	(1933)	78.6

School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine..	(1932)		73.9
Jefferson Medical College of Philadelphia..	(1933)		73.2
Temple University School of Medicine.....	(1933)		71.9
University of Schlessische-Fakultat.....	(1927)		58.7
(1930)			73.2†

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1933)		Colorado
George Washington University School of Medicine.....	(1932)		Maryland,
(1933) New York			
Northwestern University Medical School.....	(1902)		Alabama
Rush Medical College.....	(1930)		Illinois
Indiana University School of Medicine..	(1930), (1933)		Indiana
University of Louisville School of Medicine.....	(1933, 3)		Kentucky
Louisiana State University Medical Center ..	(1934)		Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons..	(1930), (1933)		Maryland
Detroit College of Medicine and Surgery.....	(1916)		Michigan
University of Michigan Medical School (1928), (1930), (1931), (1932, 2), (1933, 2) Michigan			
St. Louis University School of Medicine (1931), (1932, 3), (1933, 10) Missouri			

Washington University School of Medicine.....	(1933)	Missouri
Jefferson Medical College of Philadelphia.....	(1931)	New York
Medical College of the State of South Carolina.....	(1933)	California
Meharry Medical College.....	(1921)	Missouri,
(1926) Georgia, (1927) Tennessee		
University of Tennessee College of Medicine.....	(1931)	Tennessee
Medical College of Virginia.....	(1932), (1933)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Cincinnati College of Medicine.....	(1933)		N. B. M. Ex.
* This applicant has received his M.B. degree and will receive his M.D. degree on completion of internship			
† Verification of graduation in process			

Book Notices

Textbook of Materia Medica and Therapeutics. By A. S. Blumgarten, M.D., F.A.C.P., Associate Attending Physician to the Lenox Hill Hospital Sixth edition Fahrhold. Price, \$3. Pp. 791, with illustrations New York. Macmillan Company, 1934.

This book, to assist in the study of materia medica, based on the author's twenty-five years' experience in the teaching of nurses, has been completely revised. The author aims to help the student-nurse to "observe the effects of drugs on patients, to recognize their earliest toxic symptoms, to be helpful to the physician in understanding what his objective is in prescribing various remedies, and to administer them in such a manner that the maximum effects possible may be obtained. . . . The modern nurse," he says, "is no longer merely the gentle attendant at the sick bed, able to perform only a few practical duties, but she is now also a watchful trained observer of symptoms of disease, of the development of complications, and of the effects of drugs and their poisonous symptoms." The text emphasizes effects, the site of action being of secondary importance to the nurse, which is an improvement in nurses' teaching to be devoutly thankful for. Many books on materia medica for nurses—obviously abstracts of books on pharmacology for medical students—waste a great deal of time and attention of the pupil nurse with discussions on the site of drug actions, which are of possible value to the prescribing physician but of no use whatever to the nurse. Particularly interesting are the ward practice questions, at the end of each chapter, which are intended to enable the nurse to record her ward experience and correlate it with the facts she has learned from the text. One cannot help wishing that medical students might have similar opportunity. The chief criticism that must be offered is that the book is too exhaustively thorough. The author "gives the whole bakery to a person asking for bread."

A Handbook on Diabetes Mellitus and Its Modern Treatment. By J. P. Bose M.B., F.C.S., in Charge, Diabetes Research, Calcutta School of Tropical Medicine Second edition. Cloth. Price, Rs. 6/8 Pp 232, with illustrations. Calcutta: Thacker, Spink & Company, Ltd, 1934

This book contains comprehensive and yet brief discussions of all the principal phases of the subject of diabetes. The material is presented in an orderly manner and with a delightful English style. The author is a native of India, educated in Calcutta and London, and for many years the physician in charge of the diabetic department of the Carmichael Hospital for Tropical Diseases in Calcutta.

It is not generally known by Western physicians that the Hindu physicians were familiar with diabetes long before the first mention of it was made in the writings of Aretaeus. The fact that the urine contained sugar escaped the notice of all the early European writers but is mentioned in the "Charaka-Samhita," a compendium written by the renowned Hindu physician Charaka in the second century A. D. It appears further that Charaka selected his material from a much earlier work of Agnivesa, who again based his writings on the teaching of his master, Atreya (sixth century B. C.). In 500 A. D., Susruta described the symptoms of thirst, foul breath, voracious appetite and languor in the disease "madhu-meha," or "honey urine," and in the old Hindu medical literature lack of exercise and laziness are mentioned among the causative factors of the disease. It is made clear by the author that lack of exercise is an important factor today. Excessive ingestion of carbohydrate has been thought to be a cause of diabetes in India, but in Bose's opinion overeating combined with indolent habits is to be blamed more than the excess of carbohydrate alone. The poor working

class Indian, whose daily food consists of large quantities of rice, rarely has diabetes because he secures enough hard exercise to use all the sugar liberated from the starch he eats. The rich Indian is the one affected, the land owner, the lawyer and the merchant. This is due to a combination of ill balanced diet, overeating, disinclination for any form of exercise, excessive intellectual work, and sedentary habits. The Bengalee Hindus appear to be more prone to acquire the disease than members of any of the other races living in India. "What gout is to the nobility of England, diabetes is to the aristocracy of India."

Though there is no doubt that diabetes is much less common among children than among adults, it is not so very rare among Indian children. The youngest patient in the author's series was a boy aged 1 year and 4 months. The diabetic children in India, as has been noted in the Western countries, are usually taller than children of the same age and are unusually alert mentally, sometimes verging on precocity.

In large cities such as Calcutta, with well equipped hospitals and laboratories and trained workers in them, periodic examinations of blood sugar are readily obtainable, but the doctor in the distant "mofussil" towns and villages is handicapped in this regard. Therefore the author has devised and describes a simplified method for estimating blood sugar, a method providing results that agree to the second decimal point with those given by authenticated methods. He thinks it is unscientific and sometimes dangerous to treat patients without regard to the blood sugar level and refers to a number of cases of renal glycosuria treated with insulin with results just short of disaster.

The author's methods of treatment are sound and conservative, and despite the fact that the book is written on the other side of the globe and by one of an ancient race with which few American physicians are acquainted, it is one of the most instructive and readable treatises on diabetes that have appeared anywhere.

The Power to Love: A Psychic and Physiologic Study of Regeneration. By Edwin W. Hirsch, B.S., M.D., Associate in Urology, College of Medicine, University of Illinois. Cloth. Price, \$4. Pp. 363, with 5 illustrations. New York: Alfred A. Knopf, 1934.

In the development of this volume the author has consulted a vast amount of sexologic literature. That is apparent from the very nature of his references in the work. He begins by considering the physiologic mechanism regulating sex and follows with some attempt to convey an understanding of the various factors that may influence sex practice unfavorably. He next considers the various forms of impotence and frigidity, concluding his work with discussions of sex technic, systems of sexual control and a general discussion of potency. The references to the literature and the quotations indicate somewhat a lack of scientific judgment or an understanding as to what is established and what is merely theoretical in the sex field. Furthermore, in the section on sexual technic the author would seem to exaggerate somewhat the mechanization of a natural phenomenon. There seem today to be far too many works that endeavor to make a science out of what most normal young people find out for themselves with only a reasonable amount of opportunity. The classification of this work is difficult. It is not sufficiently scientific to attract the truly medical reader. Its discussions and deliberations are frequently, however, far too complicated and technical for the average layman, who perhaps requires the kind of information that it supplies, and yet its discussions are hardly such as to make the book suitable for a collection of erotica.

Rezeptbuch der Pflanzenheilkunde: Die Verwendung der Heilpflanzen und Kräutertees in der täglichen Praxis. Von Dr. med. S. Flamm und Apothekendirektor Ludwig Kroeber. Paper. Price, 10 marks. Pp. 188. Stuttgart & Leipzig: Hippokrates-Verlag G. m. b. H., 1934.

This book is essentially composed of two parts. The contents of the no doubt more important second or prescription part force one to look at the date of publication to make certain that it is not 1534, that this is not one of the "herbals" of the Middle Ages, and that it actually was published in the year of grace 1934. Starting with herb teas affecting metabolism and serving for "blood purification," some of which have a half dozen ingredients, it gives prescriptions for teas "for spring cure" with prescriptions of gradually increasing complexity up to seventeen

ingredients. These teas cure scrofula and rickets, gout and rheumatism, sugar [sic], arterial sclerosis, goiter and syphilis (!). Herb teas of the dim and distant past are actually resurrected for the cure of syphilis. It would be merely waste of valuable space to go on discussing the absurdities contained in this prescription part. What is interesting is that these "prescriptions" contain German herbs exclusively. The first part of the book might be considered an apology for the second part and it rather cleverly instances scientific facts, such as the superior pain-relieving qualities of opium as compared with morphine, to bolster up not only its gross and unscientific return to the use of crude herbs but of the polypharmaceutic mixtures of these. The wonder that such a book could be printed as a serious medical contribution in this age of alleged enlightenment is solved when one discovers that it is published by *Hippocrates*, a journal that attempts to bridge the gap between "school medicine" and "biologic medicine," between homeopathy and "nature cure," that aims to found a new German "heilkunde." Its motto is "Das dritte Reich will nicht Mediziner züchten, sondern Ärzte, die biologisch denken können" (the third reich does not want to breed mere medical men but physicians who can think biologically), a good motto, no doubt; but, if this book is a sample of the tendency of this new biologic medicine, it is quite evident that the progress is a movement backward into the Middle Ages, back to the herb teas of unfathomable complexity. The obvious purpose of this anachronistic "kräuterbuch" is to substitute for modern medicine based on international science a Nazi medical system based on the medical wisdom of the German aborigines.

Wish-Hunting in the Unconscious: An Analysis of Psychoanalysis. By Milton Harrington, M.D., Psychiatrist, Institution for Male Defective Delinquents, Napanoch, N. Y. Cloth. Price, \$2.50. Pp. 189. New York: Macmillan Company, 1934.

Here is a shrewd arraignment of psychoanalysis. The author is wholly out of sympathy with the freudian hypothesis and he contrives to condemn it out of the mouths of its sponsors. It is well and temperately done. It will make good reading for those who disagree with Professor Freud and perhaps wholesome reading for those who carry his theories to extreme degrees. The principal charges brought by Dr. Harrington against psychoanalysis are that it lays an unwholesome emphasis on sex as a motivation; that it succeeds only in the neuroses, in which any form of faith healing has been effective since time immemorial; that it fails totally in the psychoses; that its popular success is merely a passing phase "not to be taken as proof of either scientific or therapeutic value" but "nevertheless a very interesting psychological phenomenon." The author charges that psychoanalysis has contributed nothing to mental hygiene but, on the contrary, has postulated in effect that all mental hygiene is necessarily perverted. As an alternative to psychoanalysis he proposes the development of scientific psychophysiology, psychopathology and mental hygiene. Whether one agrees or disagrees with the author, it is a stimulating piece of work.

A Report on Cancer of the Skin. By Greta M. Thomas, M.D. An Inquiry Undertaken at the Instance of the Yorkshire Council of the British Empire Cancer Campaign Under the Direction of the Faculty of the General Infirmary at Leeds. Reports on Public Health and Medical Subjects, No. 70. Ministry of Health. Paper. Price, 2s. Pp. 130. London: His Majesty's Stationery Office, 1933.

The body of the report deals with the etiology of epithelioma, the duration of the tumor at the time of operation, and the results of operation at three, five and ten year periods thereafter. In five appendixes are tabulated the occupations of the patients, and in appendix 6 details are given of the cases transitional between rodent ulcer and squamous epithelioma. Appendix 7 gives the list of the lesions preceding each rodent ulcer, and appendix 8 the causes of death in patients dying from other causes than cancer. One of the particular aims of this investigation was to ascertain whether occupations other than those generally recognized as carcinogenic could be convicted of an evil influence in this direction. No such evidence was obtained. Lupus vulgaris was a frequent cause of epithelioma, twenty-five out of 161 cases in the series being caused by it, at an average age of 42, fifteen years earlier than the average age of the onset of the whole group. This is because of the early onset of lupus vulgaris. In spite of the fact that cancer of the lip occurred eleven times as often in men as in

women, with cancer of the lower lip twenty times as frequent as that of the upper lip, women had cancer of the upper lip more often than men. No explanation of this is offered. An outdoor occupation is shown to play a large part in the development of cancer of the lower lip in men. It is suggested that, besides exposure to the sun and wind, it gives a greater opportunity for pipe smoking. Another interesting observation was the frequency of phimosis as an etiologic factor in epithelioma of the penis, and the relative mildness of epithelioma in this region. Operation in the early stage gave a net survival rate of 80 per cent at the end of ten years. The report is a valuable one and should be available to all who are interested in skin epithelioma.

The Art and Principles of Nursing. By Amy Elizabeth Pope, R.N., and Virna M. Young, R.N. Fifth edition. Cloth. Price, \$2.75. Pp. 832, with 131 illustrations. New York: G. P. Putnam's Sons, 1934.

A new edition of the standard nursing textbook originally written by Anna C. Maxwell and Amy Elizabeth Pope is welcome. Miss Pope now has as a co-author Virna M. Young. The change in the title, which formerly was *Practical Nursing*, seems desirable because the book is for students working to become registered nurses and not primarily for practical nurses, though the latter would find it extremely useful. The present edition is comprehensive in scope, detailed in treatment, clear in description. Reasons for procedures are given, as well as instructions for the procedures themselves. There is a section on diseases that gives the nurse a background for her training without at the same time giving too much encouragement for self diagnosis. There are a few unfortunate minor errors, such as the old multiple scarification technic for smallpox vaccination, the recommendation of the proprietary antiphlogistine for packs, and the statement that blood is examined for spirochetes in the diagnosis of syphilis. The section on first aid is particularly good, perhaps because it is more profusely illustrated than any other section. All the illustrations are good, but some of the technical procedures that are not illustrated could with profit have been made the subject at least of diagrams. The book is well made, convenient to handle and well indexed.

A Primer for Diabetic Patients: A Brief Outline of the Treatment of Diabetes with Diet and Insulin, Including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions. By Russell M. Wilder, M.D., Professor and Chief of the Department of Medicine of the Mayo Foundation, University of Minnesota. Fifth edition. Cloth. Price, \$1.75. Pp. 172, with 3 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This is designed to tell the intelligent layman suffering from diabetes mellitus what he should know about the disease, its complications and treatment. It is intended for the patient who is under treatment by a physician, and the chapter on planning the diet is addressed to the latter. There is a surprising amount of information compressed into this small volume, including specific diets, recipes and food tables. The attention paid to the common exigencies of diabetic life, such as generally available menus while traveling, make the book particularly valuable.

Races, Nations and Jews. By Dr. Joseph Tenenbaum. Cloth. Price, \$2. Pp. 170. New York: Bloch Publishing Company, 1934.

In this book Dr. Tenenbaum treats a difficult social problem in the same way he would treat an obscure medical disease. In the first part of the book he discusses quite fully the underlying anthropologic and sociological factors that are etiologically related to antisemitism, which he regards as a serious social disease, from time to time reaching pandemic proportions. He reviews existing knowledge of the development of races and proves that there are no pure races. The Aryan race and the Nordic race have no sound basis in history of man's development; he regards them as entirely mythical, created by certain peoples to claim for themselves a superiority that is not based on scientific facts. Nations, too, cannot be defined by either language or territorial boundaries but are largely a state of mind. According to this point of view, he regards the Jews without a language and without a well defined country as one of the oldest and best defined nations who might play an important part in our general sociological definitions. He shows that whenever and wherever a people has broken with the laws of humanity and democracy, the Jew has proved a convenient scapegoat. The increasing antisemitism of today with its intense

form in Hitler's Germany is a manifestation of postwar social and economic disturbance. History has shown that the lot of the Jews quite parallels the course of democracy. The world, therefore, must be interested in the fate of the Jews and treat antisemitism as it does any other serious menace that threatens the safety of society.

A Textbook of Histology. By Alexander A. Maximow and William Bloom, Associate Professor of Anatomy, University of Chicago. Second edition. Cloth. Price, \$7. Pp. 662, with 530 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

Professor Maximow died in 1928 and the first edition of this important work was issued shortly afterward. The experience of four years with the volume has caused Dr. Bloom to recast it completely, using variations in type to emphasize the more significant information. Bibliographies are now included at the ends of the chapters. This histology was promptly accepted by teachers everywhere as a most useful work. Its illustrations are among the best developed in works of this character, and the publisher has aided in developing the reproductions to a high point of lucidity. The book is not ponderous either in its expression or in its appearance.

Sex-Hygiene: What to Teach and How to Teach It. By Alfred Worcester, A.M., M.D., Sc.D., Henry K. Oliver Professor of Hygiene, Harvard University. Cloth. Price, \$2.50. Pp. 134. Springfield, Ill., & Baltimore: Charles C. Thomas, 1934.

This collection of addresses by Dr. Worcester is interesting and valuable, but it could have been more appropriately titled. It is the philosophy evolved from a life in medical practice and teaching, but it is not an outline of what to teach about sex and how to teach it. Perhaps the most interesting of all the chapters is the first, not so much because of what it contains as because of when it was written. Almost any writer on sex would write such a chapter today, but few indeed would have been the hardy souls who would have exposed themselves to storms of lay and professional criticism as did Dr. Worcester by boldly stating in 1899 what even in 1934 has not had universal acceptance: that sex is inherently decent and not indecent, that girls as well as boys should know about sex, and that each sex should know something about the other. The conclusions drawn by the author are interesting; namely, that there is a physiologic basis for sex morality and not alone a moral or religious basis. This physiologic basis he conceives to be the responsibility for protecting the germ plasma that is entrusted to each individual. He judges sex morality on the basis of its effect on the germ plasma.

New Patterns in Sex Teaching: The Normal Sex Interests of Children and Their Guidance from Infancy to Adolescence. By Frances B. Strain. Cloth. Price, \$2. Pp. 242, with 2 illustrations. New York & London: D. Appleton-Century Company, Inc., 1934.

This is a useful and attractively written book. The author is a woman who is well versed in matters pertaining to sex education and, in addition, a mother who has found it necessary to give such instruction in a practical way. Here is a book that any mother can understand and which has been written so attractively and thoughtfully that it carries conviction. Various plans and suggestions are made in a way that insures their usefulness. The book is recommended for parents and to physicians who wish to be able to instruct parents in these matters.

A Nutrition Program and Teaching Outline Developed for Use in the Health Centers and Clinics of the Division of Child Hygiene, Department of Public Health, Philadelphia. Paper. Price, \$1. Pp. 156. Philadelphia: Philadelphia Child Health Society, 1934.

This outline should be useful to all teachers of nutrition. It gives a general summary of teaching points on nutrition and follows this with outlines on health examinations and corrections of defects, hot weather hygiene, child development and training, good eating habits, sleep and rest, good hygiene and constipation. Under the heading of "Food and Health," a daily food guide is given for various ages at moderate cost. Minimum and emergency nutrition, food allowances for a week, market guides, nutrition and diet during prenatal, infant, preschool, school and adolescent years, and nutrition in relation to the teeth are discussed. Chapters are devoted in detail to important classes of foodstuffs. The work is accompanied by a good bibliography and should be a valuable addition to the library of any teacher of health, hygiene or nutrition.

Röntgendiagnostik der Knochen- und Gelenkkrankheiten. Von Professor Dr. Robert Klenböck. Heft 3 (Abteilung Gelenkkrankheiten). Gelenks-osteomatosse und Chondromatose. Boards. Price, 22.50 marks. Pp. 228, with 194 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1934.

This book on osteomas and chondromas is written by the leading roentgenologist of Vienna, and one of the best known international roentgenologists. The subject is covered completely, with excellent illustrations of pathologic specimens and numerous roentgenograms, line drawings and tables. The bibliography is complete.

A Soldier in Science. The Autobiography of Bailey K. Ashford, Colonel M. C., U. S. A. With a foreword by General M. W. Ireland. Cloth. Price, \$3.50. Pp. 425, with 15 illustrations. New York: William Morrow & Company, 1934.

The death of Dr. Bailey K. Ashford was recorded in the obituary columns in *THE JOURNAL*, November 10, page 1467, where in the usual brief fashion the record was summarized of a distinguished career, which Dr. Ashford himself describes with all its romantic and dramatic aspects. His work in the tropics, his association with the army medical corps in France, his scientific research and his contributions to the control of certain forms of tropical disease are given due consideration in this record of his career. Dr. Ashford is able to look at his own research with proper abstraction; and his discussions of the development of our knowledge of hookworm disease and of sprue are written with the point of view of the scientist rather than of the claimant to priority. It is interesting to realize that one of the latest applications of a scientific discovery, namely, the application of liver extracts to the control of some of the tropical anemias, is considered in this book.

The Dangerous Age in Men: A Treatise on the Prostate Gland. By Chester Tilton Stone, M.D. Cloth. Price, \$1.75. Pp. 105. New York: Macmillan Company, 1934.

This review contains the combined opinions of a layman and a medical man. The book divides itself into two parts, in one of which Dr. Stone attempts to give medical information to the layman. As in some such cases, the author has a tendency to be confusing. He uses terms that cannot possibly be recognized by the lay reader, nor can the various kinds of complications be identified. The other part of the book, running concurrently with the medical phase, is quite commendable. Not only does Dr. Stone show sympathetically that troubles of the prostate gland are natural and nothing to be secretive about, but on reading the book the would-be patient would be likely to seek good medical advice. Had Dr. Stone omitted the technical medical pages and left the simple human statement of the trouble and the intelligent advice to take care of it in its early stages, it would not, like so many lay medical books, create fear and confusion in the reader's mind.

John Keats's Anatomical and Physiological Note Book. Edited by Maurice Buxton Forman. Printed from the Holograph in the Keats Museum, Hampstead. Cloth. Price, \$4.75. Pp. 68. New York & London: Oxford University Press, 1934.

This is a reprinting of the notes kept by the poet John Keats when he attended the lectures at Guy's Hospital. The original is on exhibition at the Keats Museum at Hampstead. It offers an interesting sidelight on one phase of the career of a literary immortal who was also a physician.

Postures and Practices During Labor Among Primitive Peoples: Adaptations to Modern Obstetrics with Chapters on Taboos and Superstitions and Postpartum Gymnastics. By Julius Jarcho, M.D., F.A.C.S. Cloth. Price, \$3.50. Pp. 175, with 129 illustrations. New York: Paul B. Hoeber, Inc., 1934.

This volume was developed by the author as a companion book to his earlier work on the pelvis and obstetrics. It is largely a picture book with a brief text covering the customs and taboos of primitive peoples. It is remarkable how many extraordinary postures have been developed among races living under the conditions of nature, in all of them an attempt being made to find such relief as can be secured from the pain associated with the obstetric procedure. The author discusses not only the various practices and postures used by the human being but also those of primates. He has added chapters on urine and hormones and on postpartum gymnastics. The book should be useful and of interest to obstetricians and ethnologists.

Medicolegal

Infanticide: Necessary Proof of Live Birth.—The defendant was convicted of the murder of a new-born child and appealed to the Supreme Court of Georgia. There was no direct evidence that the child was born alive. Eight or nine days after the infant had been buried, a physician performed an autopsy. The body was at that time badly decomposed. One lung was removed and subjected to the hydrostatic test and otherwise examined, and the physician testified that in his judgment the child breathed after it came into the world. The Supreme Court cited *Rex v. Enoch*, 5 C. & P. 539, a case of infanticide, to the following effect:

The child might have breathed before it was born, but its having breathed is not sufficiently life to make the killing of the child murder. There must have been an independent circulation in the child, or the child cannot be considered as alive for this purpose.

In *Morgan v. State*, 148 Tenn. 418, 256 S. W. 433, the court pointed out that gas in the lungs as a result of decomposition would cause them to float just as air would, adding:

Ordinarily, if the child has breathed, this would show independent life. But this test is not infallible. Sometimes infants breathe before they are fully delivered, and sometimes they do not breathe for quite a perceptible period after they are delivered. Generally, however, if respiration is established, that also establishes an independent circulation and independent existence.

The testimony of the physician in the present case that in his judgment the child breathed after it came into the world, said the court, was not an unqualified statement of opinion that the child was born alive or that it had acquired "independent circulation and existence" separate from its mother. The testimony of the physician as a whole was consistent with the theory that the child was born dead, and there was no other evidence tending to show that it was born alive. The evidence was insufficient to establish the crime beyond a reasonable doubt, and the trial court erred in refusing a new trial.—*Shedd v. State (Ga.)*, 173 S. E. 847.

Hospitals: "Inmate of Hospital" Construed.—The deceased, in an application for life insurance, stated, among other things, that he had never been an "inmate" of any hospital or sanatorium. In a suit by the beneficiary to recover the benefits provided in the policy, the evidence disclosed that the deceased, prior to the time he applied for insurance, had been admitted to hospitals on several occasions, principally for observation or for diagnostic purposes. The beneficiary contended, apparently, that, because the deceased had received little if any treatment in the hospitals, he was not an "inmate" of the institutions. In disagreeing with this contention, the United States circuit court of appeals, seventh circuit, said: "there is much said about the meaning of 'inmate' of a hospital. True this defendant [sic] received principally examination and observation and only little therapeutic medicine. But a hospital is a place where ailments are cared for. A well man has no place therein. The first step in modern treatment of any complicated physical trouble is the ascertainment of the cause. Therein modern medical science has progressed; it seeks first to diagnose, then to cure. Here for a year or more skilled physicians, in various hospitals and clinical tests, had, by use of modern hospital facilities, endeavored to perform the first step, and failed. The insured had a complicated condition; he was not cured; indeed his trouble was not even yet satisfactorily diagnosed. Can his beneficiary, in the face of this hospitalization, this consultation of physicians, this oft-repeated and always frustrated attempt to analyze his ills, insist that he was not an inmate because the hospital authorities never attempted to cure him? Is hospitalization any less hospitalization because its purpose is the first step in treatment of physical ills, diagnosis, instead of the second, cure? We know of no justification of a definition of the word 'inmate,' restricting the meaning by the limitation 'not for diagnosis, but for therapeutic treatment.'" The judgment of the district court for the beneficiary was reversed.—*Aetna Life Ins. Co. of Hartford, Conn., v. Perron*, 69 F. (2d) 401.

Workmen's Compensation Acts: Death from Coronary Thrombosis Compensable.—On Sept. 7, 1929, the employee, 42 years old, obtained employment with the Ford Motor Company, Portland, Ore., after a physician for the employer had examined him and pronounced him "as fit for any work." While engaged, October 5, in piling automobile wheels, weighing about 20 pounds each, six of the wheels fell from approximately 8 feet and landed edgewise on the employee's back, flooring him and badly bruising his neck, back and shoulders. Before the accident, the employee was able to perform his work speedily and efficiently, and had considerable "pep." Afterward, he became sluggish and was unable to keep up with his work; but he continued on the job for a portion of the time until October 23, when he became so ill that he had to quit and go home. He lounged about the house until about October 28, when he died suddenly. The cause of death, as disclosed by a postmortem examination, was "coronary thrombosis with infarction." In a proceeding under the workmen's compensation act of Oregon, the circuit court, Multnomah County, awarded compensation to the claimant, and the state industrial accident commission appealed to the Supreme Court of Oregon.

The theory of the claimant was that the injury of October 5 produced an embolus, which was carried through the blood stream until it eventually reached the right coronary artery, where it increased and formed a thrombus, producing death. The commission, on the other hand, contended that the death was due to a thrombus, caused by arteriosclerosis, and that it had no connection with the accident. Both theories were supported by the testimony of expert witnesses. This situation, said the Supreme Court, left the question for the determination of the jury, and, in the opinion of the court, the testimony warranted a finding that there was a causal connection between the accident and the death. Whether the accident directly caused the death or whether it aggravated or accelerated a disease condition was considered by the court to be immaterial. Compensation may be awarded, although there was a preexisting disease, if that disease was aggravated and accelerated by an accidental injury arising from the employment and was the proximate cause of the disability or death. The judgment of the circuit court, awarding compensation, was affirmed.—*Armstrong v. State Industrial Accident Commission (Ore.)*, 31 P. (2d) 186.

Malpractice: Limitation of Actions; Accrual of Right of Action.—In performing an operation on the plaintiff in 1926, the defendant-physician left gauze in her abdominal cavity. He continued to treat her thereafter but did not inform her that gauze had been left in her abdomen. The gauze was discovered and removed during the course of another operation in 1933. She then instituted suit against the defendant. The trial court dismissed the action, holding that the Arkansas statute of limitations required that tort actions be instituted within three years after the accrual of the right of action. The plaintiff thereupon appealed to the Supreme Court of Arkansas.

A physician, said the Supreme Court, must exercise that degree of care, skill and learning ordinarily possessed and exercised by members of his profession in good standing in the community in which he practices. It cannot be said as a matter of law, continued the court, that the defendant did not know that the gauze was left in the patient's abdomen, because, under the rule just stated, he was required to exercise ordinary care in the performance of the operation and when thus measured might have known that the gauze was left in the patient's body. If, in the exercise of ordinary care and skill, the physician knew that the foreign substance was left in her body, it then became his imperative duty to apprise her of that fact. The physician had the duty resting on him, not only to perform the operation with ordinary care and skill, but also to make immediate disclosure to his patient of any injury inflicted through his negligence. His failure to make such disclosure was a continuing act of negligence. He was under a constant and daily obligation to use ordinary care and skill, and if by omission or negligence he left a foreign substance within the walls of the abdominal cavity, it behooved him to afford timely relief. The Supreme Court concluded, therefore, that the act of the physician in leaving the gauze in the abdomen and his

failure to apprise his patient thereof "were such fraudulent concealments and continuing acts of negligence" as would suspend the statute of limitations until the physician performed his duty of removing the foreign substance or the patient learned, or should have learned, of its presence.

The ruling of the trial court dismissing the action was therefore reversed and the Supreme Court ordered a trial of the cause.—*Burton v. Tribble (Ark.)*, 70 S. W. (2d) 503.

Accident Insurance: Death from Infected Abrasion Due to Prolonged Use of Bedpan.—The defendant insurance company issued a policy providing double indemnity if Hoff should die directly and exclusively from bodily injury effected solely through external, violent and accidental means. Hoff was taken to a hospital suffering from general pains in the arms and legs, and a paralysis of his lower limbs developed. Through an attendant's negligence, he was left on a bedpan for over four hours. When the pan was removed, an abrasion about three inches in diameter was found near the base of his spine. The abrasion became infected, toxemia developed and the insured died about a month later. An autopsy revealed a spinal cord tumor. The physician who performed the autopsy testified on behalf of the beneficiary of the policy, in a suit to collect the double indemnity benefits, that the infection was the sole cause of death and that the tumor was the contributing cause only so far as it induced Hoff to enter the hospital and thus afforded the opportunity for him to be injured. The defendant introduced no medical testimony. From a judgment for the beneficiary, the insurance company appealed to the Supreme Court of Michigan.

The defendant contended, apparently, that the injury, which ultimately resulted in death, was not produced by "accidental means." In defining the term "accidental means," the court referred to *Wheeler v. Title Guaranty & Cas. Co.*, 265 Mich. 296, 251 N. W. 408, where it was said:

Where the effect is not the natural and probable consequence of the means which produce it—an effect which does not ordinarily follow and cannot be reasonably anticipated from the use of the means, or an effect which the actor did not intend to produce, and which he cannot be charged with a design of producing—it is produced by accidental means.

Ordinarily, said the Supreme Court, the use of a bedpan will not result in injury. The insured can hardly be held to have foreseen the possible consequences of his prolonged presence on the bedpan, since his paralyzed condition made it impossible for him to experience discomfort or pain. The abrasion and infection were not the natural and probable consequences of the use of the bedpan and could not have been reasonably anticipated, nor was the infection a result which the insured or the hospital attendants intended to obtain, but rather the consequences of inadvertent neglect. The injury was effected through "accidental means," in the opinion of the court, and was the proximate cause of death. The judgment in favor of the beneficiary was affirmed.—*Hoff v. Mutual Life Ins. Co. of New York (Mich.)*, 254 N. W. 137.

Malpractice: Release of Tort Feasor as Bar to Action Against Physician.—If a person injured through the negligence of another exercises due care in the selection of a physician to treat his injury, the malpractice of the physician which aggravates or increases the injury is regarded in law as a part of the original injury, for which the original wrongdoer is responsible. A release by the injured person of his right to recover damages from the original wrongdoer operates as a bar to an action for malpractice against the physician.—*Tanner v. Espey (Ohio)*, 190 N. E. 229; *Milks v. McIver (N. Y.)*, 190 N. E. 487.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 27-29. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D. C., Secretary.
Society of American Bacteriologists, Chicago, Dec. 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

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- *Is Typical Hodgkin's Disease an Infection or a Neoplasm? E. B. Krumbhaar, Philadelphia.—p. 597.
- Differential Diagnosis of Agranulocytic Angina from Acute Leukemia. H. Jackson, Boston.—p. 604.
- Five-Year Survival in Hodgkin's Disease. L. F. Craver, New York.—p. 609.
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- *Syndrome of Acute Agranulocytosis and Its Occurrence as Complication of Kala-Azar. Lily S. Zia and C. E. Forkner, Peiping, China.—p. 624.
- Heart Disease in the Middle West: Incidence and Etiology of One Thousand Six Hundred and Forty-Six Cases at the Cook County Hospital. N. Flaxman, Chicago.—p. 639.
- *Standardized Exercise Tolerance Test for Patients with Angina Pectoris on Exertion. J. E. F. Riseman and Beatrice Stern, Boston.—p. 646.
- What Treatment in Early Syphilis Accomplishes: I. Relapse and "Curative" Results. J. H. Stokes, Philadelphia; Lida J. Usilton; H. N. Cole, Cleveland; J. E. Moore, Baltimore; P. A. O'Leary, Rochester, Minn.; U. J. Wile, Ann Arbor, Mich.; T. Parran Jr., Albany, N. Y., and J. McMullen, Washington, D. C.—p. 660.
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- Relationship Between Antisyphilitic Treatment and Toxic Cirrhosis. C. W. Baldridge, Iowa City.—p. 685.
- Recurrent Laryngeal Paralysis in Left Ventricular Failure. F. H. King, W. M. Hitzig and A. M. Fishberg, New York.—p. 691.
- Limitations of Auscultation for Diagnosis and Study of Tuberculous Pulmonary Cavities. B. T. McMahon and E. H. Kerper, Loomis, N. Y.—p. 697.
- *Some Effects of Quinine Derivatives in Experimental Pneumococcus Studies. W. W. G. MacLachlan, H. H. Permar, J. M. Johnston and J. R. Kenney, Pittsburgh.—p. 699.
- *Diagnostic and Prognostic Significance of Creatine-Creatinine Metabolism in Various Myopathies Before and After Amino Acid Therapy. H. H. Beard, C. J. Tripoli and J. E. Andes, New Orleans.—p. 706.
- Arterial Essential Hypertension and Active Tuberculosis: Their Rare Association. D. Ayman, Boston.—p. 712.
- Delayed Resolution in Lobar Pneumonia and Its Relationship to Pre-existing Syphilis. A. Weinstein, Nashville, Tenn., and M. Goodman, Baltimore.—p. 716.

Hodgkin's Disease, Infection or Neoplasm.—Krumbhaar examined the tissues of thirty-three fatal cases diagnosed as Hodgkin's disease, of which none revealed a demonstrated progress from the granulomatous to the sarcomatous picture of Hodgkin's disease—Ewing's Hodgkin's sarcoma. In three there was strong probability that the condition was sarcomatous from the beginning or reasonable doubt as to whether Hodgkin's disease or lymphosarcoma in one or another form was under consideration. Evidence for an associated active tuberculosis was present in three cases but may well have been overlooked in others. The author states that his material lends no support for the primary neoplastic nature of Hodgkin's disease, unimpressive evidence in favor of a causative relationship of tuberculosis and no examples of progress from the granulomatous to the neoplastic type of Hodgkin's lesion. It brings one back definitely to the probable basis of a granulomatous infection of unknown etiology. He reviews the accumulated evidence bearing on the infectious versus the neoplastic origin of Hodgkin's disease. While it is apparent that the nature of Hodgkin's disease remains obscure, the preponderance of evidence favors the infectious theory, with some promising support for its inclusion

among the virus diseases. The use of the term Hodgkin's disease (rather than lymphogranuloma or lymphoblastoma) and the restriction of its use solely on a pathologic (not a clinical) basis is indicated.

Acute Agranulocytosis Complicating Kala-Azar.—Zia and Forkner observed that agranulocytosis occurred in four of twenty-six consecutive cases of kala-azar. In three of these the agranulocytosis was acute, in one of which it was recurrent. The period of observation of the fourth case was too short to determine whether the attack was acute or chronic. Acute agranulocytosis is a common and previously unrecognized complication of kala-azar. It is only as the result of frequent and careful studies of the blood that this complication may be detected and appropriate treatment given. The syndrome of acute agranulocytosis as it occurs in kala-azar, pyogenic infections and agranulocytic angina is less conspicuous when it occurs as a complication of kala-azar than when it is associated with agranulocytic angina, owing to the fact that attacks of the latter disease come on abruptly during a period of good health, whereas the agranulocytosis of kala-azar occurs in patients who are already quite ill. The first clinical manifestations of the syndrome are weakness and a feeling of exhaustion coming on rather rapidly over a period of from twelve to seventy-two hours. White blood cell counts at this period show an increasing leukopenia with a decrease in the number of granulocytes. The symptoms become more intense and the leukocytes frequently decrease to from 500 to 2,000 cells per cubic millimeter, with a total absence of neutrophils or the presence of a few. After from twenty-four to ninety-six hours more alarming symptoms appear, consisting of high fever, redness and tenderness of the mucous membranes, soon followed by rapidly extending ulceration accompanied by localized pain and marked general discomfort. Unless an increase in the number of neutrophils occurs either spontaneously or as the result of treatment, the symptoms and signs progress and the patient often succumbs as the result of infection. If the leukopenia subsides and the granulocytes increase progressively before severe secondary infection has occurred, a remission takes place in which there is rapid recovery.

Tolerance Test for Angina Pectoris.—The exercise tolerance test of Riseman and Stern makes use of a two-step staircase. They have found that the majority of patients suffering from angina pectoris develop typical attacks when exercising on the two-step staircase under standard conditions. When the test is repeated, the same amount of exercise invariably precipitates an attack in the same person, provided the standardized conditions are reproduced. To obviate the necessity for training and to minimize the effect of excitement, the patient is allowed to choose his own rate. Exercise on the two-step staircase is so similar to acts performed in daily life that the emotional factor is minimized. In seven of thirty cases, however, they found that at the time of the first test angina was developed after considerably less exertion than at subsequent tests. This discrepancy was due presumably to excitement and existed only at the time of the first test. The test is performed in a room the temperature of which is adjusted to between 45 and 55 F. The patient is tested at least one hour after a light meal or before breakfast on a day during which he has not experienced an anginal attack. The results are compared with single tests on other days. The exercise consists in repeatedly walking up and down the two-step staircase. The patient continues the exercise until he develops an attack of angina pectoris severe enough to cause him to stop. The number of times the patient mounts the staircase, that is to say, the number of trips performed, is recorded with a tally counter. The rate and the duration of the exercise are measured with a stopwatch. The exercise performed under the standard conditions of the test induced attacks in thirty-four of fifty-seven cases. These attacks were precisely like those experienced in daily life. When the standardized test was repeated, even months later, the same amount of exercise again precipitated an attack in the same person. Nineteen patients did not develop an attack under the standardized conditions. The diagnosis of angina pectoris eventually proved to be exceedingly doubtful in all but one. The amount of exercise necessary to precipitate attacks of angina pectoris in patients with this condition is influenced by various environmental factors. The test affords a means of investigating angina pectoris

and is of distinct value as an aid in diagnosing doubtful cases and in evaluating both the condition of the patient and the results of therapy.

Effects of Quinine Derivatives on Pneumococcus.—The work of MacLachlan and his associates confirms what Miura and Okamoto stated in reference to the superior protective power of ethylapoquinine over ethylhydrocupreine in experimental pneumococcal infection of mice. Ethylapoquinine varies considerably in its toxicity, depending on its chemical purity. The lessened toxicity fortunately does not diminish its protective power. These variations in the different samples of ethylapoquinine must be taken into consideration in interpreting the results of experimentation, and this must be remembered if later the derivative is to be used clinically. The estimation of the degree of levorotatory power in ethylapoquinine has been of value as a physical test for the toxicity of the derivative. The chemists believe that this physical property will be of great aid in the actual preparation of this substance, which may be toxic in its action on animals if impure. Of the two new derivatives, hydroxyethylapoquinine is the more important. This preparation has less toxicity than any of the ethylapoquinines and greater antipneumococcal power than any of them except ethylapoquinine (Japan). This preparation was as toxic as ethylhydrocupreine. The low toxicity of hydroxyethylapoquinine combined with its high protective power as indicated by the experimental results show it to be superior to the ethylapoquinines. Hydroxyethylhydrocupreine is the least toxic and, although its protective action is not as great as any of the other derivatives, its low toxicity makes the compound of definite interest.

Creatine and Creatinine Metabolism in Myopathies After Amino Acid Therapy.—Beard and his associates studied the creatine and creatinine excretion in the urine before and after the institution of amino acid therapy of thirty patients suffering from various myopathies. Both subjective and objective clinical improvement were observed in ten patients and subjective improvement in only seven patients whose creatine excretion rose from 50 to 200 per cent above that of the control period, provided this increased creatinuria soon disappeared or returned to the control level. In four other cases, the progress of the disease was arrested. No clinical improvement took place in thirteen cases, nine of which presented neuromuscular conditions, in which increased creatinuria was absent or less than 50 per cent above that of the control period. The results of these studies again confirm the authors' view that both creatine and creatinine may have an exogenous origin from the amino acids of the diet. Amino acid therapy had little effect on the distribution of nitrogen in the urine of three patients in the form of the total, urea, ammonia, uric acid and undetermined nitrogen. The increase in creatine and creatinine excretion was affected in only one of these cases. The authors present evidence that the lower motor neuron (tropic unit) with the muscle it innervates must be functionally intact for creatine formation from the amino acids.

American Journal of Ophthalmology, St. Louis

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- Genesis of Atypical Ocular Coloboma. B. Roncs, Baltimore.—p. 883.
Embryologic Basis of Cyclopia. H. B. Adelman, New York.—p. 890.
Retinitis Retina: I. New Concept of Visual-Cell Evolution. G. L. Walls, Iowa City.—p. 892.
Studies on Vascularization of Cornea: V. Histologic Changes Accompanying Corneal Hypersensitiveness. L. A. Julianelle and H. D. Lamb, St. Louis.—p. 916.
Fistula at Limbus (Scleromalacia Perforans): Report of Case. C. T. Eber, St. Louis.—p. 921.
Technic of Electrocoagulation in Treatment of Retinal Detachment. L. C. Peter, Philadelphia.—p. 924.
Conservative Treatment of Massive Cystoid Following Cataract Extraction. B. Chance, Philadelphia.—p. 929.
*Keratoplasty: III. Report of Seven Cases. R. Castroviejo, New York.—p. 932.
Choroidal Atrophy Without Night Blindness: Case. I. Hartsborne, New York.—p. 945.
1934—the Semicentenary of Local Anesthesia. J. E. Lebensohn, Chicago.—p. 949.

Keratoplasty.—Castroviejo maintains that homokeratoplasty in human beings can be accomplished successfully when a suitable technic is followed. The principal features of the technic that he gives are: (1) to obtain a rectangular graft, 4 mm. square, corresponding exactly in size and with beveled edges

in both the transplant and the opening in the cornea of the recipient, with the anterior surface of the graft larger than the posterior surface, and (2) the use of conjunctival flaps to hold the transplant in position, giving a gentle uniform pressure, accelerating the process of healing and furnishing necessary nutrition while cicatrization takes place during the first few days. The conjunctival flaps also make a water-tight union favoring the prompt restoration of the anterior chamber and they offer the best possible protection for the graft and the eye in case the former becomes partially detached or does not heal. He believes that the technic of partial penetrating keratoplasty will give the best results in those eyes in which the whole pathologic condition is limited to the cornea, in which the leukoma is not dense and in which there are zones of slightly scarred or nonscarred cornea surrounding the transplant. In eyes with dense corneal leukomas in which the transplant is entirely surrounded by dense scar tissue, in those with aphakia and loss of vitreous during the operation, hypertension, and so on, the results cannot be expected to be so brilliant, but, since the vision in these eyes is limited to light perception and projection, or only perception, and the corneal transplantation offers the only means to improve the vision, operation is advisable. Eyes with heavy scarring of the conjunctiva round the cornea are predisposed to glaucomatous attacks; hence iridectomy previous to corneal transplantation should be performed. Transplants should be obtained from enucleated eyes in which the cornea has been unaffected. Enucleation of the donor's eye should be performed, if possible, under general anesthesia to avoid injury of the corneal epithelium, which almost always occurs when local anesthesia is used. Eyes of young people seem to furnish better material for transplantation than those of older persons. The importance that should be ascribed to blood grouping in corneal transplantation is to be determined when the operation has been performed in a large number of cases. Blood grouping was made in the last six cases reported and in each instance it was found to be different in the donor from that in the recipient. In examining patients with dense leukomas extending over the whole area of the cornea, posterior and anterior transillumination is the most valuable method.

American Journal of Surgery, New York

26: 229-414 (Nov.) 1934

- Empyema: Report of Three Hundred and Fifty-One Cases Treated by Closed Negative Pressure Method. R. F. Harloe, Brooklyn.—p. 231.
Suppurative Pleurisy. E. K. Tanner, Brooklyn.—p. 248.
Perinephritis and Perinephric Abscess. H. G. Bugbee, New York.—p. 255.
Perinephric Abscess: Report of Cases. A. M. Dickinson, Albany, N. Y.—p. 262.
*Early Diagnosis of Carcinoma of Portio Uteri. W. Schiller, Vienna, Austria.—p. 269.
Schiller's Test for Early Squamous Cell Carcinoma of the Cervix. C. E. Galloway, Evanston, Ill.—p. 281.
*Replacement of Uterus Post Partum and Its Benefits. L. Drosin, New York.—p. 283.
Use of Solution of Dial with Urethane in Obstetrics. E. H. Rund, St. Louis.—p. 288.
Prevention of Necrosis in Plastic Repair of Breast. J. W. Malinski, New York.—p. 292.
*Method to Avoid Skin Grafting in Breast Amputations. J. F. Baldwin, Columbus, Ohio.—p. 298.
*Normal Shadow of Peripheral Nerves and Their Pathologic Change in Injury and Tumor: Roentgenologic Studies by Means of Thorium Dioxide Sol (Thorotrast). M. Saito, Nagoya, Japan.—p. 300.
Death from Appendicitis: Preventable Mortality. C. G. Heyd, New York.—p. 317.
Acute Appendicitis in the Aged: Study of Forty-Three Cases Occurring After Age of Sixty. C. B. Wood, Boston.—p. 321.
Recovery from Infantile Paralysis During First Year: Analysis of Cases from the 1931 New York Epidemic. S. P. Rogers, San Juan, Puerto Rico.—p. 326.
Complete Dislocation of Knee Joint. C. E. Stellhorn, Brooklyn.—p. 332.
Uses of U or Sugar-Tong Molded Plaster Splint. E. L. Jewett, New York.—p. 336.
Surgery in the Diabetic. J. F. Erdmann, H. E. Clark and E. J. Buckley, New York.—p. 340.

Carcinoma of Portio Uteri.—Schiller believes that about 90 per cent of all uterine carcinomas arise in the portio vaginalis; therefore it is necessary for early diagnosis that one know exactly how a beginning carcinoma of the epithelium of the portio looks clinically on examination with the speculum. To this end, the author has submitted systematically to histologic examination in radial sections the portio of every uterus that was operated on in his clinic. Among them he found a number

of beginning carcinomas. The first stage shows a small carcinomatous coating, directly at the external os, of the same thickness as the existing normal epithelium and standing in direct connection with the normal epithelium, but sharply demarcated from it. There is complete absence of deep penetration and of superficial breaking down. The second phase shows one or two small cones penetrating downward, but still no ulceration; in the third stage there is superficial breaking down and growth into the deep parts through the penetration of cones into the stroma, and greater extent on the surface. In the third phase all the characteristics of the advanced carcinoma are seen, except that the proportion of that part which is in the deep tissues and that part which is on the surface is greatly in favor of the latter, which often accounts for nine tenths of the entire carcinomatous mass, while only one tenth has grown downward. In the further development of the carcinoma to the forms long known and studied the deep growth increases disproportionately and the superficial breaking down makes further progress, while the carcinomatous coating at the margin forms only a small fraction of the whole carcinomatous mass or finally disappears altogether. The problem of the rapid diagnosis of such a beginning carcinoma on speculum examination is made possible by the staining properties of the so-called Gram's solution, consisting of one part of iodine to two parts of potassium iodide and 300 parts of water. It causes fine differences to stand out more distinctly and gives sharper differentiations than the more rapidly acting but much more diffusely staining compound solution of iodine. If any place remains white or unstained, it is suggestive of carcinoma, but failure to take the stain is by no means definitely specific for carcinoma. There are other pathologic conditions in which the epithelium loses its glycogen content and consequently remains white and unstained after painting with iodine. The decision whether carcinoma or one of these other noncarcinomatous pathologic changes is present may in general be made only by histologic examination of the suggestive epithelium.

Replacement of Uterus After Delivery.—Drosin has found that, no matter how careful the technic employed in the delivery of the child and the expulsion of the placenta, the uterus with its supports and adnexa is still left in a state of distortion and on a level so low in the pelvis that it cannot always rise spontaneously out of it. Help on the part of the attendant is therefore indicated. The fingers should be placed above the symphysis and pressure exerted at first in a direction downward and backward and then backward and upward, and, as the uterus rises and anteverts, it is thus sustained for a few minutes until it is firmly contracted. As a result of this procedure the uterus becomes and remains contracted firmly and is raised out of the pelvis to a relatively normal state of anteversion. The uterine supports and vagina are helped to regain their normal tonicity, and hemorrhage, subinvolution, prolapse and retroflexion are minimized or obviated entirely. The result of this procedure as a routine is that it diminishes the incidence of postpartum retroversion of the uterus. With this method the author has rarely seen a puerperal retrodisplacement of the uterus except when there was a history of such a displacement prior to pregnancy. Hence he urges the routine use of this method at the time of labor.

Method to Avoid Skin Grafting in Breast Amputations.—To avoid skin grafting in breast amputation, Baldwin removes the breast, underlying muscles, axillary glands and so on by the usual method. If the cancerous tissue is so limited that the surgeon can make a safe and thorough removal and still leave sufficient tissue, the wound is closed in the ordinary way; but if the edges of the wound cannot be approximated, two transverse incisions are made directly outward from the open wound, the upper one parallel with the clavicle and the other at a suitable point below. These incisions are extended as necessary and the flap is detached from the chest by free dissection from the chest muscles. The distance to which the flap shall be separated must depend entirely on the necessity of the case. A sufficient piece of each of the two corners is removed, and the entire flap is then pulled over the exposed surface and attached by interrupted sutures, usually of silkworm gut, to the opposite edge of the wound, with approximation of the skin between these sutures by continuous number 2 chromicized catgut. If necessary a buttonhole is made, through which are drawn one or

two cigaret drains, to be removed in a few hours. A snug bandage is then applied round the entire chest. Healing occurs promptly, with a minimum of tension.

Normal Shadow of Peripheral Nerves and Pathologic Change in Injury and Tumor.—By injecting thorium dioxide sol (thorotrast) into the ulnar nerve, Saito roentgenographed the nerve for a maximal length of 39 cm. The roentgenogram revealed not only the shadows of the nerve fibers but also the internal and external sheaths of the nerve. It is therefore quite possible to use it for neurohistography. If it is applied to an injury of the nerve, it will clearly reveal the shadow of the injured part. The opaque substance injected into the periphery will not infiltrate into the center over the scar on the nerve caused by the wound. So a defect in the shadow of the nerve will be visualized naturally at the site of the scar. The author believes that this method will be of great help in roentgenologic diagnosis in cases of injury to nerves. If it is applied to the diagnosis of neuroma, it will not only show the form of the neuroma itself but also reveal its structure, together with the stem of the nerve penetrating into the neuroma. Therefore it should be useful in indicating treatment, yet it does not interfere in any way with the function of the nerve nor produce any after-effects such as neuralgia. The author recommends the procedure as the best method of clinical diagnosis, having employed it in eleven instances.

Annals of Internal Medicine, Lancaster, Pa.

S: 383-520 (Oct.) 1934

- *Monocyte, Monocytosis and Monocytic Leukosis: Clinical and Pathologic Study. C. A. Doan and B. K. Wiseman, Columbus, Ohio.—p. 383.
- Remarks on Diagnosis of Coronary Occlusion. L. Hamman, Baltimore.—p. 417.
- Hepatic Function in Relation to Hepatic Pathology: Experimental Observations. F. C. Mann, Rochester, Minn.—p. 432.
- Bronchoscopy in Pulmonary Disease: Present Status as Aid in Diagnosis and Treatment. G. Tucker, Philadelphia.—p. 444.
- *Importance of Actually Measuring Total Heat Production. L. H. Newburgh, Ann Arbor, Mich.—p. 459.
- Certain Aspects of Pulmonary Abscess from Analysis of Two Hundred and Ten Cases. D. S. King and F. T. Lord, Boston.—p. 468.
- Nature of Pellagra: Critique. J. S. McLester, Birmingham, Ala.—p. 475.
- Recent Trend Toward Differentiation Between Allergy and Immunity, and Relationship to Clinical Medicine. L. Martin, Baltimore.—p. 483.
- Early Recognition of Myocardial Disease. W. L. Biering, Des Moines, Iowa.—p. 497.
- Studies of Cell Potencies and Some Relations to Neoplasia. S. P. Reimann, Philadelphia.—p. 504.

The Monocyte.—Doan and Wiseman point out that the monocyte is an independent entity, with life cycle and functions specific to its own peculiar endowments. In tuberculosis the monocyte has been shown to reflect and to be an important part of the cellular reactions to the acid fast bacilli and more particularly to the lipoids elaborated by this group of organisms. When appraised properly and interpreted in conjunction with the other cellular elements of the blood and in the further light of available clinical and laboratory data, prognosis in this disease and an accurate prompt estimation of the effectiveness of any given therapeutic measure become possible. In Hodgkin's disease, syphilis, pneumonia, the xanthomatoses and other pathologic states the monocyte if properly evaluated may contribute to the diagnosis of the disease and to the management of the patient. During the last four years the authors have diagnosed twelve cases of monocytic leukemia, and nine have been studied clinically with five necropsies. The problem of differentiating the leukemias is discussed.

Importance of Measuring Total Heat Production.—A knowledge of the basal metabolism is informative in many different problems, but its use as a basis for estimating the total production of heat is open to errors, which are sometimes so large that the observer is seriously misled; therefore Newburgh developed Benedict's study of the insensible perspiration. He has determined the total dissipation of energy by obese persons and compared these values with the calories of the diet. He then predicted the loss of weight and in that way convinced himself that all obese persons will lose weight when they are underfed and, what is more important, that these persons have invariably become fat simply and solely because they have eaten too much. The author has observed a patient of the type described by Cushing. The main characteristics are uniform

decalcification of the skeleton and adiposity of the upper half of the body. What superficially appears to be a localized accumulation of adipose tissue is in fact merely the configuration of a deformed skeleton. The author discusses the results of diet in this patient and also one who exhibited enormous localizations of adipose tissue whose initial weight was 560 pounds (254 Kg.). Both features are often credited with being signs of endogenous obesity. During the ensuing year his diet contained 300 calories a day. This effected a loss of weight of 287 pounds (130 Kg.). During the second year he received 600 calories daily and lost 93 pounds (42 Kg.). He now weighed 194 pounds (88 Kg.), a weight that was considered satisfactory for his height, and he was told to keep his weight stationary by judicious selection of his food. Nine months later he was told that he had lost a sufficient amount of weight, since he weighed the same amount. The ability to maintain the weight in the face of underfeeding is not the sole possession of obese persons, since the author reproduced it in the normal subject.

Annals of Surgery, Philadelphia

100: 883-1042 (Nov.) 1934

The Old and the New in Prostatic Surgery. C. H. Mayo, Rochester, Minn.—p. 883.

Uretero-Arachnoid (Ureterodural) Anastomosis: Report of Three Cases. E. P. Lehman, University, Va.—p. 887.

*Treatment of Carcinoma of the Thyroid Gland. J. deJ. Pemberton, Rochester, Minn.—p. 906.

Thyroid Surgery as Affected by Generalized Use of Iodized Salt in Endemic Goiter Region: Preventive Surgery. R. D. McClure, Detroit.—p. 924.

Pathology and Treatment of Bleeding Polypoid Tumors of Large Bowel. V. C. David, Chicago.—p. 933.

Tumors of Small Intestine. T. M. Joyce, Portland, Ore.—p. 949.

*Free Omental Grafts in Abdominal Operations. H. F. Graham, Brooklyn.—p. 960.

Postoperative Evisceration: Analysis of Forty-Four Cases. U. Maes, F. F. Boyce and Elizabeth M. McPetridge, New Orleans.—p. 968.

Function of Peripheral Vasodilation. F. A. Collier and W. G. Maddock, Ann Arbor, Mich.—p. 983.

*Primary Carcinoma of the Bartholin Gland. H. H. M. Lyle, New York.—p. 993.

Fractures of the Skull: Review and Summary of Thirty Years' Experience. J. F. Connors and L. T. Wright, New York.—p. 996.

Importance of Adequate Masking During Operation. J. S. Davis, Baltimore.—p. 1008.

Treatment of Carcinoma of the Thyroid.—Pemberton believes that the most effective treatment of malignant neoplasms of the thyroid is the combination of surgery and irradiation. Because of important biologic differences, treatment of primary malignant tumors should be considered in accordance with the type and grade of the condition. The distinguishing clinical features of papillary adenocarcinoma are the low grade of malignant condition and the tendency for the disease to spread to regional lymphatic structures, where it may be confined without further dissemination for many years. Metastasis to the cervical lymph nodes is not a criterion of inoperability in this type, for radical surgical removal of the primary lesion, together with the involved nodes and in conjunction with postoperative irradiation, offers a good chance for cure. The essential clinical features of adenocarcinoma in fetal adenoma are, commonly, the low grade of the malignant process and the tendency for early dissemination of the carcinoma by way of the blood stream. Since lymph vessels are not involved until after the carcinoma has invaded the capsule, the presence of cervical metastasis in this type has a far graver prognostic significance than in the former. The presence of distant metastasis should not be construed necessarily as a contraindication to surgical removal of an encapsulated and obstructing malignant adenoma. Because of the tendency of metastatic malignant thyroid tissue to undergo marked differentiation, a single metastatic tumor may not seriously impair the health of the patient for years. The diffuse adenocarcinomas are of higher malignant grades than the preceding types and behave as diffuse adenocarcinomas situated elsewhere. Squamous epithelioma is rare and is highly malignant. The author's three patients with this type of growth died within a year of the operation. Sarcoma of the thyroid is rare and his four patients died within a year of the operation. The operability for 658 patients having a malignant growth of the thyroid seen at the Mayo Clinic was 48.8 per cent; of these 323 patients, fifty-six were treated by irradiation alone, ten lived five years or more, and, of the 267 patients who underwent partial thyroidectomy with or without postoperative irradiation,

127 lived five years or more. Adenomatous goiter is a precursor of malignant processes in a high proportion of cases and, therefore, a potential suggestion of malignant manifestation should be considered in every case of nodular goiter.

Omental Grafts in Abdominal Operations.—Graham states that in transplantation the thinnest and most vascular area of the omentum available should be used. The graft should extend beyond the raw area to be covered. Fine catgut sutures should be used and placed close together round the circumference of the graft. The raw edge of the great omentum should be turned under and sutured and should not be left in a thick mass to form undesirable adhesions. Fatalities have resulted from omission of this precaution. Success in the use of omental grafts is more likely to follow sharp dissection, a clean field, absolute hemostasis, prompt transfer and accurate suture of the graft to its new location. Resection of the entire omentum must be avoided, for gastro-intestinal hemorrhages occur in 4 per cent of all cases of total resection of the large omentum with a fatality of from 50 to 60 per cent, according to Karger. The author's experience leads him to believe that: 1. Free omental grafts will live, become adherent to the underlying attached structure, prevent adhesions to surrounding organs and, at times, even remain free from surface adhesions in the presence of pus. 2. They are hemostatic. 3. They aid in preserving peristalsis by the prevention of crippling and immobilizing adhesions. 4. They strengthen weak suture lines and resist infection. Twenty cases are reported in which omental grafts were used.

Primary Carcinoma of Bartholin Gland.—Lyle reports a case of primary carcinoma of the Bartholin gland in a woman of 30. He states that carcinoma of the Bartholin gland is as malignant as epithelioma of the vulva and unfortunately is also roentgen resistant. His study leads him to believe that the primary operation should consist of a wide excision of the vulva plus a secondary dissection of the inguinal and femoral glands, the excision to be carried out with the cold scalpel or the endothermic knife. In the advanced cases it is advantageous to destroy the original growth with endothermic coagulation and then proceed immediately with wide excision. The operation should be followed by a thorough local and regional irradiation. Healy, in his cases, applied radon seeds to the recurrence and later did a radical excision of the glands of the vulva. The success of any method rests on an early diagnosis: the diagnosis is not hard to make if the condition is kept in mind.

Archives of Dermatology and Syphilology, Chicago

30: 611-760 (Nov.) 1934

*Specificity of Streptococcus Isolated from Patients with Pemphigus: Preliminary Report. A. L. Welsh, Rochester, Minn.—p. 611.

Mucha-Habermann Syndrome (Parapsoriasis Varioliformis): Critical Study with Report of Case. M. Scholtz, Los Angeles.—p. 631.

Dermatitis Venenata from Rhus Toxicodendron: Report of Unusual Cases. F. Ronchese, Providence, R. I.—p. 645.

Erythroplasia of Glans Penis (Queyrat). F. Stiles Jr., Ann Arbor, Mich.—p. 647.

Mucor Paronychia. H. Sutherland-Campbell and O. A. Plunkett, Los Angeles.—p. 651.

Verrucae: Review. J. Goodman Jr. and A. M. Greenwood, Boston.—p. 659.

Arsphenamine Dermatitis: Attempted Sensitization to Neoarsphenamine and Further Observations on the Patch Test. A. G. Schoch, Dallas, Texas.—p. 672.

*Value of Organic Lueticin in Diagnosis and Treatment of Syphilis: Study of Nine Hundred Cases. L. P. Barker, New York.—p. 676.

Safety of Lumbar Puncture for Ambulatory Patients. H. C. Torbert, San Francisco.—p. 692.

Clinical Spectroscopy: Quantitative Retention of Nickel in Psoriasis: Observations on Forty-Six Cases. L. E. Gaul and A. H. Staud, New York.—p. 697.

*Acute Pemphigus: Report of Case Occurring in Granulocytopenia. M. J. Fiala, Duluth, Minn.—p. 704.

Multiple Idiopathic Hemorrhagic Sarcoma of Kaposi: Report of Case in American Negro. F. A. Ellis, Baltimore.—p. 706.

Streptococcus in Blood in Pemphigus.—Welsh isolated from patients with pemphigus a streptococcus having specific morphologic, cultural and fermentation characteristics and a characteristic cataphoretic mobility distribution curve. It has been found to be virulent for five species of animals and to produce lesions consistent with pemphigus in a fair number. Intradermal and subcutaneous injections of the dead organism into patients with pemphigus produces bullae. The different strains have been shown to be serologically identical. The

author describes the positive precipitin reactions between the nasopharyngeal washings from patients with pemphigus and the serums of animals immunized to the specific streptococcus. The reduction of the mobility of the respective streptococci by the serums from patients with pemphigus, dermatitis herpetiformis, lupus erythematosus and erythema multiforme, as compared with their mobility in a solution of sodium chloride, is applied as a differential diagnostic test between these four diseases.

Organic Luetin in Syphilis.—Barker performed the Kolmer luetin test on 627 syphilitic patients, from which he observed that a positive reaction occurs in 3.5 per cent of nonsyphilitic patients and can be induced by the ingestion of bromides and iodides, making the test unreliable. These observations, in addition to the fact that the luetin test is not as efficient in diagnosis in any stage of syphilis as the Wassermann test of the blood, is strong evidence that it is not practical. As to prognosis, there has not been sufficient study of organic luetin to warrant any definite conclusions. The fact that there is such a high proportion of negative reactions in cases in which the Wassermann reaction is positive would exclude it as a means of determining when a patient is cured of syphilis. In the field of therapy, organic luetin may be of practical value in treating persons with malignant and recurring secondary syphilis who do not respond to therapy with drugs. It has no influence on the Wassermann reaction of the blood and has an inconstant effect on gummatous lesions.

Acute Pemphigus in Granulocytopenia.—Fiala reports a case of acute pemphigus occurring in a patient with granulocytopenia. The degenerative changes of the mucous membrane of the throat and mouth seen frequently in granulocytopenia were pronounced. The sloughing and lesions of the entire large intestine, stomach and esophagus, however, were more like those of acute pemphigus—just as the cutaneous condition was typical of the textbook description of acute pemphigus. The cutaneous lesions occasionally described in granulocytopenia are of a different type from those encountered in the present case. The typical granulocytopenic lesions seem to be seated more deeply in the skin, usually with necrotic areas and crusts covering them and with definite enlargement of the regional lymph nodes.

Archives of Ophthalmology, Chicago

12: 635-804 (Nov.) 1934

- *Use of Thyroxine in Ophthalmology: Its Application as Local Agent and Its Action as Metabolic Alternative. P. C. Jameson, Brooklyn.—p. 635.
- Meningiomas Attached to Mesial Part of Splenoid Ridge with Syndrome of Unilateral Optic Atrophy, Defect in Visual Field of Same Eye and Changes in Sella Turcica and in Shape of Interpeduncular Cistern After Encephalography. C. A. Elsberg and C. G. Dyke, New York.—p. 644.
- Etiologic Diagnosis of Conjunctivitis. P. Thygeson, Iowa City.—p. 676.
- Sarcoma of Eyelid: Metaplasia of Leiomyosarcoma to Round Cell Sarcoma After Repeated Attempted Excisions. T. L. Terry, Boston.—p. 689.
- Ependymoma of Third Ventricle: Report of Case with Extension into Optic Chiasm and with Widespread Vegetative Manifestations. A. R. Vonderahe and N. R. Abrams, Cincinnati.—p. 693.
- When and How Should One Operate for Convergent Strabismus? J. W. White, New York.—p. 699.
- Binocular Brightness Summation in Dark Adaptation. Dorothy J. Shaad, Lawrence, Kan.—p. 705.
- Retinal Detachments: Clinical Experiences with Diathermic Treatment. M. J. Schoenberg, New York.—p. 709.
- Chronic Uveitis: Bacteriologic and Immunologic Considerations. A. L. Brown, Cincinnati.—p. 730.

Use of Thyroxine in Ophthalmology.—Jameson began an investigation in the hope of ascertaining whether thyroxine is a local metabolic stimulator of cell activation in ocular conditions—in which expectation Browning used it in his own eye—and whether it has active alterative qualities when applied locally. He administered thyroxine to about seventy-five patients. The effect in many of the acute cases has been so unusual as to be strikingly impressive. Some of the changes in the lens have remained stationary and some have improved materially, but in the short period of four months a definite decision as to how far lenticular opacities may be eliminated or influenced cannot be concluded. It is doubtful whether well developed nuclear changes can be influenced, but thyroxine may prove valuable in retarding incipient opacifications. Tension, undoubtedly, is reduced moderately, and thyroxine may prove

valuable in assuaging tension incident to tumefaction of the lens and has the advantage of not contracting the pupil. Cases of floating vitreous opacities have been helped noticeably and in a large proportion of keratitic conditions the improvement has been striking. The clinical evidence has appeared more striking to the author than natural improvement could account for, and he believes that it substantiates Browning's first conception of the establishment of thyroxine as a local metabolic stimulant and alterative.

Archives of Pathology, Chicago

18: 605-776 (Nov.) 1934

- Experimental Studies on Human and Primate Species of Strongyloides: III. Fecundity of Strongyloides Females of Parasitic Generation. E. C. Faust, J. W. Wells, Corine Adams and T. D. Beach, New Orleans.—p. 605.
- *Necrosis of Myocardium Induced by Orthophosphates. F. A. McJunkin, W. R. Tweedy and W. J. Menckly, Chicago.—p. 626.
- *Concurrent Tumors of Left Carotid Body and Both Zuckerkandl Bodies. R. W. Cragg, Rochester, Minn.—p. 635.
- Rhino-Encephalocoele. J. Browder and J. A. de Veer, Brooklyn.—p. 646.
- Studies in Atherosclerosis: Chemical, Experimental and Morphologic: III and IV. Roles of Cholesterol Metabolism, Blood Pressure and Structure of Aorta: Fat Angle of Aorta (F. A. A.) and Infiltration-Expression Theory of Lipoid Deposit. S. R. Rosenthal, Chicago.—p. 660.

Necrosis of Myocardium Induced by Orthophosphates.—McJunkin and his associates studied the effects of injected orthophosphates under conditions that prevented their rapid elimination and hence favored their accumulation in the blood. They found that myocardial necrosis may be produced by the injection of disodium phosphate into small nephrectomized rats. Lesions closely resembling the "phosphate" necrosis may be produced by the injection of calcium gluconate into nephrectomized rats. Both kinds of lesions show a tendency to early calcification. The chemical and histologic evidence indicates a close relationship between the necrosis and the deposition of calcium. In view of the tendency of the myocardial necrosis to become calcified, it may be assumed that the precipitation of calcium and phosphate ions represents a local condition of tissue in which the highly organized parenchymal cells of the myocardium cannot survive.

Tumors of Carotid Body.—Cragg reports a case of concurrent tumors of the left carotid body and both Zuckerkandl bodies. The similarity of their histologic appearance to that of paraganglionic tissue associated with the positive chromaffin reaction of the tumors of the Zuckerkandl bodies classifies them in the paraganglionic system. However, they were analyzed for epinephrine and found to contain none. Four other cases of tumor of the Zuckerkandl body have been reviewed and in none have a positive chromaffin reaction and a positive test for epinephrine occurred simultaneously. The author has found these two factors to be inconsistent in the examination of the suprarenal medulla, and the presence of epinephrine has never been demonstrated in the carotid body. Therefore he is inclined to believe that there is no definite association between the chromaffin reaction and epinephrine and that the presence of epinephrine is not essential in the classification of a tissue as a part of the paraganglionic system.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 577-640 (Oct.) 1934

- Intranasal Zinc Ionization: Its Fundamental Aspects and Clinical Value. A. R. Hollender, Chicago.—p. 581.
- The Mammary Problem. G. M. Blech, Chicago.—p. 587.
- Newer Aspects of Iontophoresis for Arthritis and Circulatory Disturbances. R. Kovács and J. Kovács, New York.—p. 593.
- *Histamine Iontophoresis in Myospastic and Vasospastic States. J. C. Doane, Philadelphia.—p. 599.
- Electrosurgery and the Tonsil Problem. F. L. Wahrer, Marshalltown, Iowa.—p. 605.
- Cancer of the Head and Neck: Critical Analysis of Available Therapeutic Methods. F. M. Lederer, Chicago.—p. 608.
- Physics of High Frequency Heating. C. J. Breitwieser, Pasadena, Calif.—p. 616.

Histamine Iontophoresis.—Doane employed histamine iontophoresis in the treatment of a case of Buerger's disease with intermittent claudication, one of persistent hypertension with moderate kidney, cardiac and vascular damage, one of Buerger's disease, one of spasticity of the lower extremities and one of marked spastic arterial involvement of the lower extremities. The author states that by this method one has a means to effect

local hyperemia that is easily subject to control. The effect of this vasodilatation in thrombo-angiitis obliterans with intermittent claudication, in local ulceration due to a deficiency of blood supply and in painful muscle cramp or spasm, such as torticollis and lumbago, has been proved beneficial both subjectively and objectively. The ease with which localized areas can be treated by the use of histamine foils or even of gauze pads moistened with a 1:10,000 histamine solution makes possible a local counterirritant effect whenever the use of the immersion method is impracticable. No serious systemic responses were observed even when, as in one case, a fifth of the body was immersed in this solution. This patient evidently was not susceptible to histamine, since others in the group displayed systemic symptoms even though the amount absorbed must have been small. Clinicians have endeavored by the use of systemic vasodilators to procure localized responses. This has proved rather ineffectual, since splanchnic dilatation tended to counterbalance the local effect. It appears that by the immersion method the physician has a means by which effective treatment can be given to such conditions as diabetic ulcerations of the extremities, Raynaud's disease, Buerger's disease and many others of the vasospastic endarterial group. The author has not been able to learn how rapidly a known strength of histamine solution decreases in concentration as the result of ionization. It is reasonable to suppose that after several treatments a 1:10,000 solution may easily become so weakened that it has but a fraction of the original strength. It has been noticed repeatedly that after three or four treatments local and systemic response tends to become less and that these reactions recur when a fresh solution is employed.

Arkansas Medical Society Journal, Fort Smith

31: 87-108 (Nov.) 1934

- Coronary Thrombosis. R. I. Millard, Dardanelle.—p. 87.
Acute Encephalomyelitis Following Vaccination Against Smallpox: Case Report with Review of Literature. W. G. Klugh and L. E. King, Hot Springs National Park.—p. 91.

Canadian Medical Association Journal, Montreal

31: 465-586 (Nov.) 1934

- Histologic Variations in Animal Thyroids in Western Canada. A. C. Abbott and J. Prendergast, Winnipeg, Manit.—p. 465.
*Surgical Treatment of Facial Palsy by Autoplastic Nerve Graft. J. A. Sullivan, Toronto.—p. 474.
Acute Empyema in Infants and Children. R. R. Fitzgerald, Montreal.—p. 479.
Attempt to Inhibit Development of Tar Carcinoma in Mice: Preliminary Note. J. R. Davidson, Winnipeg, Manit.—p. 486.
Villous Papilloma of the Rectum. F. B. Bowman, Hamilton, Ont.—p. 488.
Value of Glucose in Surgical and Medical Conditions and Its Mode of Administration. D. S. Macnab and E. P. Scarlett, Calgary, Alta.—p. 489.
Climatic Bubo and Lymphogranuloma Inguinale. G. Kinneard, Nassau, Bahamas, W. I.—p. 496.
Effects of Cyclopropane on Normal and Impaired Liver. B. B. Raginsky and W. Bourne, Montreal.—p. 500.
Is Total Thyroidectomy Rational as Method of Treatment? Critical Survey. O. R. Lourie, Boston.—p. 502.
Analysis of Twenty-Six Cases of Aerodynia, with Especial Reference to Their Etiology and Incipency. U. J. Gareau, Regina, Sask.—p. 509.
Maternal Welfare. W. B. Hendry, Toronto.—p. 516.
Recent Advances in Obstetrics and Gynecology. W. P. Tew, London, Ont.—p. 521.
Treatment of Corneal Infections. S. R. Gifford, Chicago.—p. 527.
*Value of Magnesium Chloride as Aid in Treatment of Cancer: Preliminary Report. R. H. Craig, Montreal.—p. 531.
Bactericidal Properties of Sodium Formaldehyde Sulphoxylate in Vivo: Preliminary Report. L. M. Rabinowitch, A. C. Corcoran, J. A. Davidson and L. J. Rhea, Montreal.—p. 534.

Surgical Treatment of Facial Palsy by Autoplastic Nerve Graft.—Sullivan suggests that the nerve be uncovered at once whenever facial palsy immediately follows an operation on the mastoid, in order to determine the extent of the damage. The rewards of such action are manifest. Compression or slight injuries may then be remedied by decompression, or inspection will disclose the fact that the accident has destroyed or damaged a longer segment of the nerve. Immediate operation will permit a decompression of the nerve above or below the point of injury, averting the dire consequences of prolonged inflammatory compression, or a suitable graft may be introduced to replace the damaged segment. It is much better to explore and determine immediately the nature and extent of the injury than to be harassed by uncertainty.

Magnesium Chloride in Treatment of Cancer.—Craig cites a case which, during operation under tribrom-ethanol and chloroform anesthesia, disclosed a diffuse cancerous infiltration and edema of the larynx involving the epiglottis, the aryepiglottic folds, the arytenoids, the true and false vocal cords, the subglottic space and the trachea as far down as the tracheotomy wound. There was some improvement in the patient's general condition following the operation, which was attributed to the removal of the septic foci, but in spite of daily dressings and meticulous care, the laryngeal picture remained about stationary. The patient's condition was grave and the prognosis gloomy. As a last resort magnesium chloride was administered subcutaneously and combined with pepsin as a spray for the pharynx and with pepsin and glycerin as a dressing in the laryngeal cavity. The infiltration began to subside after the tenth treatment. The tracheotomy wound, which had been moth eaten and succulent in appearance, was now firm and healthy looking; the granulations in the laryngeal opening were white, healthy and glistening. The odor and cough had almost disappeared. The improvement was pronounced and, in order to speed it up magnesium chloride was prescribed by mouth. Two days later the man developed general malaise with loss of appetite, and the tracheotomy wound had lost its healthy appearance. The magnesium chloride was discontinued and a purge of mild mercurous chloride was given. Forty-eight hours later he again felt comfortable, and the appearance of the mucosa of the larynx and the tracheotomy wound gave the clue to the amount of magnesium chloride that could be tolerated and assimilated by the patient. Fifteen days after the treatment was begun the feeding tube was removed and deglutition returned gradually to normal. One month later the edema had disappeared from the epiglottis and the ulceration of the mucous membrane of the larynx had disappeared. When the tracheotomy tube was removed, the patient could whisper; abduction and adduction were returning slowly. One month and two days from the time the treatment was first started, the patient left the hospital.

Johns Hopkins Hospital Bulletin, Baltimore

55: 245-294 (Oct.) 1934

- Study of In Vivo and In Vitro Behavior of Monocytes of Blood Stream and Connective Tissue. D. L. Reeves, Washington, D. C.—p. 245.
Iron Metabolism in Infancy: Relation to Nutritional Anemia. H. W. Josephs, Baltimore.—p. 259.
Locomotion of Polymorphonuclear Neutrophils of Rat in Autoplasma Cultures. W. H. Lewis, Baltimore.—p. 273.
Critical Review of One Hundred and Seventy Cases of Urticaria and Angioneurotic Edema Followed for Period of from Two to Ten Years. A. I. Fink and L. N. Gay, Baltimore.—p. 280.

Journal of Clinical Investigation, New York

13: 833-1098 (Nov.) 1934

- Localization of Pain Accompanying Faradic Excitation of Stomach and Duodenum in Healthy Individuals. E. A. Boyden and L. G. Rigler, Minneapolis.—p. 833.
Unexplained Fever in Heart Failure. A. E. Cohn and J. M. Steele, New York.—p. 853.
Fever in Heart Failure: Relations Between Temperatures of Interior and Surface of Body. J. M. Steele, New York.—p. 869.
Significance of Vessels of Skin in Essential Hypertension. J. M. Steele and E. Kirk, New York.—p. 895.
Neufeld Method of Pneumococcus Type Determination as Carried Out in Public Health Laboratory: Study of Seven Hundred and Sixty Typings. Edith Becker and Patricia MacLeod, Boston.—p. 901.
Effect on Renal Efficiency of Lowering Arterial Blood Pressure in Cases of Essential Hypertension and Nephritis. I. H. Page, New York.—p. 909.
*Acidosis of Guanidine Intoxication. A. S. Minot, Katharine Dodd and J. M. Saunders, Nashville, Tenn.—p. 917.
*Effect of Alkali on Absorption of Peptide of Thyroxine from Gastro-Intestinal Tract. W. O. Thompson, S. B. Nadler, Phoebe K. Thompson and Lois F. N. Dickie, Chicago.—p. 933.
*Factors Determining Effect of Exercise on Blood Sugar in the Diabetic. R. Richardson, with technical assistance of Alma L. Case, Philadelphia.—p. 949.
Lactic Acid and Glutathione Content of Blood of Schizophrenic Patients. J. M. Looney and Hazel M. Childs, Worcester, Mass.—p. 963.
Significance of Concentration and Dilution Tests in Bright's Disease. A. S. Alving and D. D. Van Slyke, New York.—p. 969.
Study of Blood in Chronic Respiratory Diseases, with Especial Reference to Volume of Blood. N. L. Kaltreider, A. Hurtado and W. D. W. Brooks, Rochester, N. Y.—p. 999.
Studies of Total Pulmonary Capacity and Its Subdivisions: VI. Observations on Cases of Obstructive Pulmonary Emphysema. A. Hurtado, N. L. Kaltreider, W. W. Fray, W. D. W. Brooks and W. S. McCann, Rochester, N. Y.—p. 1027.

Id.: VII. Observations During Acute Respiratory Distress of Bronchial Asthma and Following Administration of Epinephrine. A. Hurtado and N. L. Kaltefleiter, Rochester, N. Y.—p. 1053.
Radiation of Heat from Human Body: Statement Relative to Critique of J. D. Hardy. H. Bohnenkamp, Giessen, Germany.—p. 1063.
Observations on Effect of Vagus and Sympathetic Stimulation on Coronary Flow of Revived Human Heart. W. B. Kountz, E. F. Pearson and K. F. Koenig, St. Louis.—p. 1065.
Phosphatase Content of Blood Serum in Jaundice. C. H. Greene, H. F. Shattuck and Lillian Kaplowitz, New York.—p. 1079.

Acidosis of Guanidine Intoxication.—Minot and his associates show that guanidine intoxication causes an acidosis due primarily to increased production and defective metabolism of lactic acid. The administration of alkalinizing sodium salts in the treatment of this acidosis is attended by unusual difficulties because of the danger associated with any temporary decrease in the effectiveness of calcium ions in the presence of increased guanidine. Sodium lactate fails to increase the alkali reserve because of the inability of the subject to utilize lactates. Sodium bicarbonate, while at times both dangerous and ineffective if used alone, can be made safe and promptly efficient if calcium medication is combined with its administration. A gradual relief of acidosis results from calcium medication alone or from the intravenous administration of fluid in the form of dextrose solution or physiologic solution of sodium chloride. The latter procedure also improves the condition of the subject by hastening the excretion of guanidine through improved kidney function. The authors have found that the most satisfactory treatment of the acidosis produced by the administration of guanidine is the use of sodium bicarbonate combined with repeated intravenous calcium medication and the injection of liberal amounts of fluids to increase the urinary output. The same form of treatment is recommended for severe acidosis in clinical subjects with hyperguanidemia.

Effect of Alkali on Peptide of Thyroxine from Gastro-Intestinal Tract.—Thompson and his co-workers prepared a peptide of thyroxine containing 48 per cent of iodine, with a nitrogen:iodine ratio of 0.48:1, from a proteolytic digest of desiccated thyroid. This product is insoluble in distilled water but soluble in a dilute solution of sodium hydroxide. When suspended in distilled water and administered by mouth to patients with myxedema, it produced only a slight increase in the basal metabolism, which was about the same as that produced by the oral administration of the monosodium salt of thyroxine in doses which contained the same amounts of iodine, and about one fourth as great as that produced by thyroxine in alkaline solution given intravenously. However, when administered by mouth in an alkaline solution the peptide produced a well marked increase in the basal metabolism, which was nearly four fifths as great as that produced by thyroxine in alkaline solution given intravenously and slightly greater than the increases produced by the oral administration of desiccated thyroid and thyroxine in alkaline solution. The authors' observations were made on three patients who had well marked myxedema. In the second patient the myxedema was spontaneous and in the other two it followed a subtotal thyroidectomy for exophthalmic goiter.

Effect of Exercise on Blood Sugar in Diabetes.—Richardson observed sixty-one diabetic patients by means of a standard form of exercise, in an effort to determine whether they differ in their response to exercise and whether the severity of the diabetes influences the response. The exercise selected consisted of four five-minute periods of work on the ordinary type of rowing machine exerciser. He found that the effect of exercise of the degree and character employed in these experiments, after sixteen hours without food or insulin, varied with the severity of the diabetes as indicated by the fasting blood sugar level. With increase in the fasting blood sugar level from a normal value to about 175 mg. per hundred cubic centimeters of blood, the effect of a half hour of standardized exercise induced a progressively more marked lowering of the blood sugar. With further increase in the fasting blood sugar level from 175 mg. to more than 300 mg., the effect of a half hour of standardized exercise induced a progressively more marked elevation of the blood sugar. In cases of severe diabetes the intravenous injection of 0.1 unit of insulin, which given before a period of rest was without marked effect on the blood sugar, caused, when given immediately before a period of exercise, a recognizable drop in blood sugar. Five times this

dose given intravenously a half hour before the exercise was begun failed to prevent in cases of severe diabetes this rise associated with the exercise. The effect of from 0.5 to 5 units of insulin subcutaneously was not influenced by rest or exercise. Recent intake of food led under certain conditions to a decrease in blood sugar during exercise in two diabetic patients, who, fasting, exhibited a rise of blood sugar during exercise.

Journal of Experimental Medicine, New York

60: 541-660 (Nov. 1) 1934

- Protective Action of Copper Against Trypanosoma Equiperdum Infection in Albino Rats. D. Perla, New York.—p. 541.
Studies on Mouse Leukemia: XI. Metabolic Effects of Host Constitution. J. Victor, New York, and J. S. Potter, Cold Spring Harbor, N. Y.—p. 547.
Antibody Response of Rabbits to Injections of Emulsions and Extracts of Homologous Brain. F. F. Schwenker and T. M. Rivers, New York.—p. 559.
Thermoprecipitation Reaction in Trypanosoma Equiperdum Infection in Laboratory Animals. H. A. Poindexter, Washington, D. C.—p. 575.
*Study on Mechanism of Invasiveness of Streptococci. E. W. Dennis and D. Berberian, Beirut, Lebanon.—p. 581.
Chemo-Immunologic Studies on Conjugated Carbohydrate-Proteins: IX. Specificity of Antigens Prepared by Combining *p*-Aminophenol Glycosides of Disaccharides with Protein. W. F. Goebel, O. T. Avery and F. H. Babers, New York.—p. 599.
*Studies on Minute Hemolytic Streptococci: I. Isolation and Cultural Characteristics of Minute Beta Hemolytic Streptococci. P. H. Long and Eleanor A. Bliss, Baltimore.—p. 619.
*Id.: II. Distribution of Minute Hemolytic Streptococci in Normal and Diseased Human Beings. P. H. Long, Eleanor A. Bliss and C. F. Walcott, Baltimore.—p. 633.
*Chemical Studies on Bacterial Agglutination: I. Method. M. Heidelberger and E. A. Kabat, New York.—p. 643.
Protection Afforded by Vaccination Against Secondary Invaders During Colds in Infancy. Y. Kneeland Jr., New York.—p. 655.

Mechanism of Invasiveness of Streptococci.—Dennis and Berberian confirm Menkin's observations of the failure of inflammatory fixation in areas of acute inflammation due to *Streptococcus haemolyticus*. The lack of inflammatory fixation in the presence of streptococci is not due to the passive nature of the streptococcus but may be attributed to the production of fibrinolytic and antifibrinogenic substances, which dissolve the fibrin barrier or prevent its formation, thus maintaining the patency of the lymphatics and capillaries and facilitating the dissemination of the organisms. The production of fibrinolytic or antifibrinogenic substances and the invasiveness of a given strain of streptococcus are correlative. Both substances are relatively thermostable. Fibrinolysin is destroyed if held at 100 C. for one hour. The antifibrinogenic substance is weakened but not destroyed under the same conditions. There is evidence that both substances are antigenic and exhibit some degree of type specificity. The authors discuss the rôle of fibrinolysin and the antifibrinogenic factor in the invasion of the tissues by streptococci.

Minute Hemolytic Streptococci.—Long and Bliss describe the cultural and biochemical characteristics of a group of minute heretofore undescribed beta hemolytic streptococci from human sources and on the basis of these cultural reactions suggest that the organisms may represent new species of the genus streptococcus. It is evident from the study that, while they resemble ordinary beta hemolytic streptococci in many respects, they cannot be classified under any previously described groups of the latter organisms. The individual organisms are smaller than ordinary hemolytic streptococci, and the colonies are much more minute. Their fermentation reactions in the test sugars resemble those described for ordinary hemolytic streptococci of human origin except in three instances in which they conformed to those described for the organisms isolated from stranglers in horses. None of the strains hydrolyzed sodium hippurate nor did they reduce methylene blue milk. The majority of the strains produced a fair amount of acid when grown in 1 per cent dextrose broth. None of the tested strains showed the presence of the fibrinolytic substance. While all strains possess certain of the characteristics of ordinary beta hemolytic streptococci, none of them completely conform to known species of these organisms.

Minute Hemolytic Streptococci in Man.—Long and his associates observed that minute beta hemolytic streptococci occur in normal persons from a third to a half as frequently as ordinary beta hemolytic streptococci. They were rarely isolated from the rhinopharynx of persons suffering from chronic disease. In

acute infection of the respiratory tract other than that due to the ordinary beta hemolytic streptococcus, the incidence of minute streptococci was slightly higher than in normal subjects. In acute streptococcal infections, scarlet fever and acute tonsillitis, for example, the incidence of minute hemolytic streptococci did not vary significantly from the incidence found in normal human beings. Minute beta hemolytic streptococci were found in the throats of thirty-three of forty-two patients having glomerular nephritis and in twenty-five of fifty-nine patients who were suffering from the various manifestations of rheumatic fever. In glomerular nephritis and rheumatic infection the minute beta hemolytic streptococci were isolated from the throats of more patients than were the ordinary beta hemolytic streptococci.

Bacterial Agglutination.—Heidelberger and Kabat describe a method that affords an exact analytic determination of the total amount of agglutinin present in absolute, not relative, terms and should therefore be useful in instances in which accuracy is demanded and scientific, not routine, data are sought. It has yielded evidence of the quantitative correspondence of agglutinin and precipitin and has afforded new data on the mechanism of bacterial agglutination. The method should be useful in determining the agglutinin content of standard serums, with which serums could then be compared by the commonly used relative methods. The authors state that the range of applicability of the method among the nonencapsulated bacteria is yet to be determined. Preliminary tests with a hemolytic streptococcus system were not encouraging, as complete absorption of the antiserums required too large amounts of the heat-killed suspension used. Experiments are being continued with other types of streptococcus suspensions. It was possible to estimate quantitatively the agglutinin content of a serum for different variants of the same organism.

Journal of Immunology, Baltimore

27: 355-430 (Oct.) 1934

- *Agglutination Reactions in Rheumatoid Arthritis. III. Comparison of Agglutinins and Precipitins for Streptococcus Haemolyticus in Rheumatoid Arthritis Serums. M. H. Dawson, Miriam Olmstead and Elizabeth L. Jost, New York—p. 355
- Some Factors Influencing Rate of Thermal Destruction of Tetanus Antitoxin of Antitetanic Horse Plasma at 60 to 66 C. T. D. Gerlough and W. White, New Brunswick, N. J.—p. 367
- Studies on Immunizing Substances in Pneumococci. II. Separation of Organism into Acid Soluble and Acid Insoluble Fractions. L. D. Felton, Boston—p. 379
- Rate of Antibody Formation in Monkeys Actively Immunized with Polio-myelitis Virus. M. Brodie, Montreal—p. 395
- Age and Antibody Production. I. Qualitative Changes in Antiserums Associated with Age. Leona Baumgartner, New Haven, Conn.—p. 407
- Id. II. Further Observations on Qualitative Changes in Antiserums Associated with Age. Leona Baumgartner, New Haven, Conn.—p. 417

Agglutination Reactions in Rheumatoid Arthritis.—Dawson and his associates made a comparative study of precipitins and agglutinins against Streptococcus haemolyticus in the serums of seventy-one cases of rheumatoid arthritis and in seventy-nine cases of other diseases. The results indicate that there is a close approximation, but not an absolute agreement, in the capacity of rheumatoid arthritis serums to agglutinate strains of Streptococcus haemolyticus and to precipitate various group specific fractions of this organism. With certain exceptions the control serums examined did not show the presence of either agglutinins or precipitins in significantly high dilutions. The authors believe that their observations offer suggestive evidence in favor of the hypothesis that rheumatoid arthritis is associated with infection by Streptococcus haemolyticus.

Journal of Nervous and Mental Disease, New York

80: 501-628 (Nov.) 1934

- Clinical Studies on Particular Types of Depressive Psychoses. Their Differential Diagnosis from Schizophrenic Pictures and Some Remarks on Psychology of Depressions. P. Schilder, New York—p. 501
- Total Contralateral Hemianalgesia in Cases of Vascular Lesions of Medulla and Pons. J. A. Luban, Chicago—p. 528
- *Neurologic Findings in Mastoiditis. Study of One Hundred and Six Consecutive Cases Without Intracranial Extension. J. M. Nielsen and C. B. Courville, Los Angeles—p. 541
- The Unhappiness of Genius. H. H. Hart, New York—p. 557.

Neurologic Observations in Mastoiditis.—Nielsen and Courville studied 106 consecutive cases of clinically uncomplicated mastoiditis in an effort to establish what signs and

symptoms may occur without intracranial extension. Each patient was studied from the neurologic standpoint with especial reference to pupils, eyegrounds, headache, nystagmus, reflexes, pain in the distribution of the trigeminal, meningeal signs, aphasia, cerebellar symptoms, perimetric changes, extra-ocular palsies and dementia paralytica. Also focal convulsions, general toxemia, chills and sweats, acuity or chronicity, nausea and vomiting, laterality, age and sex were noted. Pathologic signs and symptoms were observed in the following order of frequency: alteration in deep reflexes, headache (ipsilateral hemi and frontal headache predominating), eyeground changes, pathologic reflexes, chills or severe sweats, pupillary changes, pain in the ipsilateral eye, vomiting or severe nausea, nystagmus, meningeal signs and pain in the ipsilateral jaw. As to laterality among the unilateral cases, forty-eight were left and twenty-eight right. Sex distribution was equal. Aphasia, cerebellar symptoms, extra-ocular palsies, focal convulsions and perimetric changes were not observed.

Journal of Nutrition, Philadelphia

8: 497-614 (Nov. 10) 1934

- Study of Manganese Retentions in Children. Gladys J. Everson and Amy L. Daniels, Iowa City—p. 497
- Utilization of Meat by Human Subjects. I. Utilization of Nitrogen and Phosphorus of Loin and Heel Cuts of Beef. Martha S. Pittman, Ruth B. McCammon and Myrna Holman, Manhattan, Kan.—p. 503
- Specific Dynamic Effects of Protein, Fat and Carbohydrate as Determined with the Albino Rat at Different Planes of Nutrition. M. Kriss, E. B. Forbes and R. C. Miller, State College, Pa.—p. 509
- Energy Metabolism of the Albino Rat in Relation to Plane of Nutrition. E. B. Forbes, M. Kriss and R. C. Miller, State College, Pa.—p. 535
- Efficacy of Vitamin D Administration in Aqueous Preparation. Y. Venar and T. W. Todd, Cleveland—p. 553
- Studies on Adrenal: VII. Relation of Adrenal Cortical Hormone to Vitamins. A. Grollman and W. M. Firor, Baltimore—p. 569
- Effect of Supplementary Iodine on Nutritive Value of Chick Rations. A. D. Holmes, Madeleine G. Pigott and W. H. Packard, Boston—p. 583
- New Toxicant Occurring Naturally in Certain Samples of Plant Food stuffs: I. Results Obtained in Preliminary Feeding Trials. K. W. Franke, Brookings, S. D.—p. 597
- Id. II. Occurrence of Toxicant in Protein Fraction. K. W. Franke, Brookings, S. D.—p. 609.

Journal of Pharmacology & Exper. Therap., Baltimore

52: 235-354 (Nov.) 1934

- Rôle of Adrenalin in Production of Ventricular Rhythms and Their Suppression by Acetyl- β -Methylcholine Chloride. H. E. Hoff and L. H. Nahum, New Haven, Conn.—p. 235
- Effect of Diuretics on Rabbits During Recovery Stage from Acute Uranium Nephritis. J. H. Mentzer, Boston—p. 246
- Ether and Strychnine Antagonism. Janet Travell and H. Gold, New York—p. 259
- Studies of Phenanthrene Derivatives: III. Disubstitution Products. N. B. Eddy, Ann Arbor, Mich.—p. 275
- Inhibitory Innervation of Iris Sphincter. T. F. Yonkman, Boston—p. 290
- Barbiturates in Local Anesthetic Toxicity. A. H. Maloney, Washington, D. C.—p. 297
- *Effect of Caffeine, Coffee and Decaffeinated Coffee on Blood Pressure, Pulse Rate and Certain Motor Reactions of Normal Young Men. Kathryn Horst, W. D. Robinson, W. L. Jenkins and Dji-Lih Bao, Ann Arbor, Mich.—p. 307
- *Effect of Habitual Use of Coffee or Decaffeinated Coffee on Blood Pressure and Certain Motor Reactions of Normal Young Men. Kathryn Horst, R. E. Buxton and W. D. Robinson, Ann Arbor, Mich.—p. 322
- Effect of Different Concentrations of Acetylcholine and Histamine on Rate of Contraction of Longitudinal Muscles of Guinea Pig Ileum. F. Bernheim and A. Gorfain, Durham, N. C.—p. 338
- Strychnine in Poisoning by Alcohol. H. Gold and Janet Travell, New York—p. 345

Effect of Caffeine and Coffee on Blood Pressure.—Horst and her associates gave fourteen men, from 20 to 25 years of age, caffeine or coffee (dosage, 3 or 4 mg. of caffeine per kilogram of body weight) once or twice a week and decaffeinated coffee on the intervening days. In certain studies, bouillon was administered as a control beverage. The blood pressure and the pulse rate after decaffeinated coffee were essentially the same as after bouillon. After coffee or caffeine, the blood pressure and the pulse rate were altered, although the changes were small and often uncertain. One or two hours after the drugs, the blood pressure was usually increased (from 5 to 10 mm. of mercury), the pulse rate decreased (5 per minute) in certain subjects and increased in others. Twenty-five hours after the drugs, the blood pressure was not changed, but the pulse rate was at times increased. Motor function was

changed by coffee or caffeine, the response to single doses being relatively uniform throughout the two months of experimentation. The performance of a simple movement (target test), was usually improved one or two hours after coffee or caffeine but impaired in certain subjects, particularly twenty-five hours after the drugs. Caffeine exerted a sustained, deleterious influence on the performance of an acquired motor skill. Decaffeinated coffee did not affect performance of this skill. In the target test the effect of caffeine or coffee on performance was not apparent later than twenty-five hours after the drugs, but in the acquired motor skill each dose exerted an influence for several days.

Effect of Habitual Use of Coffee on Blood Pressure.

—Horst and her co-workers administered caffeine equivalent to a dose of 3 or 4 mg. per kilogram of body weight or a like quantity of decaffeinated coffee (or bouillon), once daily for periods of from three to eight weeks to seven men from 20 to 25 years of age. During the periods on coffee, the blood pressure was usually higher than that on decaffeinated coffee, the increase being distinct in some subjects and slight or variable in others. The rise in blood pressure seldom exceeded 10 mm. of mercury and was somewhat less in the latter weeks of the periods on coffee. Motor function was changed throughout the periods on coffee. In one motor test (target), improvement in performance reached a maximum in the first two weeks on coffee, then decreased slightly, but was still apparent in the latter weeks (fifth to eighth) on coffee. In another motor test (acquired motor skill) performance was impaired markedly throughout the periods on coffee, the impairment of performance being almost as great in the latter weeks (fourth to seventh) as in the first part of the period. When coffee was withdrawn, the blood pressure returned quickly to the level found after decaffeinated coffee, but performance was impaired in both motor tests during the first week after withdrawal of coffee. During the periods on decaffeinated coffee the blood pressure was not far different from that when bouillon was administered. In the acquired motor skill, performance on decaffeinated coffee was essentially the same as that when bouillon was administered or when no special beverages were taken.

Journal of Thoracic Surgery, St. Louis

4:1-106 (Oct.) 1934

- Thoracoplasty in Bilateral Cavernous Tuberculosis. H. Jessen, Davos-Platz, Switzerland.—p. 1.
Simultaneous Bilateral Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. F. M. Mattill and T. J. Kinsale, Oak Terrace, Minn.—p. 13.
Thoracoplasty Versus Pneumothorax. P. N. Coryllos, New York.—p. 30.
Scaleneotomy with or Subsequent to Phrenicectomy in Treatment of Pulmonary Tuberculosis: Report of One Hundred and Thirty-Five Cases. L. Fisher, Waverly Hills, Ky.—p. 41.
Results of Operation Which Interrupts Nerve Impulses Along Phrenic Nerve Pathway: Indications and Contraindications for Its Use. A. V. S. Lambert, New York.—p. 49.
Results of Extrapleural Thoracoplasty in Treatment of Pulmonary Tuberculosis. C. A. Hedblom and W. Van Hazel, Chicago.—p. 55.
Nonparasitic Cystic Disease of Lung: Its Clinical Recognition and Treatment. E. F. Pearson, Springfield, Ill.—p. 84.

Journal of Urology, Baltimore

32:417-540 (Nov.) 1934

- Urology: Retrospect and Prospect. N. P. Rathbun, Brooklyn.—p. 417.
Tumors of Adrenal Gland: Clinical Report of Two Cases. H. Culver and M. Davison, Chicago.—p. 428.
*Ureteral Occlusion Following Radium Implantation into the Cervix. H. G. Bugbee, New York.—p. 439.
Study of Comparative Effects of Various High Frequency Currents and of Thermal Cauterization in Prostatic Resection. J. R. Caulk and W. Harris, St. Louis.—p. 449.
*Treatment of Prostatic Hypertrophy by a New Shrinkage Method. T. J. Kirwin, New York.—p. 481.
Calculus Replacement of Prostate: Report of Case. J. B. Clark, New York.—p. 495.
Treatment of Malignant Disease of Penis. R. C. Graves, Boston.—p. 501.
Interpretation of Biochemical Findings in Urologic Disease. H. M. Ray, Pittsburgh.—p. 513.
Urinary Bilharziasis. L. W. Riba and F. A. Christensen, Chicago.—p. 529.

Ureteral Occlusion Following Radium Implantation in Cervix.—Since 1930, Bugbee has nephrectomized six patients following irradiation of the cervix for carcinoma. Two other cases were referred to the urologic department, one presenting

an occlusion of both ureters, the other a unilateral occlusion, in both instances secondary to irradiation of the uterus. Seven of the patients were admitted to the hospital complaining of vaginal bleeding; all but one showed a squamous carcinoma of the cervix on biopsy; all except one were treated with radium, one or more tubes being inserted into the cervical canal for a minimal dosage of 1,787.5 mg. hours and a maximal dosage of 4,857.68 mg. hours. In three cases, needles were inserted also into the cervix; and five patients had received high voltage roentgen therapy. In four cases the carcinoma had extended into the vaginal wall. None of these patients showed evidence of metastasis when first treated. None had urinary symptoms at the time of the first irradiation, and in all but one the urinalyses were negative. The ureteral obstruction was unilateral in seven cases and bilateral in one. In six cases a functionless kidney due to pyonephrosis and secondary to a ureteral occlusion was removed; the time elapsing between the irradiation and the nephrectomy was from five months to nine years. Of the two patients not operated on, the bilateral obstruction occurred in one case one month and in the other one five years after the irradiation. None of the kidneys removed showed metastasis; one was tuberculous when removed but negative at the time of irradiation. In two cases of ureteral occlusion that came to necropsy, carcinoma was found to have extended to or metastasized in the occluded ureter. It is quite possible that in the other cases the growth had extended in a similar manner and that the early breaking down of the tumor tissue after irradiation, with the rapid cicatrization that had resulted, had accounted for the early ureteral occlusion and the establishment of a ureterovaginal fistula in three cases. The author gave smaller doses of radiation than did Dean, which probably accounts for the absence of lesions of the bladder, except in one case, the patient having received radiation elsewhere. In the case in which there was an obstruction of both ureters one month after irradiation, the microscopic sections of the ureters and adjacent tissue showed carcinoma and cicatricial tissue in the ureters and surrounding tissue. He believes that the results obtained by irradiation in the treatment of cervical carcinoma have been such as to warrant its general employment in those cases. The possibility of ureteral occlusion, either unilateral or bilateral, secondary to its use and resulting in the slow destruction of a kidney possibly necessitating nephrectomy, must be considered. In the follow-up examinations, the urinary tract should receive careful attention. Urinary examinations should be made regularly and supplemented by excretory urograms and cystoscopic investigations, when symptoms or physical signs are present that suggest the possibility of ureteral occlusion.

Treatment of Prostatic Hypertrophy.—Kirwin explains nondestructive shrinkage as a heat treatment by high frequency current, a given current density being applied to a measured area of tissue for a definite length of time. The unit of measurement of current density is called a millimil. The depth to which the heat will penetrate during a given period of time may be predetermined. The shrinkage method, as its name implies, withdraws fluid and coagulates albumin, so that the treated tissues are reduced in volume and changed in consistency. The temperature within the tissues is raised to a degree that kills living adenomatous cells but does not injure blood and lymph vessels. The object is to carry the heat treatment beyond the point of tolerance in the unanesthetized patient (in diathermy) but not to the point of tissue destruction, as in coagulation. By coagulation of albumin and evaporation of tissue fluids, the gland will be reduced greatly, without subjecting the most debilitated patient to the chance of surgical shock. The author describes an instrument designed for efficient application of the procedure and cites a series of cases in which the procedure was used.

Kansas Medical Society Journal, Topeka

35:409-444 (Nov.) 1934

- Essential Hypertension. E. V. Allen, Rochester, Minn.—p. 409.
Uterine Hemorrhage Due to Adnexal Pathology. L. Rudolph, Chicago.—p. 416.
Achyilia Gastrica. E. W. Wilhelmy, Kansas City.—p. 420.
Capillary Blood Pressure in Normal Subjects and in Patients with Arterial Hypertension. M. Snyder, Salina.—p. 425.
Asthma Due to House Dust. H. J. Rinkel and O. R. Withers, Kansas City, Mo.—p. 430.

Maine Medical Journal, Portland

25: 221-240 (Nov.) 1934

- Some Observations on Treatment of More Common Forms of Heart Disease. W. J. Renwick, Auburn.—p. 222.
Rabies in Maine. G. H. Coombs, Augusta.—p. 226.

Michigan State M. Society Journal, Grand Rapids

33: 581-648 (Nov.) 1934

- Lesions of the Esophagus. R. D. McClure, Detroit.—p. 581.
The Present Obstetric Problem. H. A. Furlong, Pontiac.—p. 587.
Whither Surgical Practice. E. I. Carr, Lansing.—p. 590.
Indications for and Technic of Indirect Citrate Method of Blood Transfusion. J. S. Lundy and R. M. Tovell, Rochester, Minn.—p. 592.
*Demonstration of Relief of Endometrium with Thorium Hydroxide Sol. T. O. Menees and J. D. Miller, Grand Rapids.—p. 598.

Relief of Endometrium with Thorium Hydroxide Sol.
—Menees and Miller prepared a colloidal suspension of thorium hydroxide by peptizing it with an appropriate amount of thorium nitrate solution. This was prepared by the precipitation of the hydroxide through addition of dilute ammonium carbonate solution to a dilute solution of thorium nitrate. This gave a flocculent white precipitate, which was allowed to settle, washed, the required amount of thorium nitrate added and then concentrated by boiling to the desired strength. The solution so obtained is opalescent in appearance and thin enough to be drawn through a small cannula with ease. It has a p_n value of approximately 6. It coagulates and adheres to a surface when coming in contact with dilute alkalis or mucus. The film deposited in this manner is sufficiently opaque to the x-rays to give a satisfactory demonstration of the relief of the endometrium. The deposited material does not remain in place but is soon loosened, apparently by secretion from the mucous surface, and expelled. For injection the solution is drawn into a sterile 20 cc. syringe to which is attached a small caliber cannula. The cannula is passed through the cervix into the fundus of the uterus and injection is made slowly, its tip being turned from side to side and it being moved back and forth so that the solution is well distributed over the interior of the cavity, care being taken that there is a free return of fluid round the cannula. After injection, the fundus is massaged a few times with the hand to expel any excess of fluid. The speculum is removed, the tenaculum being left in place. An anteroposterior view is then taken, the Potter-Bucky diaphragm being used. If the shadow is too dense to give good detail, the patient is allowed to get up and walk about for a few minutes. When a satisfactory shadow has been obtained, right and left oblique and postero-anterior views are taken. It is advantageous to use moderate traction on the tenaculum while the postero-anterior view is being taken in order to straighten the uterus as much as possible. The authors state that roentgenograms taken in this manner outline clearly the contour of the uterine cavity; the relief of the mucous membrane produces a latticed appearance as the result of the deposit of the material in the crevices between the folds in thicker layers than on the summit of the folds.

Military Surgeon, Washington, D. C.

75: 277-356 (Nov.) 1934

- Medical Progress and the War. W. N. Bispbam.—p. 305.
*Autogenous Vaccines in Treatment of Chronic Sinus Infections and Nasal Allergy (Further Studies). W. C. Cox.—p. 317.
Diverticulosis of Colon. F. C. E. Kuhlmann.—p. 325.
Relation of Foreign Service to Morbidity and Mortality Rates During the Past Decade. G. F. Lull.—p. 332.
Emotional Stability in Young Men After Being in a C. C. C. Camp for Two Months. A. Luppens.—p. 335.

Autogenous Vaccines in Treatment of Nasal Allergy.
—Cox reports nineteen cases treated for nasal allergy and chronic sinus infections in which autogenous vaccines prepared from washed organisms and the diluted broth filtrate from eighteen-hour cultures of the organisms were used. The patients treated included those referred to the laboratory after having undergone long continued treatment in the eye, ear, nose and throat clinic, cases of obscure nasal allergy and cases of bronchial asthma. Of the nineteen patients, fifteen were so improved as to be classed as cured. Two patients with bacterial allergy, although classed as cured, find it necessary to report at intervals for treatment. Four patients were not benefited by vaccine treatment. During the past nine months the predominating organisms occurring in the nose and throat cultures of patients being

given routine treatment have been *Streptococcus haemolyticus*, *Streptococcus viridans*, *Staphylococcus aureus* and *Staphylococcus albus*. There was a marked seasonal variation. Throughout the fall the *Streptococcus viridans* group predominated, during the spring the *Streptococcus haemolyticus* group. The author concludes that treatment by means of autogenous vaccine has benefited the majority of patients referred to the laboratory during the past two years suffering from chronic sinus infections, nasal allergy and associated asthma of the bronchial type.

Missouri State Medical Assn. Journal, St. Louis

31: 413-452 (Nov.) 1934

- Surgery of Autonomic Nervous System: Effect of Parasympathetic Denervation on Rectum and Colon (Experimental Megacolon). J. H. Hershey and J. M. McCaughan, St. Louis.—p. 413.
Id.: Effect of Sympathetic and Parasympathetic Denervation on Urinary Bladder. J. M. McCaughan and J. H. Hershey, St. Louis.—p. 417.
Prognosis and Therapeutic Management in Ambulatory Cases Presenting Anginal Syndrome. E. S. Smith, St. Louis.—p. 421.
Tertian Malaria with Unusual Type of Skin Manifestation: Report of Case. A. G. Davis, Kirkwood.—p. 426.
Diaphragmatic Hernias: Clinical and Radiologic Study of Twenty-Five Cases. W. A. Myers, Kansas City.—p. 428.

Philippine Journal of Science, Manila

54: 343-472 (July) 1934

- Does Chaulmoogra Treatment Influence Shifting of Serologic Findings in Lepers as Obtained by Wassermann, Kahn and Vernes Reactions? C. Monserrat, Manila.—p. 343.

Psychiatric Quarterly, Albany, N. Y.

8: 651-820 (Oct.) 1934

- Endocrine Studies in Mental Cases. M. M. Harris, W. A. Horwitz and S. E. Katz, New York.—p. 655.
Changes in Psychologic Functions in Paresis: I. C. Landis and J. Rechetnick, New York.—p. 693.
Id.: II. P. H. DuBois, L. L. Mays and C. Landis, New York.—p. 699.
Value of Orientation Letter for Newly Admitted Patients. Tamara Dembo and Eugenia Hanfmann, Worcester, Mass.—p. 703.
Studies of Catatonia: IV. Electrical Skin Resistance of Catatonics During Sleep. T. W. Forbes and Z. A. Piotrowski, New York.—p. 722.
Id.: V. Perseverational Tendencies in Catatonic Patients. L. L. Mays, New York.—p. 728.
Id.: VI. Further Investigation of Perseverational Tendency. W. C. Shipley, New York.—p. 736.
Id.: VII. Conclusions and General Summary. C. Landis and T. W. Forbes, New York.—p. 745.
*Sodium Amytal as a Means of Obtaining Contact in Stuporous and Uncommunicative Cases: Preliminary Report. P. L. Smith and D. K. Schwartz, Marcy, N. Y.—p. 748.
Acid Base Equilibrium in Epilepsy. G. M. Doolittle, Sonyea, N. Y.—p. 754.
Relation of Occupational Therapy to Medicine. H. M. Pollock, Albany, N. Y.—p. 760.
Psychotherapy in Outpatient Clinics. S. C. Wolff, Poughkeepsie, N. Y.—p. 765.
Surgical Treatment of Constitutional Psychiatric Disorders. J. L. Bennett, Queens Village, N. Y.—p. 772.

Use of Sodium Amytal in Psychiatric Patients.—Smith and Schwartz gave sodium amytal orally and intravenously to six stuporous and uncommunicative psychiatric patients with whom contact could not be established. It was found that in all but one case oral administration although increased to a total dose of from 12 to 18 grains (0.8 to 1.2 Gm.) in twenty-four hours did not produce adequate contact. Under the dosage used there was little or no spontaneous speech by the patients, but in all but one case there was a response to questions. The period of response varied with the patient as the initial doses were uniform. The intravenous method produced a better result than the oral, although one patient showed an adequate response to the latter. Continued oral administration following intravenous injection did not result in producing as good contact as obtained immediately after intravenous dosage. The use of a standardized dose does not give the best results. The dosage should be varied in accordance with the individual tolerance.

Public Health Reports, Washington, D. C.

49: 1201-1228 (Oct. 12) 1934

- Leprosy with Tuberculosis in Hawaii. N. E. Wayson.—p. 1201.
Pulmonary Infection in Pneumonoconiosis: II. Fusospirochetal Infection; Experiments in Guinea-Pigs. H. O. Proske and R. R. Sayers.—p. 1212.

Southern Medical Journal, Birmingham, Ala.

27: 891-982 (Nov.) 1934

- Serologic Survey for Syphilis in Negro Population. K. F. Maxey and W. A. Brumfield, Charlottesville, Va.—p. 891.
Brucelliasis: General Consideration. W. B. Grayson and G. Hastings, Little Rock, Ark.—p. 901.
Undulant Fever Control in Washington County, Maryland. W. R. Cameron and Marian Wells, Hagerstown, Md.—p. 907.
Reticulo-Endothelial System: Reconsideration. R. D. Baker, Durham, N. C.—p. 913.
Bichloride of Mercury Poisoning: Statistical Study of Three Hundred and Two Cases. E. Hull and L. A. Monte, New Orleans.—p. 918.
Experiments on Section of Rubrospinal Tracts in the Monkey. A. D. Keller and W. K. Hare, University, Ala.—p. 924.
Cystic Adamantinoma of Lower Jaw. A. T. Moore, Columbia, S. C.—p. 928.
Facial and Dental Deformities Due to Perennial Nasal Allergy in Childhood. R. Bowen and R. M. Balyeat, Oklahoma City.—p. 933.
Collapsed Bladder Skiodan Cystograms. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 938.
Megalogastria and Megaduodenum: Case. J. P. Madigan, Washington, D. C.—p. 939.
Simplified Cough-Plate Method for Early Diagnosis of Whooping Cough. I. S. Barksdale and F. P. Simpson, Greenville, S. C.—p. 943.

Method for Diagnosis of Whooping Cough.—Because of the possible inhibiting effect of glycerin, Barksdale and Simpson left it out of their culture mediums for plating *Bacillus pertussis*. Ordinary nutrient agar was used, enriched with potato or turnip extract. The proportion is 10 cc. of nutrient agar to 5 cc. of the extract. The nutrient agar has 1 liter of water, 3 Gm. of beef extract, 5 Gm. of peptone and 15 Gm. of agar adjusted to pH 6.7. For the potato extract, three or four medium sized Irish potatoes are peeled and cooked in about a quart of water for half an hour. This is filtered through cotton and autoclaved, then added to the nutrient agar. The plate is held about 6 inches from the patient's mouth and the child is allowed to cough directly on the congealed agar in the dish. The plate is then placed in the incubator at the usual temperature, bottom up, to minimize evaporation. At the end of twenty-four hours the typical small, nearly transparent colonies of the Bordet-Gengou bacillus are seen. A platinum loopful of water is placed on a clean glass slide in two places. The organisms are transferred from the most typical colonies to the droplet of water and thoroughly emulsified. The specimen is dried, fixed in flame, stained in 1:5,000 bismuth-violet for three minutes and examined under the microscope with the oil immersion objective. The Bordet-Gengou bacillus is stained a deep purple with bismuth-violet and appears as a short, stubby bacillus in sizes varying from 2.5 to 5 microns.

Surgery, Gynecology and Obstetrics, Chicago

59: 713-840 (Nov.) 1934

- Kidney Pelvis: Further Contribution to Its Physiology and Pathology. J. L. Jona, Melbourne, Australia.—p. 713.
Experimental Chronic Intestinal Obstruction from Blind Loops. H. E. Pearce Jr., Rochester, N. Y.—p. 726.
Effects of Carbon Dioxide Hyperventilation on Aeration of Lungs in Patients After Operation. H. K. Beecher, Boston.—p. 734.
Acute Appendicitis: Study of Correlation Between Time of Operation, Pathology and Mortality. E. M. Stanton, Schenectady, N. Y.—p. 738.
Lipid Composition of White Blood Cells in Women During Pregnancy, Lactation and Puerperium. E. M. Boyd, Rochester, N. Y.—p. 744.
Bacteriology of Cholecystitis: Virulence and Spore Formation of *Clostridium Welchii*. E. T. Thorsness, Rochester, Minn.—p. 752.
Blood Amylase in Experimental Pancreatitis. A. C. Clasen, P. N. Johnstone and T. G. Orr, Kansas City, Kan.—p. 756.
Carcinoma of the Colon. D. P. MacGuire, New York.—p. 762.
Repair of Recurrent and Difficult Hernias and Other Large Defects of Abdominal Wall Employing Ilitibial Tract of Fascia Lata as a Pedicled Flap. O. H. Wangenstein, Minneapolis.—p. 766.
Drainage of Common Bile Duct for Gallstones. M. M. Zininger and H. G. McCandless, Cincinnati.—p. 781.
Partial Gastric Fundusectomy in Treatment of Peptic Ulcer. F. G. Connell, Oshkosh, Wis.—p. 786.
Subphrenic Abscess in Children. J. Ireland, Chicago.—p. 789.
Uretero-Intestinal Anastomoses: Use of Mechanical Anastomosing Apparatus. R. Zollinger, Boston.—p. 796.
Pectenosis and Minor Maladies of Anal Region. J. W. Morgan, San Francisco.—p. 806.
Epithelioma of Lower Lip: Results of Treatment. F. A. Figi, Rochester, Minn.—p. 810.
Diathesis in Surgery of the Anal Canal: Clinical Survey of One Hundred Cases. C. Rosser, Dallas, Texas.—p. 820.

Carbon Dioxide Hyperventilation and Aeration of Lungs.—To determine whether the treatment of patients after operation with carbon dioxide inhalation has any effect in preventing or even diminishing the crippling of the respiratory

system that occurs following laparotomy, Beecher studied twenty-two patients who received carbon dioxide treatment after laparotomy and twenty-eight used as controls, who received no treatment. Of the treated patients there were eight men and fourteen women; of the controls, ten men and eighteen women. Of the treated patients, eleven underwent upper abdominal laparotomies and eleven operations on the lower part of the abdomen or herniorrhaphies, while in the control group eleven were submitted to operations on the upper and seventeen to operations on the lower part of the abdomen. In all cases each treatment produced marked hyperpnea and was continued as long as the patient could endure it. In every case there is a close relation between the treated and the control curve. In no case has the divergence of the two curves exceeded the limit of experimental error. In the cases studied, carbon dioxide therapy following laparotomy had no effect in preventing the crippling of the respiratory system.

Lipid Composition of Leukocytes During Pregnancy, Lactation and Puerperium.—Boyd studied, under controlled conditions of diet and exercise, the lipid content and distribution in the white blood cells of eleven women at or near the termination of pregnancy, during lactation and the puerperium. It was found that age and parity did not affect the level of lipids in the leukocytes. Before parturition the white blood cells have a wide range of lipid values though, on the average, cholesterol ester and neutral fat are low in amount and the total lipid content is reduced by about one fourth from the mean levels in nonpregnant women. Following parturition there is no change in the lipid composition of the leukocytes of the blood until the third to the seventh day. Then there occurs a rise in total lipid due to increases in phospholipid, free cholesterol and neutral fat. These high values appear to return to normal, beginning about three weeks after delivery. Cholesterol ester is present in small amounts throughout. On the basis of the current theory the author interprets these results as indicating an increased activity on the part of the white blood cells during the first two to three weeks of the puerperium.

Carcinoma of the Colon.—In the operative procedures that MacGuire discusses, not once has he used clamps or severed the colon by cautery as is done in all forms of anastomosis. Nor does he suture the wall of the colon to the parietal wall of the peritoneum. In his opinion the mortality of surgery of the colon will remain high if surgeons in general adopt any of the so-called aseptic technic operative procedures. He believes that the term is a misnomer, as every time clamps are applied across the lumen of the colon the wall is traumatized so severely that hordes of microscopic or ultramicroscopic bacteria are spilled into the peritoneal cavity. So infection and tension are the chief adverse factors of all colon operative procedures to date. In the operation that he describes, the mortality should be so much lower that its lack of danger will appeal to the careful surgeon. In all cases of cancer of the colon a preliminary cecostomy is made through the McBurney gridiron incision. The patient is sent home for a rest of two months before the radical abdominoperineal excision is performed. On reentrance to the hospital, a complete check up is again made. The administration of transfusions—dextrose, sodium chloride—and the application of an indwelling catheter are ordered. A median or left incision is made and the mesentery of the left colon is resected from a point above the growth down through the peritoneal reflection, the gland-bearing area being excised. The abdomen is then closed temporarily. The patient is placed in the lithotomy position for the perineal resection. The perineal incision is made preferably with a cautery and continued until sufficient rectum extrudes so that a sterile rubber glove can cover the lower intestine completely. After dissection has been done up to the peritoneal reflection, the abdomen is reentered, the peritoneal reflection is dissected and the entire loop is carried outside the abdomen. Before this is done, a separate incision is made in the left rectus muscle and the entire freed intestine is carried through this aperture for the purpose of fashioning a single barrel colostomy. The peritoneal reflection and the incision in the abdomen are closed. The cut edges of the sigmoid mesentery are sutured to the left parietal peritoneum to prevent herniation. The extraneous intestine is double clamped a few inches from the colostomy opening and severed with a cautery,

which completes the single barrel colostomy. In cases of tumor of the left colon in which the growth is resectable, a modified Mikulicz and Paul operation is preferable. The preliminary colostomy operation is performed and the patient is sent home to recuperate. Two months later, the patient reenters the hospital and a complete check up is again made. The usual incision is made on the left side of the median line and the growth is surrounded with laparotomy pads. It should be long enough to permit the growth to be drawn well outside the abdomen and the two barrels of the colon approximated for a distance of from $2\frac{1}{2}$ to 3 inches. The approximation is made by sutures through the cut edges of the mesentery. In dealing with carcinoma of the left part of the transverse colon and the left colon and sigmoid, one can draw more colon out of the abdomen if the phrenicocolic ligament is severed fairly high up. In the newer Paul-Mikulicz type of operation, no sutures are used to approximate the parietal peritoneum with the colon proper. If necessary, however, the parietal peritoneum can be sutured to the cut edges of the mesentery. At the end of seventy-two hours, the tumorous mass can be resected with a cautery and the usual follow-up procedures of the Paul-Mikulicz operation can be accomplished without any undue haste. By means of a continuous suction apparatus the wound can be kept clear of debris. With the preliminary cecostomy and suction, faster healing is accomplished. This same operative procedure can be used for carcinomas of the transverse colon.

Drainage of Common Bile Duct for Gallstones.—From a study of forty-two cases in which the common duct was drained through the stump of the cystic duct, Zinninger and McCandless conclude that this should be the method of choice when drainage of the duct is necessary. It allows complete and accurate suture of the exploratory incision, which predisposes to early, firm healing of the incision with minimal scarring. It provides a long narrow channel for the drainage tube, which ordinarily remains water tight until it is time to remove the tube. Removal of the tube causes little damage or disturbance to the common duct, and drainage of the bile from the wound after the removal of the tube is of short duration. The method therefore reduces the total loss of bile and shortens materially the duration of the convalescence.

Tennessee State Medical Assn. Journal, Nashville

27: 425-470 (Nov.) 1934

- Relation of Cellular Structure of Brain Tumors to Therapy. C. Pilcher, Nashville.—p. 425.
- Fetal Conditions for Termination of Labor. C. W. Friberg, Johnson City.—p. 428.
- Hydatid Mole: Report of Case. K. S. Howlett, Franklin.—p. 432.
- Lymphogranuloma Inguinale. G. V. Williams, Chattanooga.—p. 439.
- Postoperative Pulmonary Complications: Review of Literature. J. W. McClaran, Jackson.—p. 444.
- Management of the Asthmatic Patient. T. C. Crowell, Chattanooga.—p. 453.

West Virginia Medical Journal, Charleston

30: 481-528 (Nov.) 1934

- Autarceology of Poliomyelitis: Study of Recurrence of Disease in Same Family. W. L. Aycock, Boston.—p. 481.
- Agranulocytic Angina: Report of Cases. R. O. Rogers and M. W. Sinclair, Bluefield.—p. 490.
- Fractures of Spinal Column. J. Browder and T. Miner, Brooklyn.—p. 497.
- Syphilis from the Standpoint of the General Practitioner. J. U. Rohr, Charleston.—p. 508.
- Historical Outline of Psychiatry. R. R. Summers, Morgantown.—p. 511.

Yale Journal of Biology and Medicine, New Haven

7: 1-82 (Oct.) 1934

- Crime and Personality. E. Kahn, New Haven, Conn.—p. 1.
- Urinary Excretion of S Substance in Lobar Pneumonia. D. S. Pepper, New Haven, Conn.—p. 13.
- Bronchopneumonia in Adolescence. J. R. Gallagher, Pottstown, Pa.—p. 23.
- Rational Approach to an Understanding of Arthritides. D. S. O'Connor, New Haven, Conn.—p. 41.
- Precipitin Tests with Phosphate Fractions of Tubercle Bacilli. L. N. Claiborn and H. C. Francis, New Haven, Conn.—p. 47.
- Dental and Medical Relationships at Yale. B. G. Anderson, New Haven, Conn.—p. 51.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

9: 267-334 (Oct.) 1934

- *Coronary Endarteritis in Acute Rheumatism. A. D. Fraser.—p. 267.
- Gout and Aleukemic Leukemia in a Boy Aged Five. C. W. Vining and J. G. Thomson.—p. 277.
- *Sedimentation Rate in Rheumatic Carditis. C. B. Perry.—p. 285.
- *Nephritis in Infancy. J. B. Rennie.—p. 295.
- Inherited Smallpox. J. P. Marsden and C. R. M. Greenfield.—p. 309.
- Bone Changes in Leukemia: Part I. Clinical and Roentgenologic. C. E. Scelling and A. Brown.—p. 315.
- Id.: Part II. Pathology. I. H. Erb.—p. 319.
- Gastric Secretion in Normal and Rheumatic Children. Jessie W. Ogilvie.—p. 327.

Coronary Endarteritis in Acute Rheumatism.—Fraser presents four cases of acute rheumatism, in which the condition found in the coronary arteries illustrates the occurrence of an endarteritis which is specific in type, the intima undergoing a diffuse inflammatory reaction which reduplicates the histologic features of the Aschoff nodule. The initial change is an intimal cell proliferation, which may lead to fibrotic thickening or simple intimal hypertrophy. This is followed by fibrinous exudation or necrosis, mobile cell infiltration and the appearance of those basophil giant and multinucleated cells which denote the presence of the virus of acute rheumatism. Usually there is marked degeneration of the internal elastic lamina and of any other elastic layers that may have formed in the intima. Unless complete obliteration of the lumen occurs, the vascular endothelium remains intact and thrombosis does not take place. An interesting feature is the occasional isolation of small luminal spaces or even the complete partition of the lumen, which in the later stages leads to the simulation of intimal vascularization or thrombus canalization. Sometimes the intimal cells, in keeping with their mesenchymal origin, reproduce layers of what appear to be smooth muscle cells round these luminal spaces, thus giving them the appearance of thick-walled vessels. A common accompaniment of this endarteritis is a perivascular inflammation, which may be of the Aschoff nodule type or consist of a more diffuse inflammatory reaction with numerous mobile cells, isolated Aschoff cells and many distended blood vessels. Communication between the lumen of the affected segment of the vessel and these perivascular blood vessels is established through the formation of new capillary channels, which pass through the media. The media may remain unchanged or it may be involved through spread of the infection either from the intimal or the adventitial side or from both. As a result, medial muscle cells disappear and are replaced by fibrous tissue. Both coronary arteries may be affected and at any part of their course, but the condition is more commonly found in the smaller branches of the left coronary artery. The vascular lesions observed in these cases show that in acute rheumatism the coronary arteries may be infected not only from the outside, the virus gaining access by way of the perivascular lymphatics, but also from the inside, the virus passing directly into the wall from the lumen.

Sedimentation Rate in Rheumatic Carditis.—Perry performed 1,043 estimations of the sedimentation rate on 167 children suffering from rheumatic heart disease. The high sedimentation rate found in acute rheumatism is in no way a specific reaction, since many other acute and chronic infections show a similar change. The absence of any constantly high sedimentation rate in chorea uncomplicated by carditis is puzzling. Payne has suggested that this observation is due to the fact that the cases with chorea have not come under observation until late in the disease when the chorea is a residual phenomenon. The two patients who developed chorea during convalescence from an attack of rheumatism with no change in the sedimentation rate suggest that this is not the true explanation. It was hoped that the sedimentation rate might provide a clue to those smoldering cases which show no gross clinical evidence of activity but deteriorate rapidly on being set free from restraint and treatment. In some cases this is so, and it is clear from this study that any rheumatic child showing a persistently abnormal sedimentation rate should be regarded as having active disease unless some other cause for the change in the blood can be found. A single normal sedimentation rate does not exclude the possibility of a smolder-

ing activity, but if persistently low it is unlikely that the rheumatic process is active. In sixteen cases, subcutaneous nodules developed at the end or late in the attack: in nine they appeared when the sedimentation rates had fallen to between 10 and 20; in six the sedimentation rate was more than 20 at the time the nodules first appeared, and the remaining case was not seen until the nodules appeared, at which time the sedimentation rate was 6. Fresh nodules did not appear after the sedimentation rate had fallen below 10.

Nephritis in Infancy.—Rennie reports ten cases of acute nephritis in infants less than 18 months of age. The disease was characterized by obstinate edema and a reduction of serum proteins in every case. Seven of the cases were fatal, death being due in five or possibly six either to pneumonia or to enteritis. In one case, death was due to cellulitis. The other three patients made complete recoveries, in one without any special form of treatment. High protein diet was used in one and ammonium chloride in another, but there was no evidence that recovery was due to these therapeutic measures. There was no evidence that the nephritis was the result of a syphilitic infection. The edema was ascribed in every case to a fall in the serum protein with consequent reduction in the oncotic pressure. This was a constant observation and the condition differs in this respect from acute nephritis as seen in older children, in which a fall in oncotic pressure below edema level occurred in only 14 per cent. Attempts at treatment should be directed toward causing a rise in the serum proteins as the cure is coincident with their return to normal. Spontaneous cure as in older children accounted for all the recoveries.

Edinburgh Medical Journal

41: 557-604 (Oct.) 1934

Acute Appendicitis: Statistical Survey of Eight Thousand Cases. L. B. Wevill and H. L. Wallace.—p. 557.

*Treatment of Acute Rheumatism by Streptococcus Antitoxin. J. Eason and W. A. R. Thomson.—p. 583.

Treatment of Rheumatism by Streptococcus Antitoxin.

—Eason and Thomson present a study of twelve cases of acute rheumatism that were treated by means of streptococcus antitoxin. The antitoxin used was concentrated streptococcus antitoxin (scarlatina). The dosage varied from 30 to 90 cc., given intravenously in two or three doses. All patients were tested for sensitiveness to the antitoxin, but none was detected. As a control group, twenty-seven consecutive cases were used who had received treatment by means of salicylates. The results show that the average time elapsing between the administration of the antitoxin and the patient's discharge from hospital was 58.5 days. In the case of the control group treated by means of salicylates, the average stay in the hospital was 43.2 days. In comparing these figures, it must be borne in mind that in treatment by antitoxin there is almost invariably a febrile reaction at the time of the appearance of the rash, which inevitably results in a slight prolongation of the period of treatment. The antitoxin cases were also kept in the hospital for lengthy observation in view of the experimental nature of the treatment. In a number of cases throat swabs were examined for the presence or absence of hemolytic streptococci and the skin reactions to intradermal injections of extracts of hemolytic streptococci were investigated. No correlation could be shown to exist between the skin reactions to such extracts and the course of the disease before or after the administration of the antitoxin. A study of the clinical records of the cases showed that in the series treated by antitoxin the results could be considered good in nine cases and moderate in three; while in the series treated by salicylates the results were good in fourteen cases and moderate in three. Ten cases showed no improvement after prolonged treatment.

Glasgow Medical Journal

4: 137-184 (Oct.) 1934

Extrapleural Thoracoplasty in Tuberculosis: Thirteen Cases Reported. J. Taylor and M. A. Foulis.—p. 137.

Glycosuria Following X-Ray Therapy: Case of Lymphadenoma. J. Carslaw.—p. 145.

*Occurrence of So-Called "Coronary T Wave" in Electrocardiograms from Cases of Pericarditis. A. A. F. Peel.—p. 149.

Coronary T Wave in Electrocardiograms in Pericarditis.—Peel describes six cases in which pericarditis was associated with displacement of the RT segment of the electro-

cardiogram similar to that which occurs in coronary thrombosis. In forty-eight cases of pericarditis, some abnormality of the RT- or T segment was found in twenty-nine (60 per cent), though in only seventeen (35 per cent) can other possible causes be excluded. In nineteen (40 per cent) the RT and T segments were normal, though in one third of them other electrocardiographic evidence of myocarditis was obtained. The evidence points to myocarditis rather than pericardial effusion as the cause of the RT and T wave changes, although experimental work in the literature shows that they can be produced by raising the intrapericardial pressure. In a proportion of cases, though not in all, pericardial effusion causes diminished voltage of QRS.

Indian Medical Gazette, Calcutta

69: 481-540 (Sept.) 1934

Skeletal Traction by Means of Kirschner's Wire in Treatment of Lower Limb Fractures. W. L. Harnett.—p. 481.

Treatment of Compound Fractures of Bones of Leg by Skeletal Traction. P. Chatterjee.—p. 487.

Administration of Opium to Infants in India. R. N. Chopra.—p. 489.

Factors Influencing Spread of Leprous Infection. E. Muir and K. R. Chatterji.—p. 495.

Dental Myiasis. D. N. Roy.—p. 500.

Comparative Record of Anthelmintic Treatment with Tetrachloro-Ethylene and Oil of Chenopodium. D. Manson.—p. 500.

Journal of Hygiene, London

34: 283-432 (Oct.) 1934

Absorption of Hydrocyanic Acid Vapor Through Skin: Notes on Other Matters Relating to Acute Cyanide Poisoning. A. Fairley, E. C. Linton and F. E. Wild.—p. 283.

Examination of Blood Films in Relation to Prevention of Plumbism Among Shipbreakers. A. E. Ferguson and T. Ferguson.—p. 295.

Examination of Cotton, Coir and Esparto Grass Dust for Histamine. A. D. Macdonald and H. B. Maitland.—p. 317.

Study of Chick-Martin Test for Disinfectants. L. P. Garrod.—p. 322.

The Genus *Salmonella* Lignières, 1900: Issued by the Salmonella Subcommittee of the Nomenclature Committee of the International Society for Microbiology.—p. 333.

*Sporadic *Salmonella* Infections: New *Salmonella* Type. J. Smith.—p. 351.

*Reputed Antigenic Relationship Between Organisms of the *Brucella* Group on One Hand, and of the *Pasteurella*, *Pfeifferella* and *Proteus* Groups on the Other. G. S. Wilson.—p. 361.

Further Studies on Survival Time of Bovine Tubercle Bacillus in Soil, Soil and Dung, in Dung and on Grass, with Experiments on Feeding Guinea-Pigs and Calves on Grass Artificially Infected with Bovine Tubercle Bacilli. E. C. G. Maddock.—p. 372.

Pulmonary Tuberculosis in Wales Between 1911 and 1931. W. T. Russell and G. Salmon.—p. 380.

Epidemiology of Influenzal Outbreak in Leeds. E. A. Underwood.—p. 407.

Filtration Experiments with *Spirochaeta Schaudinnii*. E. C. Smith.—p. 429.

Sporadic *Salmonella* Infections.—Smith discusses the serologic characteristics of a heretofore undescribed *Salmonella* organism and also one (*Salmonella* potsdam) which has not been described previously as occurring in Scotland. The organism was isolated from a case of acute enteritis occurring in a child of 11 months. A non-lactose fermenting organism was obtained from the feces. The organism produced acid and gas in twenty-four hours in mediums containing dextrose, mannite, dulcitol, xylose, arabinose and rhamnose but failed to ferment inositol, even after an incubation period of ten days. It failed to produce indole in peptone water but produced blackening on lead acetate agar and an acid to alkaline reaction in litmus milk. The organism was apparently in the group phase when first isolated, but after plating and selection of single colonies, no difficulty was found in obtaining a specific phase form; i. e., one that would not agglutinate with the group serum for *Salmonella* europaei-suispestifer. The specific phase H antigen agglutinated to the full titer of the specific *Salmonella* aertrycke serum and absorbed the agglutinins without difficulty from that serum. When the organism was tested against the O antigen antiserum for the paratyphoid B group, it did not agglutinate with this serum or absorb the agglutinins from it. The cultural characteristics, salt and thermo-agglutination tests did not show evidence of any rough variation. Agglutination tests and agglutinin absorption tests with other O serums failed to agglutinate the organism, and the agglutinins were not absorbed by it. An account is given of sporadic *Salmonella* infections. The investigation has shown that the most frequent cause of such infections are *Salmonella* types aertrycke, thompson, dublin, enteritidis and europaei-suispestifer. It has been

found that the dublin and suipestifer types are definitely more tissue invasive than the other types. Septicemia and meningitis have been associated with infections due to *Salmonella dublin*, and septicemia in cases infected with *Salmonella suipestifer*.

Antigenic Relationship Between *Brucella* and *Pasteurella*, *Pfeifferella* and *Proteus* Organisms.—The experiments of Wilson lend no support to the suggestion put forward by various workers of the existence of an antigenic relationship between *Brucella* strains and strains of *Pfeifferella*, *Pasteurella* and *Proteus* X. The evidence on which such an assumed relationship is based is wholly insufficient to bear the weight of the conclusions drawn from it. The evidence accumulated in the last few years points strongly in favor of the existence of a high degree of antigenic specificity in most groups of organisms examined. In the interpretation, however, of routine agglutination tests made on human or animal serums, it is essential to know the normal level and variation of agglutinins, either naturally present or acquired through latent or overt infection, to the particular organism under consideration. It is neither generally nor sufficiently recognized that the level of "normal" agglutination for a given species depends directly on the sensitiveness of the strain used in estimating it. In somatic O agglutination, with which the author's discussion is concerned mainly, the difference in sensitiveness of different strains of the same species is considerable. One of the best known examples is that of strain 901 of *Bacterium typhosum*, whose sensitivity to O agglutinins is from five to ten times that of the common strains of this organism (Felix, 1929). Provided that due precautions are taken to ascertain the normal level of agglutinins in a given host and that antigenically smooth strains are used, there is every reason to believe that the occurrence of agglutinins in a titer above the normal range of variation is due to infection—latent, active or past—with the specific organism in question or in a few instances with an organism, usually of the same genus, sharing a similar antigen.

Journal of Mental Science, London

80: 469-628 (July) 1934

- The Professional Mind. Macmillan.—p. 469.
Anxiety: Its Nature and Treatment. H. Harris.—p. 482.
Palmar Chin Reflex of Marinesco: Note. F. Golla and S. Antonovitch.—p. 513.
Observations on Use of Pyrifer. J. E. Howie.—p. 521.
*Barbiturates in Epilepsy. R. Handley.—p. 526.
Follow-Up Study of One Hundred Cases Made for the Department of Psychologic Medicine, Guy's Hospital. Dorothy H. Hardcastle.—p. 536.

Barbiturates in Epilepsy.—Handley shows that an epileptic patient may receive temporary benefit from any new form of treatment. When this ceases, an impression is obtained that tolerance is established; but this is not true tolerance. The real explanation of this temporary improvement is found in the mental attitude of the patient himself, who responds, but only for a time, to any form of treatment. After an exhaustive test, it was shown that phenobarbitonum solubile (B. P.) is the best drug for general use in an institution. Phenobarbitone reduces greatly the incidence of "jumps," serial epilepsy, prolonged clonic convulsions and status epilepticus; but, with the exception of the first, once these conditions have begun they are not benefited by the drug, unless it is given in large soporific doses. In spite of warnings against prolonged medication, patients are reported who have taken daily therapeutic doses for periods up to twelve years. No sign of mental deterioration is produced, and many are improved markedly. Although it is the custom when withdrawing the drug to do so gradually, the author's practice of sudden complete withdrawal has never been accompanied by any unpleasant symptoms. The evidence that he has obtained supports strongly the opinion of French and German authorities, who say that no craving is established. An idiosyncrasy to phenobarbitone may occur, but the author has found that it never has occurred with the soluble alkaline drug. Most people agree that, even if idiosyncrasy occurs, ample warning is given. Emphasis is laid on the importance of suitable environment if epilepsy is to be treated successfully. The possibility of danger in phenobarbitone treatment has been exaggerated greatly and the severity of toxic symptoms magnified. The drug has undoubtedly diminished the incidence of serious sequels, and a patient becomes brighter and more equable when under its influence.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

41: 669-852 (Oct.) 1934

- *Principles That Should Underlie All Operations for Prolapse. V. Bonney.—p. 669.
*Endometriosis as Manifestation of Ovarian Dysfunction. T. N. A. Jeffcoate and A. L. Potter.—p. 684.
So-Called Sarcoma of Endometrium. G. R. Tudhope and A. E. Chisholm.—p. 708.
Heterotopic Teeth and Their Significance, with Especial Reference to Intra-Abdominal Group. W. R. Williams.—p. 721.
*Cystodiaphanoscopy: New and Simple Method of Examination. E. Klaffen.—p. 739.
Pernicious Vomiting of Pregnancy. H. B. Atlee.—p. 750.
Heterotopic Bone in Columnar-Celled Carcinoma. H. E. Harding and F. S. Kirk.—p. 760.
Severe Dysmenorrhea: Unusual Case. B. K. Tenison-Collins.—p. 762.
Spinelli Operation, Followed by Pregnancy and Labor. W. P. Tew.—p. 765.
Blood Reinfusion in Hemoperitoneum. F. Stabler.—p. 768.

Operations for Prolapse.—Bonney postulates that prolapse is a purely vaginal phenomenon, in the causation of which the uterus does not play any direct part but acts more or less as a deterrent. The vagina, in its relation to the peritoneal cavity, is in exactly the same position as the in-turned finger of a rubber glove. In both cases there is a culdesac intruding into a closed cavity, the pressure within which is liable to a sudden rise. The intra-abdominal pressure depends partly on the gas pressure in the intestine, the muscular contraction of the abdominal walls and the weight of the movable viscera. Of these three components the first acts equally in all directions, the second more often toward the pelvis than toward the diaphragm, while the third, being dependent on gravity, acts downward, and as a result the walls of the lower part of the peritoneal cavity are in the standing, sitting and squatting postures more exposed to a stretching force than those of the upper part. The author discusses the mechanical considerations, the supporting mechanism of the vagina, the effect of the intra-abdominal pressure, the supporting mechanism of the uterus, the increase in the caliber of the lumen of the vagina without a proportional increase in the thickness or strength of its wall, the yielding of the attachments of the wall of the vagina to the abdominal walls, the axis of effect of the intra-abdominal pressure and the position of the initial bulge, from which he concludes that: 1. The intra-abdominal pressure when it rises above atmospheric pressure tends to turn the vagina inside out. 2. This tendency is countered by a mechanism made up of several factors. 3. Prolapse is due to the failure of this mechanism, either in whole or in part. 4. There are several forms of prolapse. 5. The form depends on which part of the sustentacular mechanism has failed. 6. No operative treatment is ideal that does not take into account and rectify or abrogate the factors responsible for the particular deformity and, therefore, no one procedure is a panacea for all cases.

Endometriosis as Manifestation of Ovarian Dysfunction.—Jeffcoate and Potter maintain that the development of endometriomas, irrespective of the primary source of the endometrial elements, is due to an excessive production of estrogenic substance by the ovaries. In a clinical and pathologic study of 111 cases of endometriosis the presence of follicular overactivity is demonstrated in the majority. Endometriosis is regarded as being analogous in many respects to hyperplasia of the uterine mucosa. It is suggested that the same ovarian conditions give rise to the frequently associated overgrowth of fibromuscular tissue. It is claimed that this theory explains more adequately than does any other all the known clinical and pathologic features of the disease.

New Method of Examination—Cystodiaphanoscopy.—Klaffen outlines a method (cystodiaphanoscopy) which utilizes the bladder light for visualizing the contents of transparent ovarian cysts and accumulations of fluid in the abdominal cavity. The method is based on the simple laws of light transmission. The author uses a cystodiaphanoscope composed of four lamps attached to the inner end of a metal rod, which, perpendicularly mobile, serves at the same time as an obturator. These lamps are placed in a tube of 24 Charrière thickness and 20 cm. in length. The extremity of the foremost lamp is strengthened and closes the opening of the tube to the inner side, and 7 cm. from the inner extremity of the tube there is a mark showing when the urethral canal has been passed and the extremity of the tube has entered the bladder. Now the metal rod has to

be pushed forward and the lamps are, one after the other, passed into the cavity of the bladder. Signs on the other end of the obturator make it possible to know the number of lamps already in the bladder. If a dry battery is used, it is provided with a control lamp to show whether the lamps are lighted. The instrument is introduced with precaution into the bladder, after which the lamps are introduced successively, in the number required by the occasion. In removing the apparatus it is so fixed as to avoid every motion, the forefinger is applied to the end of the tube near the notch in its outer end, while the other fingers retract the lamps, one after the other, into the tube. The strengthened foremost lamp closes the inner aperture and covers the border of the tube. By the aid of the cystodiaphanoscope constructed on these principles the author was enabled to examine women with rather fat abdominal walls and to state exactly the facts discovered with the simple cystoscopic lamp. Up to now the degree of translucency of a cyst had to be judged by comparing the intensity of the bladder light with the tumor. The author claims that actually one can judge not only by this comparison of the intensity of translucency of a tumor but also by the number of lamps introduced into the bladder. The light of the bladder in the dark chamber is due to reflection from the vesical mucosa. The effect of the transvesical diaphanoscope permits a conclusion to be drawn about the contents of cystic ovarian tumors, which flash up in case of a clear serous condition of the contents and give passage to a more or less dimmed light in case of pseudomucinous contents of the cyst, according to the grade of admixture of the pseudomucin.

Journal of Physiology, London

82: 265-392 (Oct. 17) 1934

- Asphyxial Arrest of Isolated Frog's Ventricle. A. J. Clark, R. Gaddie and C. P. Stewart.—p. 265.
- Recovery Heat of Frog's Muscle at High Temperature: Note. B. Szahuniewicz.—p. 278.
- Does Vagus Stimulation Cause an Increase in Acetylcholine Content of Heart Muscle? A. Vartiainen.—p. 282.
- Humoral Control of Secretion by Submaxillary Gland of the Cat Following Sympathetic Stimulation. J. Secker.—p. 293.
- Study of Chemical Changes Associated with Muscular Contraction in Normal and Adrenalectomized Animals. O. Cope, A. B. Corkill, H. P. Marks and S. Ochoa.—p. 305.
- Strength Duration Curves for Repetitive Stimulation of Medullated Nerve. D. Scott.—p. 321.
- Physical Analysis of Relation Between Threshold and Interpolated Length in Electric Excitation of Medullated Nerve. W. A. H. Rushton.—p. 332.
- Rate of Development and Spread of Electrotonus. J. Y. Bogue and H. Rosenberg.—p. 353.
- *Deficient Acclimatization to Low Oxygen Pressure: Case. J. Barcroft, R. H. E. Elliott, F. R. Fraser, W. Herkel, B. H. C. Matthews and M. Talaat.—p. 369.
- Relation of Central Nervous System to Increase in Systemic Flow Produced by Occlusion of Thoracic Aorta. H. Barcroft and P. Formijne.—p. 377.
- Effect of Anterior Pituitary Extracts on Acetone Body Excretion in Rat. P. T. Black, J. B. Collip and D. L. Thomson.—p. 385.

Deficient Acclimatization to Low Oxygen Pressure.—Barcroft and his associates observed a person in good health in a chamber at a reduced partial pressure of oxygen for more than five days. The pressures varied from 116 mm. on the first day to 75 mm. The degree of acclimatization obtained was poor as compared with what has been observed on mountains, the alveolar oxygen pressure falling to about 30 mm. and the carbon dioxide pressure remaining above 28 mm. The figures for the total metabolism fell also. The oxygen dissociation curve at 40 mm. of carbon dioxide pressure and even at the pressure in the body was shifted considerably to the right. The arterial blood obtained by puncture at the time of coming out of the chamber was not more than 65 per cent saturated with oxygen and may have been somewhat less. The subject was intensely cyanosed and in an indifferent mental condition. For some days after the experiment he became unduly hyperpneic on exercise and was appreciably hysterical.

Journal of Tropical Medicine and Hygiene, London

37: 305-320 (Oct. 15) 1934

- Pathologic Lesions Met with Among Aborigines in Musgrave Ranges, South Australia. J. B. Cleland and J. H. Gray.—p. 305.
- Observations on Anemia in Egypt. S. A. Bey, M. Gaafar and H. Noshokati.—p. 311.
- Neostam in Treatment of Bilharzia Disease. F. G. Cawston.—p. 316.

Lancet, London

2: 855-908 (Oct. 20) 1934

- Inventions and the Outlook in Neurology. J. Collier.—p. 855.
- *Susceptibility of Mice to Viruses of Human and Swine Influenza. C. H. Andrewes, P. P. Laidlaw and W. Smith.—p. 859.
- Treatment of Schistosomiasis with Acridine Compounds. M. Khalil and M. Salah.—p. 862.
- Bronchoscopy with Examples of Its Application: Notes. A. M. Zamora.—p. 864.
- Nature and Treatment of Acute Osteomyelitis. C. C. Holman.—p. 867.
- Impedance Angle Test for Thyrotoxicosis: Study of Impedance Angle in Normal Child. M. A. B. Brazier.—p. 869.

Susceptibility of Mice to Viruses of Influenza.—The evidence of Andrewes and his associates that mice are susceptible to the viruses of human and swine influenza rests on the following facts: 1. Virus of ferret origin regularly produces in mice lesions of the lung not unlike some of those encountered in influenzal pneumonia in man. 2. After several passages through mice, the virus still produces the characteristic disease in the ferret. 3. Cultures of the lungs of infected mice on ordinary mediums are often sterile and do not in any case tend to yield growths of any particular organism. 4. Filtrates of infected mouse lungs through membranes having an average pore size of 0.6 micron are infectious for other mice. This indicates, according to Elford's (1933) calculations, that the diameter of the virus is less than 0.3 micron. 5. The two viruses when isolated from mice are neutralized by the corresponding serums prepared in other animals. 6. The swine influenzal infection in mice is like that in the ferret and unlike that in the pig: the virus alone produces a severe and perhaps fatal disease, no concomitant bacteria being necessary.

Medical Journal of Australia, Sydney

2: 407-438 (Sept. 29) 1934

- Deaths from Appendicitis. C. J. O. Brown.—p. 407.
- Trichomonas Vaginalis in Relation to Leukorrhoea. C. S. Graham and E. Collins.—p. 416.
- Spaced Radium Needle. W. R. Frayne.—p. 420.

2: 439-468 (Oct. 6) 1934

- The Ancient Romans Through Medical Eyes. E. Jeffrey.—p. 439.
- Linear Distribution of Radon Seeds. W. H. Love.—p. 452.

South African Medical Journal, Cape Town

8: 665-700 (Sept. 22) 1934

- Public Health Influences. T. S. Higgins.—p. 674.

8: 701-740 (Oct. 13) 1934

- What Anatomy Owes to the Paleontologist. R. Broom.—p. 701.
- Blood Group and Red Cell Diameter. A. Pijper.—p. 703.
- Fracture of Neck of Femur Treated with Smith Petersen-Johansson Nail Fixation. H. J. Besselaar.—p. 705.
- Distribution of Three Primitive Serologic Races in Bantu. R. Elsdon-Dew.—p. 712.
- Anthropometry in Endocrinology. V. Brink.—p. 715.
- Comparison of Spinous Processes of Cervical Vertebrae Found in Skeletons of the European and of the South African Native. L. R. Shore.—p. 717.
- Treatment of Bacillary Dysentery with Bacteriophage. F. H. McCay.—p. 721.
- H and O Agglutination of Bacillus Typhosus in a Group of Suspected Typhoid Cases and in a Group of Unselected Individuals. W. Lewin.—p. 731.
- *Colorimetric Determination of Hydrogen Ion Concentration Without Buffer Solutions. P. H. Symons.—p. 735.
- Premature Artificial Systoles in the Bahoan. R. W. S. Cheetham.—p. 739.

Determination of Hydrogen Ion Concentration.—Symons describes a simple colorimetric method for p_H determination that eliminates the use of standard buffer solutions or permanent standards of any sort. A suitable indicator is selected, after the approximate p_H of the unknown is determined, if necessary, e. g., by means of the universal indicator or by trial with various indicators. This indicator is diluted from stock strength and its reaction is adjusted. Six exactly similar tubes are set up in two rows of three each in a comparator block having three rows of holes placed exactly behind each other. If compensation for the color or turbidity of the unknown is unnecessary, two rows of two each are used. Into one tube 5 cc. of the unknown is pipetted (suitably diluted if necessary) and behind it the water blank is placed; into each of the other two tubes 5 cc. of water is pipetted, the one being rendered acid and the other alkaline, with the quantity and type of acid or alkali respectively necessary. To the unknown the given quantity of indicator is added (usually 10 drops, or 0.5 cc., to each 5 cc. of unknown). The same amount of

indicator is distributed between the two tubes, one acidified, the other alkalinized, so that the composite color finally produced matches in tint and intensity that of the unknown. The ratio of acidified to alkalinized dye required to produce the color is determined. From this ratio the p_H is determined by use of the equation. The author finds that 6 drops of indicator in the acid form and 4 in the alkaline form give a composite color which matches in tint and intensity that of the unknown, which contains the same number of drops of indicator; viz., 10. By reference to Gillespie's table, he finds that this drop ratio corresponds to p_H 7.5. As it is a ratio that is being determined, the actual concentration of indicator is not of great importance, provided the sum of the amounts in the two standard tubes equals the amount in the unknown. The results compare favorably with those obtained by standard methods.

Gynécologie et Obstétrique, Paris

30: 209-304 (Sept.) 1934

Spontaneous Phlebitis in Course of Evolution of Uterine Myomas: Cases. G. Cotte and J. Mathieu.—p. 209.

Obstetrical Phlebitis of Subacute Venous Septicemia Nature. J. Ducuing and P. Guilhem.—p. 222.

*Fetal Erythroblastoses. M. Péhu, P. Trillat and R. Noél.—p. 232.

Generalized Edema of Fetus with Histologic Examination of Organs and of Placenta. Mlle. L. Kulikowska.—p. 244.

Radium Therapy of Cancers of Body of Uterus. E. Held.—p. 250.

Fetal Erythroblastoses.—Two rare conditions affecting the fetus and the new-born are discussed by Péhu and his co-workers. The first is generalized fetal edema due to blood dyscrasia and the second grave familial icterus of the new-born. They report one case involving an anasarca in a still-born fetus of five months, without malformations but with signs of blood dyscrasia, more exactly determined as erythroblastosis. They also describe the necropsy on a boy dying on the fourth day after birth with a marked icterus. They believe with von Gierke in the existence of fetal blood diseases of which the clinical expression is not identical but the cause lies in a profound disorder of hematopoiesis. The clinical response may be generalized fetal edema, grave familial icterus, acute erythrocyte anemia of the new-born, and the acute congenital leukemias. In all probability in these diseases there exists a profound disorder of blood morphogenesis, the development of which operates in an abnormal sense. Prognosis must be reserved in those born alive. If the diagnosis is made certain in the first two days of life, blood transfusions should be given. The authors suggest from 20 to 40 cc. of the mother's blood or that of a universal donor, given intramuscularly. The injections should be repeated daily for one or two weeks. Some successes have been obtained and some long survivals have been observed.

Presse Médicale, Paris

42: 1553-1576 (Oct. 6) 1934

*Clinical and Anatomic Study of True Aleukemia: Absence of Leukocytes in Blood; Case. P. Merklen, L. Gery and L. Israel.—p. 1553.
New Form of Experimental Epilepsy: Epilepsy by Skin Parasites. P. Pagniez, A. Pichet and R. Laplane.—p. 1557.
Congenital Transverse Septum of Gallbladder. M. Chiray and A. Lomon.—p. 1559.

*Generalized and Osteogenic Congenital Calcinosis of Childhood. R. Turpin, Mlle. C. Brun and C.-O. Guillaumin.—p. 1561.
Physiology and Roentgenography of "The Splints." H. Meige and P. Bellugue.—p. 1565.

Acute Diffuse Glomerulonephritis Clinically and Functionally Cured After Decapsulation. H. Chabanier, C. Lobo-Onelli, P. Gaume and E. Lelu.—p. 1568.

Vertebral Angiomas. J.-A. Lièvre.—p. 1571.

Reduction of Fractures of Vertebral Column. J.-P. Grinda.—p. 1572.
Symptomatology of Artificial Pneumothorax: Whistling of Neighboring Lung. C. Mantoux.—p. 1576.

Study of Aleukemia.—Merklen and his collaborators describe a fatal case in which there was true and complete absence of white blood corpuscles. A woman, aged 20, was a worker in a factory where she received a chronic intoxication from the fumes of benzene. The resulting absence of lymphocytes was as complete as that of the granulocytes. The only type of white corpuscles that could be found in the blood were some histiocytic elements, and these did not appear until after contraction of the spleen. The condition terminated with a fatal staphylococcal septicemia. Clinically the aleukemia was associated with thrombopenia with purpura and hemorrhages, with anemia of almost hypoplastic character, and with cutaneous

and visceral necroses. Anatomically the necropsy showed complete absence or rarity of granulocytes in the osseous medulla, similar rarity in the spleen and glands, relative persistence of formation of white cells of the reticulo-endothelial system (but with these not pushed into the circulation), and a scarcity of megacaryocytes and erythroblasts, which explains the purpura and anemia.

Calcinosis of Childhood.—A case of calcinosis developing for about nine years is described by Turpin and his associates. The disease began at the age of 5 following an acute toxic infectious process, which suggested the idea of a dermatomyositis. It involved the muscular aponeuroses and hypoderm and deserved the name of aponeurocellulitis. The acute phase passed, leaving a collagenic fibrosclerotic cellulo-aponeurotic tissue favorable for the precipitation of calcareous salts. The neighborhood of the zones of hemorrhagic infiltration undoubtedly initiated the osteogenic process. By its first phase of acute edema and its second of sclerosis, this calcification shows many similarities to scleroderma complicated by secondary calcification. In this case there was, however, no scleroderma. At present the mechanism is uncertain, but the authors believe that study of the acute phase of generalized edematous scleroderma of infancy, of dermatomyositis, of ossifying polymyositis and of their visceral alterations, especially endocrine, will eventually serve to clarify the cause of these secondary calcinosis and to say in what measure each is an autonomic disorder.

Schweizerische medizinische Wochenschrift, Basel

64: 957-976 (Oct. 20) 1934

*Present Treatment of Primary and Secondary Syphilis. E. Ramel.—p. 957.

Traumatic Appendicopathy: Influence of Traumas on Vermiform Appendix and Their Estimation. O. Oesch.—p. 963.

Two Hundred and Fifty Punctures in Case of Ascites in Pick's Pericarditic Pseudocirrhosis of Liver Following Acute Osteomyelitis. P. F. Nigst.—p. 966.

*Role of Iodine in Pathogenesis of Diseases of Thyroid. L. Scheffer.—p. 969.

*Demonstration of Occult Blood in Stool. C. Hablützel.—p. 971.

Treatment of Primary and Secondary Syphilis.—Ramel shows that at present the system of three courses of treatment with arsenic and bismuth compounds according to the technic of E. Hoffmann constitutes for the general practitioner the method of choice in the treatment of primary and secondary syphilis, on the condition that the prescribed intervals between the series are adhered to. Particularly between the first and second course the interval should be a period of from four to six weeks. Serologic control examinations of the blood should be made at the beginning and end of each course of treatment. The serologic reactions at the end of the first and at the beginning of the second series of injections are of especial significance for the prognosis. The patient with primary and secondary syphilis, who has undergone the three courses of the anti-syphilitic combination therapy with success, presents a negative serologic reaction of the blood from the end of the first series of treatments and does not present other clinical signs of syphilis. In these patients further treatments may be dispensed with, but they should remain under medical control to the end of the third year following the infection. The cure of the syphilitic infection is controlled by a reactivation at the end of the third year, and this is followed six months later by a spinal puncture. In case of a negative result of the latter, the marriage of the patient may be permitted.

Iodine and Diseases of Thyroid.—Scheffer shows that in the present status of experimental research it may be asserted that goiter is not caused by a deficiency in the intake of iodine. He admits that the occurrence of iodine in nature (earth, air, water) is low in regions where goiter is endemic, but he maintains that this deficiency in the external iodine is not the cause but only the indicator of goiter. The disturbance in the internal iodine metabolism, however, must be brought into relationship with the disorders of the thyroid.

Demonstration of Occult Blood in Stool.—Hablützel calls attention to the sources of error involved in the benzidine test. He experimented with various foods and on the basis of these studies he reaches the conclusion that patients with gastric and intestinal disturbances, whose stools are to be examined with the benzidine test, must adhere to a special diet

without meat, meat extract, raw vegetables or raw milk. It is also important to have the benzidine solution freshly prepared and to use it within five minutes of its preparation.

Minerva Medica, Turin

2: 521-552 (Oct. 20) 1934

- Hepatic Abscess Due to Bacterium Coli. D. Giordano.—p. 521.
Observations on Diazo Reaction of Bilirubin of Blood Serum. G. Dominici and G. Marengo.—p. 523.
Pulmonary Carcinoma. L. Lovisato.—p. 525.
Hypo-Evolution Due to Cardiac Defects Producing Decompensation in Youth. A. Francaviglia.—p. 533.
*Presence of Globin (Globulin Derivative) in Cerebrospinal Fluid. C. L. Emiliani and A. Simili.—p. 539.
Isolated Cystic Osteodystrophy in Monochorionic Twin. Evelina Ravis.—p. 544.

Presence of Globin in Cerebrospinal Fluid.—Emiliani and Simili studied the cerebrospinal fluid of a number of patients presenting meningeal and cerebral hemorrhages, hemiplegia, tumors and compression of the medulla oblongata, syphilitic diseases of the nervous system, meningitis and other diseases. The authors found that, when the amount of blood in cloudy cerebrospinal fluid is conspicuous, a notable amount of globin is present. They maintain, however, that, if the amount of blood is minimal, the globin is present only to slight degree. Of fifty-five cerebrospinal fluids examined, twenty-three were cloudy, sixteen clear, two almost clear and fourteen weakly xanthochromous. The reaction of Meyer was negative in eighteen specimens of cerebrospinal fluid, doubtful in two, weakly positive in twenty-two and positive in thirteen. The authors do not believe that slight traces of globin in cerebrospinal fluid have any diagnostic value. To be of value, the globin must be in evidence and the reaction of Meyer must be more than slightly positive. Since the cerebrospinal fluid is believed to be the secretion of the choroid plexus of the ventricles, the authors deem it possible that the slight traces of globin found in all cerebrospinal fluids may constitute the protein complex that distinguishes them under normal conditions. The pathologic amount of albumin as demonstrated by common methods of estimation (such as that of Brandberg-Pfäundler) indicates more than the percentage of global albumin. It also comprises, according to cases, a more or less increased amount of globin. The presence of globin in the fluid has great diagnostic value, in the sense of indicating a hemorrhage, even a remote one, provided it is found in a fairly high percentage. The authors conclude that minute amounts of globin are a constituent of the normal protein composition of the cerebrospinal fluid.

Archiv für klinische Chirurgie, Berlin

180: 1-648 (Sept. 21) 1934. Partial Index

- Treatment of Suppurative Infections and Results. E. Lexer.—p. 183.
Electrosurgery in Suppurative Infections. H. von Seemen.—p. 199.
*Cod Liver Oil Treatment of Acute and Chronic Osteomyelitis of Long Bones. W. Löhr.—p. 206.
Surgery of Carcinoma of Rectum. O. Goetze.—p. 240.
Technic of Extirpation of Carcinoma of Rectum and Pelvic Colon. K. Lichtenauer.—p. 273.
*Operative Treatment of Congenital Bronchiectasis. Sauerbruch.—p. 312.
Traumatic Diaphragmatic Hernias. Rütz.—p. 321.
*Therapeutic Outlook in Benign and Malignant Tumors of Parotid Gland. A. Hintze.—p. 606.

Cod Liver Oil Treatment of Osteomyelitis.—Löhr reports twenty-four cases of acute osteomyelitis of the long bones treated with cod liver oil and a plaster cast. The field of operation was rendered bloodless and a long incision was made over the tender part of the bone. The periosteum was split and pus evacuated. He found it seldom necessary to drill the bone. The wound was filled with cod liver oil, and the skin incision was loosely closed with interrupted sutures. A circular plaster cast was applied. In the next few days a profuse discharge of an emulsion of pus and oil took place. The behavior of the wound could be judged from the temperature curve, the appearance of the tongue, the appetite and the sleep. The cast was removed at the end of the second or the third week, at which time roentgen examination gave an accurate idea of the extent of the involvement. The patient at this stage was submitted to a second operation, in the course of which sequestrums were removed and the bone cavity was filled with cod liver oil. The author later became convinced that the second operation could be dispensed with in a high

percentage of the cases. Of the twenty-four cases, six belonged to the most severe type not amenable to any local treatment and ended fatally. Of the remaining eighteen, the temperature fell promptly in seventeen. In one the temperature remained elevated and a more radical operation was repeated at the end of two weeks. All eighteen patients were discharged as cured. The convalescence was smooth and painless. The author believes that with this method a high percentage of cases of acute osteomyelitis can be definitely cured and thus prevented from passing into the stage of chronic osteomyelitis. The treatment of chronic osteomyelitis differed only in a more radical removal of the involved bone. The resulting frequently enormous cavity was filled with cod liver oil and a plaster cast was applied. The principle of the treatment is not to disturb the tissues. The use of disinfectants, drains, gauzes and frequent dressings is entirely omitted. The convalescence is thus rendered painless and the general outlook with regard to the ultimate cure is brighter. Of twenty-six patients with chronic osteomyelitis given the treatment, one died of embolism, three were not cured, and twenty-two were completely cured and discharged without fistulas.

Operative Treatment of Congenital Bronchiectasis.—Sauerbruch points out that congenital bronchiectasis, though little appreciated by pediatricians, is not an infrequent clinical entity. He believes that fully 80 per cent of bronchiectases of childhood limited to one lobe are of congenital origin. As a proof of his contention the author points out that there were no pleural adhesions or inflammatory pulmonary alterations in the fifty-eight lobes resected by him, the alterations consisting of widening of the bronchi and thickening of the pulmonary tissue. The next proof is furnished by the histories of these cases. They did not exhibit a tendency to colds, nor did the bronchiectasis develop as an immediate sequel to influenzal or whooping cough pneumonia. It is likewise noteworthy that the lung is frequently the seat of congenital malformations, such as cysts of the bronchi or of the pulmonary tissue. The left lower lobe is the seat of congenital bronchiectasis in the great majority of cases. The author raises the question of whether local congenital malformations capable of leading to so grave a condition as bronchiectasis had not better be subjected to a radical removal. That is possible only through the removal of the entire lobe. The author's method for the removal of a lobe is carried out in two or more stages. Two or three ribs are removed and a filling is placed against the pleura. After a number of weeks, when adhesions have formed, it becomes possible to remove the lobe without infecting the pleural cavity and without retraction of the bronchial stumps. The author performed fifty-eight such operations, including two total (whole lung) extirpations. Six patients died as the result of the operation and fifty-one were cured without a fistula. Radical removal is not feasible in bronchiectasis of inflammatory origin. Here improvement may be obtained by collapse therapy and drainage of the pus cavities. The discharge is diminished, toxemia is lessened and damage to the kidney is prevented. The outlook for a cure, however, is not as good as after a radical operation. The rational treatment of congenital bronchiectasis consists of extirpation of the involved lobe. It is the method of choice and should be performed early, before the secondary alterations have time to develop.

Tumors of Parotid Gland.—Hintze reports 116 cases of parotid tumor observed at the surgical clinic of the University of Berlin between 1912 and 1933. Classification of parotid tumors on a histologic basis presented certain difficulties, since pathologists are not always agreed as to whether carcinoma or sarcoma is present and at times are unable to state definitely whether the tumor is benign or malignant. The surgeon must keep in mind the ever present possibility of malignant degeneration of a previously benign tumor. The author believes it advisable to consider malignant the so-called mixed tumors. The cylindromas, which may be either benign or malignant, are considered as a separate group. Of the fifty histologically proved malignant conditions of the parotid, there were fourteen carcinomas, sixteen sarcomas, three not clearly differentiated between carcinoma and sarcoma, twelve mixed tumors, four cylindromas and one lymphoma. Of twenty histologically proved benign tumors, fifteen belonged to the mixed group and three to cylindromas, while two were simple benign tumors.

The author emphasizes the fact that not an inconsiderable proportion of the mixed tumors are malignant. About one third of the histologically proved malignant cases had a long history suggesting malignant transformation of an originally benign tumor. The author sees in irradiation a powerful adjuvant to surgical therapy. He reports 45 per cent of five year survivals in the malignant cases, of which 21 per cent were symptom free at the end of this term. He sums up the therapeutic indications as follows: Every malignant or suspected tumor is given a single powerful roentgen irradiation. Should the tumor be roentgen sensitive so that within six weeks after the initial exposure it is reduced to one half its original size, the irradiation is repeated until no further reduction takes place. The use of radium is then resorted to. The tumors that do not respond to the initial irradiation are at once subjected to a radical extirpation, which is however followed by repeated irradiations to prevent recurrence. A recent recurrence is best treated by irradiation. The roentgen-insensitive recurrence must be treated operatively. The inoperable tumors are treated by intensive roentgen irradiation, after which it may be possible to do a partial resection of the growth and to implant radium. The likely paralysis of the facial nerve does not constitute a contraindication to therapy, since its involvement by the malignant tumor sooner or later is a foregone conclusion. The radical therapy in such cases is further indicated by the unbearable pain. Distant metastases can be retarded only by irradiation. A recent benign parotid tumor is best treated by irradiation. A progressive, even though slow enlargement, demands operative intervention even at the risk of facial palsy. Because of frequent recurrence and tendency to malignant degeneration, every case of a benign parotid tumor is to be subjected, after the surgical removal, to prophylactic irradiation.

181:1-192 (Oct. 4) 1934. Partial Index

- Influence of Infection on Gastric Suture Line: "Intersuture Space" on Basis of Animal Experiments. R. Friedrich.—p. 1.
Clinical and Experimental Study of Muscle Damage in Maxillary Fractures. K. H. Link.—p. 24.
Postoperative Osteomyelitis of Skull. F. Marek.—p. 78.
*Infection Due to Vitamin Deficiency, Especially in Acute Infectious Osteomyelitis. R. Takahashi.—p. 103.
Restoring Liver Function After Operations for Complete Obstruction of Bile Passages. T. Ichijima.—p. 129.
*Biologic Action of Various Types of Goiters. M. Kimura.—p. 149.
*Effect of Iodine, Sympathetic, Vagus, Parathyroids and Suprarenals on Compensatory Hypertrophy of the Thyroid. N. Hoshiko.—p. 161.

Influence of Avitaminosis on Infection.—Takahashi noted a pronounced lowering of resistance to bacterial infection in his animal experiments in the presence of vitamin B and C deficiency. Multiple abscesses in the epiphyses of bones regularly occurred in vitamin C deficiency. Bony metastases of this type were observed exceptionally only in the control animals. The circulation in the medulla of metaphyses was found considerably altered in the absence of vitamin C. These circulatory disturbances together with the anatomic alterations in the medulla of the metaphyses exercised the determining influence on the localization and multiplication of the bacteria in this segment of the bone. The author concludes that vitamin C deficiency may be a factor in the genesis of acute osteomyelitis.

Biologic Action of Different Types of Goiters.—Kimura found that injection of thyroid extract in guinea-pigs definitely raises their basal metabolic rate while slightly raising their blood sugar. At the same time the respiratory quotient is somewhat lowered. The blood sugar rises shortly after the injection and returns to normal in five hours. The basal metabolic rate begins to rise only after five hours and remains so for a number of days. The respiratory quotient was regularly found to be at its lowest when the rise in the basal metabolic rate had lasted longest. Glandular substance characterized by thyrotoxic symptoms, high basal metabolic rate and the histologic picture of a hyperfunctioning gland was found to be not always the most active in the biologic sense. The author found that administration of iodine lowered the basal metabolic rate and improved the clinical symptoms, while the histologic picture was more that of a functionally resting gland. Extracts from such a gland proved to be far more biologically active. Apparently the active substance was abundantly secreted in these glands. Cystadenomas showed

without exception a low basal metabolic rate and a pronounced diminution of colloids. Their biologic action was almost absent.

Effect of Iodine on Compensatory Hypertrophy of Thyroid.—Hoshiko found that removal of one lobe of the thyroid in a guinea-pig was followed by a compensatory hypertrophy of the remaining lobe, as evidenced by an increase in weight and in the colloid content. When in addition to the hemithyroidectomy iodine in the form of 1 per cent compound solution of iodine was fed by mouth, it was found that the increase in weight of the remaining lobe was further increased but that the increase in colloid content continued only for eight days and that after eleven days no difference could be noted between iodized and noniodized glands. The effect of sympathectomy was to inhibit or, at least, to retard the increase in weight and in colloid content. Exhibition of iodine, however, again caused the increase in weight and in colloid. The author found that section of the vagus inhibited the compensatory hypertrophy but that under the influence of iodine the increase in weight and colloid again took place. The sectioning of the vagus and the sympathetic with simultaneous administration of iodine resulted in increase in weight and colloid, which corresponded to the average increase in experiments in which either the sympathetic or the vagus was sectioned. Storing of colloid was present in each instance. The effect of the removal of the parathyroids and of the suprarenals was to prevent the compensatory hypertrophy to a considerable degree. This inhibition could be counteracted by administration of iodine so that the increase in weight corresponded to that seen in the control animals, while the increase in colloid was even more pronounced than in the controls. On the basis of these experiments the author concludes that the thyroid is influenced by the autonomic nervous system and humorally by the interval secretions of the parathyroids and the suprarenals. These influences may always be counteracted by the administration of iodine. The effect of iodine consists in provoking a compensatory hypertrophy and in increasing the colloid content of the follicles. The storing of colloid under the influence of iodine is more pronounced if the influence of the sympathetic, the vagus, the parathyroids and the suprarenals is eliminated.

Deutsche medizinische Wochenschrift, Leipzig

60: 1535-1574 (Oct. 12) 1934. Partial Index

- Surgical Treatment of Spastic Torticollis. Bostroem and A. Löwen.—p. 1535.
Edema in Cerebral Tumor. H. Hoff and H. Urban.—p. 1537.
Criticism of "Loss of Pupil Reflexes." L. Roemheld.—p. 1541.
*Tabetiform Manifestations Following Diphtheria. A. Werner.—p. 1543.
*Can Suboccipital Puncture of Patients with Syphilis Be Done During Consultation? A. M. Memmesheimer.—p. 1545.
Erroneous Diagnoses in Cerebral Hemorrhages. S. Schoenhorn.—p. 1547.

Tabetiform Manifestations Following Diphtheria.—Werner describes the clinical history of a woman, aged 28, whose main symptom was lack of the pupillary and the patellar reflexes. Congenital and acquired syphilis and all other disturbances that may cause tabetiform disorders could be ruled out in this patient. The anamnesis revealed that the pseudotabetiform syndrome appeared first at the age of 12, immediately following a severe diphtheria that was accompanied by prolonged visual disturbances and by impaired walking. The author designates the condition as postdiphtheric pseudotabes. He thinks that many of the obscure, pseudotabetiform disorders and many cases of tabes with negative serologic reactions may be of diphtheric etiology.

Suboccipital Puncture During Consultation?—Memmesheimer thinks that a physician who has mastered the technic well and who is familiar with the dangers is permitted to perform a suboccipital puncture in the consultation office. He discusses some of the details of the technic and shows how to avoid certain complications. He points out that the syphilologist often discovers cases in which an examination of the spinal fluid has been neglected because the patients feared a lumbar puncture and did not report at the clinic for a suboccipital puncture. As a result, an incipient disease of the central nervous system is overlooked and serious sequels result, whereas an examination of the cerebrospinal fluid at the right time would have permitted a prophylactic treatment. The author emphasizes that such cases may be avoided if the suboccipital puncture is done during the consultation hour.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

97: 317-376 (Sept.) 1934

- Our Experiences with Radiation Therapy of Carcinoma of Uterine Cervix. O. Nchesky.—p. 317.
- *Essential Hypertension of Pregnancy as Disease Entity. L. Seitz.—p. 325.
- Emulsification Tendency of Serum in Genital Carcinoma of Women. H. Eufinger and B. Schwemmler.—p. 335.
- *Treatment of Gonorrhea in Women by Intracutaneous Administration of Living Vaccine. S. Sommer.—p. 339.
- Case of Spontaneous Cure of Two Extra-Uterine Pregnancies with Development of Two Lithopedions of Eleven and Nine Years Duration, Respectively. W. P. Umnowa.—p. 349.

Essential Hypertension of Pregnancy.—Seitz proves the existence of a hypertension, which is the result of the changes caused by pregnancy, in which all other symptoms are absent, and which disappears again during the puerperium (essential hypertension of pregnancy). This hypertension is an exacerbation of the increase in blood pressure that frequently develops at the end of pregnancy and is always present during delivery. It is a manifestation of the adaptation on the part of the organism that only by increased tension of its vascular walls is capable of accomplishing the changed and increased work required of the vascular apparatus during pregnancy. The blood pressure increase is to be considered as abnormal if it exceeds a certain height. Whether the hypertension of pregnancy ever becomes so severe that it threatens the life of the mother and makes an interruption of the pregnancy necessary cannot be determined as yet. The essential hypertension of pregnancy is the result of hormone influences, among which the reduction of choline and the increase of the hormone of the posterior lobe of the hypophysis in the blood play an important part. Women with symptoms of exophthalmic goiter or with plethora seem to be especially predisposed to essential hypertension of pregnancy. If it exists for longer periods and becomes rather high, it may influence other organs. It may cause nutritional disturbances in the parenchymatous organs (kidneys, liver, brain and others), and this in turn may lead to anatomic changes in the affected organs. However, in addition to the general increase in blood pressure, localized vascular spasms and the influence of toxic products on the cells play a part in the development of the organic changes. Thus the increased blood pressure that exists in toxemias is a symptom rather than the essential cause of the toxemias (symptomatic hypertension of the toxemias of pregnancy). An already existing essential hypertension often becomes exacerbated by a pregnancy. If the hypertension is severe, 250 mm. or more, and symptoms of decompensation appear, an interruption of pregnancy must be taken into consideration.

Intracutaneous Administration of Living Vaccine in Gonorrhea.—Sommer asserts that while the usual subcutaneous, intramuscular and intravenous administration of vaccines of killed gonococci is accompanied by severe general reactions, the intracutaneous administration of living vaccines causes none or extremely mild general reactions. The author employed the living vaccine in thirty-six women with gonorrhea. He reaches the conclusion that the intracutaneous injection of living vaccines presents a considerable progress in the treatment of the chronic gonorrheal processes of inflammation of the female sex organ. The method proved to be entirely harmless, and ambulatory treatment was possible. When employed in the correct manner, the treatment effected a cure even in those cases which relapsed again and again for months and even for years and which proved refractory to all other methods of treatment.

Wiener Archiv für innere Medizin, Vienna

25: 321-480 (Oct. 5) 1934

- *Anemias Caused by Deficiency of Iron. M. Schur.—p. 321.
- Studies on Metabolism in Case of Disordered Circulation. D. Laszlo.—p. 353.
- Leukopenia Under Physiologic and Pathologic Conditions. U. Strasser.—p. 387.
- Role of Liver in Water Exchange. D. Adlersberg.—p. 401.
- Functional Test of Heart Which Excludes Habitual Pulse Frequency. L. Meczner.—p. 463.
- Behavior of Pulse in Dissociated Cardiac Activity. R. Fischer.—p. 469.

Anemias Caused by Iron Deficiency.—Schur attempts to bring the hypochromic anemias into one group. He shows that the large group of chloranemias may be brought under one heading in that they are varying manifestations of a clinical

entity. The different forms show gradual transitions and the essential factor is always a disturbance in the iron metabolism. The regulation of the formation of the blood is closely connected with the iron metabolism. The latter in turn is dependent on an undisturbed collaboration of numerous organic functions that make possible intake and resorption of iron, depot formation, mobilization of the depots and utilization for the formation of blood. The concurrence of several pathologic factors is as a rule necessary to effect a considerable disturbance. Anemias resulting from such disturbances should be considered from the point of view of the disturbed iron metabolism. Such anemias may be caused by deficient intake of iron, chronic loss of blood, disturbances in the resorption (achylia, achlorhydria, hypochlorhydria, gastric resection, chronic enteritis), disturbances in the endocrine and the sympathetic apparatus and systemic diseases with direct impairment of the blood forming organs.

Zentralblatt für Gynäkologie, Leipzig

58: 2401-2464 (Oct. 13) 1934

- *Counting of Labor Pains and Prognosis of Delivery. F. Siegert.—p. 2402.
- Correct Terminology of Oblique Diameter of Pelvis. B. Ottow.—p. 2411.
- Resistance of Ovary to Gonadotropic Hormone. H. Siegmund.—p. 2413.
- Conditions of Inbreeding Among Inhabitants of the Frische Nehrung. K. W. Schultze.—p. 2420.
- Fecal Concretion Simulating Ovarian Tumor. G. von Nagy.—p. 2424.
- Treatment of Gynecologic Disorders by Means of Moor Packs and by Injection of Pregnancy Urine. A. Mandelstamm and S. Becker.—p. 2427.

Counting of Labor Pains and Prognosis of Delivery.—Siegert says that the larger the os uteri is at the time of the rupture of the bag of waters, the less is the number of labor pains required to complete the delivery. This corresponds to the rule that the total number of labor pains in a delivery is the greater, the smaller the os uteri is at the time of the rupture of the bag of waters. The author discusses the hour frequency, that is, the number of contractions in an hour. His observations convinced him that there is a rather constant ratio between the time required for the different periods of birth and the number of their uterine contractions. He assumes a law that governs the dynamics of delivery and formulates it as follows: (1) The longer the duration of the birth, the greater the number of uterine contractions; (2) there is a definite ratio between the work accomplished in the various periods of birth. In answer to the problem whether the absolute number of labor pains is a valuable factor in determining the prognosis and thus the management of a delivery, the author states that on the basis of the aforementioned deductions this is not the case, for the counting is of value only in connection with the duration of the process of birth. He emphasizes that, if after the rupture of the bag of waters the hour frequency of the uterine contractions decreases, this is an indication that the contraction capacity of the uterus slackens, and a spontaneous delivery becomes more doubtful as the number of pains each hour becomes smaller. He thinks that, if the obstetrician considers only the absolute number of uterine contractions, operative interventions will be resorted to more often than necessary. The number of uterine contractions per hour determines the course of birth in primiparas as well as in multiparas.

58: 2465-2528 (Oct. 20) 1934. Partial Index

- Further Results of Ray Therapy of Uterine Carcinoma. F. Voltz.—p. 2466.
- Case of Decidual Reaction in Cervical Polyp and in the Os Uteri. J. Gosau.—p. 2473.
- Difficulties in Menstruation. A. von Fekete.—p. 2476.
- *Influence of Hormone of Anterior Lobe of Hypophysis on Internal Genitalia of Sexually Mature Women. E. Stöckl.—p. 2484.
- Cases Resembling Hyperemesis of Pregnancy: Pregnancy and Suppurating Meningo-Encephalitis. P. I. Fomina.—p. 2491.

Hormone of Anterior Lobe of Hypophysis and Female Genitalia.—Stöckl describes observations on the internal genitalia of three women who were given intramuscular injections of a gonadotropic preparation of the anterior lobe of the hypophysis. The studies were made in women who had to undergo a surgical intervention on the genitalia, after preliminary tests had been made on animals. In the course of the days preceding the operation, the women were given several injections of the extract. The total dose varied between

200 and 400 mouse units. It was found that these injections induced a strong hyperemia of the pelvic organs, the appearance of blood-filled follicles in the ovaries, and, in a patient past the menopausal age, the formation of an unusually large corpus luteum. Changes were noted also in the uterine mucous membrane. The general condition of the patients remained unchanged, and disturbances were not noted during or after the injections. The author thinks that, in spite of the small material, his observations justify the conclusion that the administration of gonadotropic preparations produces in the internal genitalia of sexually mature women changes that are identical with those observed in animals following the administration of these substances.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 4921-5012 (Oct. 27) 1934

Alopecia. E. Zuhelle.—p. 4923.

Experiences with Thirty-Two Cases of Cancer of Stomach. R. Finaly.—p. 4931.

Rubber Sponge Treatment of Varicose Ulcer of Leg. E. A. Immink.—p. 4937.

*Necessary Measures to Take in Clinical Determination of Phosphorus in Blood. J. C. J. Burkens.—p. 4944.

Acute Thallium Poisoning: Case. J. G. Menken.—p. 4951.

Agranulocytosis and Leukopenia After Treatment with Neoarsphenamine and Bismuth. H. H. A. De Jong.—p. 4953.

Two Unusual Cases of Full Term Extra-Uterine Pregnancy. N. J. A. F. Boerma.—p. 4958.

Clinical Determination of Phosphorus in Blood.—Burkens found that in determining the inorganic phosphate of the blood made noncoagulable by means of oxalate, citrate or hirudin it is necessary to proceed immediately after withdrawing the blood to avoid a possible increase in the phosphate content. In some cases the orthophosphate content may diminish. The cause of this lies in the fact that the phosphoric esters disintegrate to and are built up from inorganic phosphorus. In the albumin-free trichloroacetic acid filtrate of blood and plasma, the inorganic phosphorus content is just as inconstant. Blood, serum, plasma or an albumin-free filtrate cannot be sent for an analysis. If the blood is made noncoagulable by the addition of 10 mg. of sodium fluoride (in powder form) to every 5 cc. of blood or by mixing with it 0.1 part of a 2 per cent solution of sodium fluoride, the blood or the plasma may be kept for a long time at room temperature or at 38 C. without showing any change in the concentration of inorganic phosphorus. The author concludes that phosphorus determinations are of clinical importance only when found in the blood of fasting persons because, after consumption of carbohydrates, there is a prolonged decrease in the phosphate content of the blood.

Hospitalstidende, Copenhagen

77: 1033-1060 (Sept. 25) 1934

*Idiopathic Steatorrhea, with Especial Regard to Diagnosis and Occurrence of Symptoms of Endocrinopathy and Avitaminosis: Two Cases. T. E. H. Thaysen.—p. 1033.

*Investigations on Capillary Resistance: II. Reduced Resistance in Patients on Gastro-Intestinal Diet, Especially Ulcer Diet, and Its Affectibility by Vitamin C (from Berries of Dog Rose). P. Schultzer.—p. 1052.

Idiopathic Steatorrhea.—In the first and fatal case described by Thaysen, the symptoms of the disorder set in nine years earlier; in the second, the disturbance dated back to childhood. The first patient was a man, aged 32, the second a woman, aged 24. Both patients had been treated at home and hospitalized at various times. Abdominal tuberculosis had been suspected. The cases were treated under the diagnosis of Addison's disease, pluriglandular insufficiency and anemia. The author says that while there was marked pigmentation of the skin, neither of the patients had typical Addison's disease. Symptoms of endocrinopathy and avitaminosis appeared together. In the first case there were hemeralopia, pronounced tetany and pigmentation; in the second, dwarfism of hypophyseal type, glossitis, pigmentation, hemorrhages in the skin, osteoporosis and latent tetany. The anemia in idiopathic steatorrhea may be so marked as to dominate the entire picture, and the two attacks of grave anemia, which occurred in both cases, diverted attention from the steatorrhea. The diagnosis of idiopathic steatorrhea is not confirmed on the demonstration of an excess of fat in the stools. The presence of this abnormality without

jaundice or signs of occlusion of the choledochus calls for examination of the blood sugar curve after the administration of dextrose. If the blood sugar curve is low the diagnosis of idiopathic steatorrhea must be made, since neither pancreatic steatorrhea nor steatorrhea in intestinal amyloidosis nor intestinal tuberculosis is accompanied by low blood sugar.

Capillary Resistance.—After treating eighteen patients suffering from ulcer and having normal capillary resistance with a diet relatively deficient in vitamin C for an average of sixteen days, Schultzer found lowered capillary resistance in nine. A series of examinations in seventeen other patients also treated with a gastro-intestinal diet deficient in vitamin C confirmed this result. That the resistance was not reduced in all the cases is explained by the fact that different persons require different lengths of time to develop lowered resistance. The addition of vitamin C (in tablets of pulverized berries of dog rose) in seven cases restored normal capillary resistance in five; a cause other than avitaminosis was confirmed for the lowered resistance in one of the two cases.

Svenska Läkaresällskapet's Handlingar, Stockholm

60: 157-268 (No. 3) 1934

*Elimination of Organic Acids in Urine During Childhood and Relation of Acids to Basal Metabolism in Adults. S. Siwe.—p. 157.

Murder or Suicide Due to Blows from Ax. F. Harbitz.—p. 266.

Organic Acids in Urine During Childhood.—Siwe states that the elimination of organic acids, both in the total amount and in the ether-free fraction, often varies considerably from case to case and in the same person from day to day. In premature and weak infants the values of the eliminated organic acids are higher than in normally developed children of the same age. The quantity of organic acids in the urine depends mainly on the intermediary metabolism. In grave acute nutritional disturbances in infancy the organic acid values are somewhat increased; in chronic nutritional disturbances the values equal those seen in weak and premature infants of younger age. In rickets the values are greatly increased, the total value rising considerably more than the ether-free fraction. In spasmodophilia, both increased and approximately normal values are found. In diabetes, establishment of the organic acids in the urine presents a simpler and more sensitive method for determination of the acidotic condition of the body than is afforded by the usual quantitative methods. As children grow older the elimination of organic acids per kilogram and day seems to diminish, and the daily variations become less. Cases of abnormally low organic acid elimination appear in childhood. There is a relatively constant ration of 3:2 between the organic acids eliminated during the day and during the night. Comparison between the basal metabolism and the organic acid elimination in adults shows no positive or negative correlation between the values. Instances of abnormally low organic acid values also occur in adults. The diagnosis in these cases points to disturbances in metabolism, sometimes of endocrine nature. The results of the author's examinations in eighty children are tabulated.

Ugeskrift for Læger, Copenhagen

96: 1129-1152 (Oct. 18) 1934

Investigations in Children from Tuberculous Environment. O. Lassen.—p. 1129.

*Investigation of Liver Function in Patients with Acute Febrile Disorders. K. Brøchner-Mortensen.—p. 1136.

Report of Fifteenth Continuation Course in Tuberculosis in Prince Regent Luitpold Children's Sanatorium in Scheidegg, Bavaria. 1934. H. Harpelt.—p. 1141.

Liver Function and Acute Febrile Disorders.—Brøchner-Mortensen found urobilinuria and urobilinogenuria in forty-nine of fifty cases of acute febrile disturbances, increased lipase count in twenty-two, and increased retention after the bilirubin loading test in thirteen. The bilirubin content of the blood was normal in scarlet fever. A marked reduction in the liver function set in rapidly in sepsis. There was also decreased function in one case of encephalitis, one of tuberculous meningitis, two of influenza and two of mononucleosis; in two cases of acute leukemia and two of mononucleosis the function was normal. Daily tests in twenty-nine cases showed that the increased urobilin elimination generally continued somewhat longer than the fever.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 26

CHICAGO, ILLINOIS

DECEMBER 29, 1934

LUNG ABSCESS

CHAIRMAN'S ADDRESS

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SAN FRANCISCO

In searching about for a subject that might be of interest, several things conspired to influence me in the choice of lung abscess. Any disease that has a mortality as high as this is a proper subject for consideration before this section. Of equal importance but less emphasized is the long period of disability and hospitalization, thus bringing about serious social and economic problems. Because this disease is not a very common one, because it is usually treated in the first instance by the family physician who has had no considerable experience with it, and because it is difficult from the literature to evaluate any particular form of treatment, I feel that a discussion of this disease may be of value.

It might at this point be interesting to relate that several years ago in the San Francisco Bay region a little group was formed, composed mostly of thoracic surgeons with a sprinkling of especially selected medical men. We formed ourselves into a dinner club. After a number of interesting meetings, the group finally split up on the subject of lung abscess. But we came to some interesting conclusions, which were that we knew but little about this disease in its clinical aspects, that the criteria which we had used were not built on fact, that to prognosticate the course of any individual case was fraught with difficulty, and that we could obtain arguments through the literature for any kind of procedure that we might wish to use.

With this previous experience it is therefore with some temerity that I appear before you, and I presume to do so only because a chairman's address permits of no discussion.

As a result of this experience, a rather intensive review was made of 128 cases from the records of the University of California Hospital, the Mount Zion Hospital, and the University of California service at the San Francisco Hospital. Through the courtesy of Dr. Leo Eloesser it was possible to add seventy-seven cases from the Stanford service at the San Francisco Hospital, making a total of 205 cases. When I started, I had certain preconceived ideas that I wished to prove. When I finished, I reached conclusions that were diametrically opposite. This study was carried on by a group composing the Thoracic Clinic of the Univer-

sity of California. They will report in the future, in detail, many of the points touched on in this paper which cannot be given full consideration here.

The cases were handled by a number of different men, some better trained than others in this special field; but the series does, perhaps, give a cross-section of the treatment and results in hospitals throughout the country. It is worthy of note that the seventy-seven cases from the Stanford service treated by Dr. Eloesser and his staff gave practically the same values as were obtained from the three hospitals mentioned.

Perhaps the subject might best be approached through a series of questions: Does the trouble in the handling of this disease lie in difficulty of diagnosis and early action on such diagnosis, as is the case with many acute surgical conditions? Are the diagnostic means at one's disposal always accurate, and does one lean at times too heavily on them? Is the complexity of the disease recognized and are insufficient data from a few cases too readily drawn on? Are medical practitioners carried away by any particular form of treatment and do they apply the various forms of treatment recommended, both medical and surgical, either at the wrong time or in the wrong case? Should cases be treated medically for a longer period or should surgical intervention come earlier in the course of the disease? Are there any criteria for the time of surgical intervention? Is there a possibility of improving surgical methods? If these questions have remained unanswered in the past, what are we, as surgeons, going to do about it?

I am limiting the scope of this paper to that type which had its beginning, at least, as an acute putrid abscess—foul smelling, containing elastic tissue, usually aspiratory in origin, and containing a multiplicity of bacteria, both anaerobic and aerobic; excluding bronchiectasis, abscesses on a carcinoma basis, and those produced by foreign bodies. For the purpose of this study 205 cases have been reviewed, hospitalized between the years of 1925 and 1934.

EXPECTANT TREATMENT

In the study of the literature, the dominant opinion expressed is that lung abscess should be treated medically or expectantly over a considerable period of time. There are no landmarks given as to when this treatment should cease; but it is often said that surgery should be done before the abscess becomes chronic, and this time is set arbitrarily at about six weeks to two months. The records seem to show, however, that surgery is seldom applied within this period.

Under the term of medical treatment I have included inhalations, postural drainage, bronchoscopy, artificial pneumothorax, phrenicectomy, arsphenamine and the

application of roentgen therapy. Space does not permit of prolonged discussion. Some of them, however, it would seem to me will bear consideration.

Surgical treatment includes only open drainage or lobectomy.

Postural drainage has been more generally advocated by internist and surgeon than any other one measure. I can find nothing in the literature that speaks of its disadvantages. Nevertheless I am cognizant of three cases in which death resulted from its application, and some warning may therefore be necessary in the use of this valuable procedure. Its advantages are not nearly so great in abscess as in bronchiectasis. It is valueless until an abscess has broken into a bronchus. To apply this remedy to a very sick patient—cyanotic, with high fever, rapid pulse and a low vital capacity—is courting disaster.

I myself know from personal experience how much easier it is to get material up from the bronchi in the sitting than in the lying posture; and I know how thwarted the diaphragm becomes in its expulsive efforts in the position of postural drainage. Experimental evidence verifies these clinical observations. Prinzmetal and Kountz¹ state that pulmonary ventilation is facilitated in the upright position. It has been shown that the vital capacity is generally higher, that the volume of the lung is greater, that the midcapacity is greater, that the accessory muscles of inspiration can be used to better advantage and that the diaphragm is lower than in the recumbent position. In their experiments on thirteen individuals, six of whom were without orthopnea and seven with, they found in all cases that the intrapleural pressure was less negative in the recumbent than in the upright position, and that the shift was more marked in the patients with orthopnea than in the control group. Occasionally the intrapleural pressure rose above the atmospheric pressure in the recumbent position. A less negative intrapleural pressure will limit pulmonary ventilation, and, according to the work of Starling, interferes with pulmonary circulation. The heart also shifts from a more longitudinal to a transverse position. Briscoe² states that, in the change from the upright to the supine position, the volume of the chest is reduced from 10 to 20 per cent and the reserve air by about 1,200 cc.

All these factors would work an even greater disadvantage in the position of postural drainage. It is easy to see, therefore, why this position might have brought about the death of the three patients mentioned. These factors also tend to produce compression and atelectasis of the lung, and, I feel, may so lower its resistance that infection may take place, with intrapulmonary spread.

Postural drainage has its place in the treatment of lung abscess; but it must be given with due consideration to the condition of the patient, the location of the abscess, and the direction of the bronchial tree leading from the infected area.

Bronchoscopy has its advocates. Here too is a procedure that cannot be carried out with sufficient frequency on a sick patient really to keep an abscess drained, as we say, surgically. Many have tried it only to give it up as a routine. It is not entirely void of the danger of setting up further inflammation.

Bronchoscopy is useful for the purpose of eliminating the possibility of a foreign body, for the diagnosis of a malignant condition or stenosis as a cause of the abscess and for the purpose of shrinking granulations to permit of better drainage through the bronchus; but as a routine for the cure of the disease it is, in my opinion, unsurgical.

For artificial pneumothorax, again, there are advocates who are enthusiastic, especially those who have used it as their routine in tuberculosis. If such therapy is employed, only small quantities of air should be used at each refill, and a negative pressure maintained. I would say, however, that most surgeons are fearful of adopting this mode of treatment. While some patients get well under its use, it is applicable to but few. It tends to break down adhesions, which is disadvantageous. A long period of time is required in its application thereby causing delay, especially when surgery is beneficial. It not infrequently causes rupture into the pleural cavity with formation of a putrid empyema, with a mortality of from 80 to 90 per cent. In my experience the risks of the procedure have not justified its use.

Temporary phrenic paralysis by crushing of this nerve is best applied for abscess of the lower lobe with adhesions to the diaphragm but has very limited application.

Arsphenamine as a cure has been unsatisfactory in my hands. While some improvement may occur in the general condition of the patient, I have not found it to be a specific agent, spirochetes still being present on careful examination.

The recent use of roentgen therapy to cause more rapid liquefaction of the abscess, early rupture into a bronchus, clearing up of surrounding pneumonitis and delimitation of the disease (as frequently happens when used in the treatment of carbuncles) is probably advantageous, but it has not been used in a sufficient number of cases to warrant a definite conclusion as to its value. I feel that, with careful studies as to proper dosage and time of application, roentgen treatment may prove to be a most valuable adjuvant.

X-RAYS IN DIAGNOSIS

The use of x-rays for diagnosis is most important. Physical examination is, at best, equivocal. The x-rays should be used frequently and are the best method of following the course of the disease. Roentgenograms should be taken in various directions, at least the antero-posterior and lateral, and sometimes with varying densities. Many medical men fail to use the x-rays sufficiently often, depending rather on their physical examination, in which they have a certain pride.

Useful as the x-rays are, they should not be relied on absolutely. Comparison of the roentgenogram with the postmortem examination frequently reveals this discrepancy. A cavity may be present but obscured by a surrounding pneumonitis. Liquefaction occurs early in this disease but may be undiagnosed by x-rays for a considerable period of time. When the pleura is thickened, much of the process is obscured and the x-rays lose some of their value. I have seen both small and large loculated empyemas, shown either by operation or post mortem, that had been missed completely by roentgen examination. In chronic cases even greater errors can be made as to multiple cavitations, and without the presence of earlier pictures taken months before it would be most difficult to diagnose even the location

1. Prinzmetal, Myron, and Kountz, W. B.: Intrapleural Pressure in Orthopnea, *Proc. Soc. Exper. Biol. & Med.* 31: 610-611 (Feb.) 1934.
2. Briscoe, Charlton: Mechanism of Inflation of the Lung, *Lancet* 2: 513 (Sept. 5) 1931.

of the abscess. So once again, without wishing to be a pessimist and recognizing, to the utmost, the value of the x-rays, I feel that one must at times base one's judgment on the clinical course rather than on the x-rays, if they do not verify one's conclusions.

The use of iodized oil seldom gives any information in lung abscess, as the cavity is almost never filled by the opaque medium, just as the cavity does not empty easily by postural drainage. It is of advantage when the abscess has broken into the pleura or is complicated by a bronchiectasis. Its disadvantages are great in that it remains within the lung for months at a time, and it is most difficult to read future roentgenograms. Many mistakes have been made in the reading of x-ray plates when it was not known that iodized oil had previously been employed.

BACTERIOLOGY

At this stage of the discussion a word should be said about the bacteriology of lung abscess. Efforts have constantly been made to find the etiologic agent of this disease. Until the present time this has proved a fruitless task. At first these studies were confined to aerobic organisms only; later they were supplemented by anaerobic studies, especially those of J. Cohn, Varney and D. T. Smith. Smith's studies have been by far the most complete. He concluded that four types of anaerobic organisms (spirochetes, vibrios, fusiforms and cocci), acting in symbiosis, are responsible for the inception of this disease. These bacteriologists have all demonstrated the similarity between the flora of abscesses and the flora of the buccal cavity, and that these flora are predominantly anaerobic. Olitsky and Gates have recently demonstrated the presence of filtrable forms in the nasopharynx. No studies on filtrable lung abscess material have as yet been reported.

In my own work, carried on in the laboratories of the Hooper Foundation under the direction of Drs. K. F. Meyer and M. S. Marshall, I confirmed the studies of Smith, but after careful bacteriologic study of bronchoscopic specimens I was unable to use the knowledge gained for either treatment or prognosis.

It would seem that this problem must be attacked now along the newer lines of bacteriologic research and immunologic studies. Under Dr. Charles Weiss and his co-workers, a new plan of procedure is being set up which, after a few years, I hope may give more information than has been available in the past. This work is based on the investigations of Avery, Heidelberger and Seegal, studying the purified nucleoproteins and specific carbohydrate fractions derived from various aerobic and anaerobic bacteria that have been frequently isolated from lung abscess. Along with this are cytologic studies and studies on the enzyme and antienzyme balance of the purulent pulmonary exudate.

MORTALITY

I believe it can be said that the lung has a better defensive mechanism for the resistance of infection than any other organ of the body, and that it has a wonderful recuperative ability. If this were not so, lung abscess would be a very common disease. The same organisms transferred to other parts of the body would give a mortality much higher than that of lung abscess. Every one will remember cases in which implantation has occurred in the chest wall after thoracentesis, causing spreading gangrene and necrosis and rapid death, with

practically 100 per cent mortality. We are, I think, forced to ask ourselves the question whether or not, surgically, we are treating this infection with the same ability and the same purposefulness, helping the forces which nature gave us, as we have learned to do in other parts of the body.

One cannot help but draw an analogy between the history of the treatment of acute appendicitis and acute gallbladder disease and that of lung abscess. So long as the expectant treatment held sway, no dent could be made in the high mortality of these diseases. The fact that under expectant treatment a certain number of cases improved caused physicians to hope that every case would fall within this group. As the result of similar procrastination in the treatment of lung abscess, the surgeon is faced constantly with the end-pathology of this disease: gangrene, hemorrhage, ruptures into the pleura, multiple abscesses, marked fibrosis and bronchiectatic dilatations. For this reason, I believe the course that has been followed in the past will get us nowhere in the battle against this very prolonged and exhausting disease.

May I also call attention to the fact that in this problem there is not only the question of mortality but also, bound up with it, the long hospitalization period, the economic and the social problem of months or years of disability, in many cases preventable. The picture is a tragic one from every standpoint, and difficult of solution; and we as surgeons should, I feel, concentrate on it.

THE HEALING OF LUNG ABSCESS

Certain basic principles underlie the healing of lung abscess, treated either medically or surgically. These are perfect drainage of the infecting material as in other surgical abscesses, aeration of its interior, and the ability of the cavity wall to collapse.

When a lung abscess heals by medical treatment, it must first rupture into a bronchus to produce drainage. Unfortunately, this drainage is often imperfect, resulting in the exacerbations that are so characteristic of the disease. These are ushered in by a rise of temperature and diminution of sputum, and as a result the disease may spread to new areas, producing either a pneumonitis or a secondary abscess. These bouts of fever are allowed to occur again and again without active intervention, which is quite contrary to the usual surgical procedure in abscesses of other parts of the body.

The second factor is the entrance of air into the cavity. As the causative agent is an anaerobe, the aeration of the cavity produces an unfavorable environment for its growth. This aeration is not always complete when rupture occurs through a bronchus.

In the third place, collapse of the walls is important and occurs best when the lung has retained its elasticity and before fibrosis has taken place.

ADVANTAGES OF SURGICAL TREATMENT

The advantages of surgery in meeting these requirements is evident. Perfect drainage of the abscess cavity can be obtained, leaving no undrained pockets from which extension can take place. Through-and-through aeration of the cavity and bronchi results. The importance of the through-and-through passage of air cannot be overestimated. This is exemplified in the surgical treatment of very chronic abscesses, with numerous and large bronchial fistulas. After months of drainage, if

the fistulas are closed by any method, there is recurrence of an abscess, even though the area is aerated on the bronchial side. Thirdly, by a liberal removal of the roof of the cavity, its early collapse is facilitated.

The choice of time and procedure in the surgical treatment of lung abscess will always require rare judgment. The condition of the patient is of more importance than the method of operating. At times only a minimal amount of surgery can be applied. Even a hypodermic of morphine may so lower the vital capacity that the patient becomes inoperable.

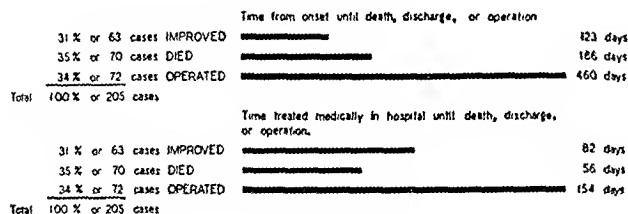


Chart 1.—Results of medical treatment.

There are certain important requisites that may be mentioned. These are (1) careful localization, (2) the performance of the operation in two or even more stages instead of one, (3) the use of the cautery or diathermy knife in exposing the abscess, and (4) the use of compression by a gauze pack or paraffin.

The first point of importance in technic is the careful localization of the abscess. Many studies on localization have recently been made: Neuhoff on a clinical basis, Leveton³ by anatomic studies of the lobes of the lung and the arrangement of the bronchi, and Johnson⁴ by roentgenologic studies in which localization is accomplished by measuring stereoscopic distance, with three markings on the chest. By any or all of these methods very accurate localization of the abscess can be made, which will give a direct approach to it at its nearest point to the surface and probably through the area of adhesion.

I have come to believe that the operation, whether it is to be done early or late, should always be done in two stages. Even late cases at times show surprisingly few adhesions; and in this type of case the element of compression before the abscess is opened plays a considerable part in its cure. In the early cases, in which only fine adhesions are present between the parietal and visceral pleura, the abscess may be entered through the line of adhesions; but if the patient coughs at the time of operation or at the time of a dressing, these adhesions may separate and the pleural cavity become infected.

In chronic cases the exposure of a considerable area over the lung abscess, with or without removal of the ribs, and the application of a pack of gauze or paraffin for from five to seven days, the wound being sewn up tightly as recommended by Dolly and later by Overholt, may have distinct advantage. I have on many occasions produced compression by such a pack, either as a planned procedure or because the patient was too ill to proceed further with the operation, and have been surprised at the improvement that has always taken place in the amount of sputum, diminution of cough and the well being of the patient. The second stage

is therefore done with the patient in very much better condition.

Another point of importance in technic is the use of the diathermy knife or cautery. Thorough cauterization of the top of the abscess should be made by slow coagulation. This avoids the danger of air embolism and the dislodgment of emboli. The plunging of a forceps or the finger into the cavity, with injury and trauma to the surrounding lung, is dangerous. In the report of cases to be given, I had one death from air embolism, and another presented convulsive seizures with recovery. Both of these were chronic cases and occurred immediately on the thrusting of an aspirating needle into the lung at the second stage, in an attempt to locate the abscess.

These are only a few points in technic that may help to lower the surgical mortality; but they can, at best, play an indifferent part. It would seem to me that the main problem of lung abscess at the present time is to change the attitude of the profession toward its treatment, just as the surgeon has changed the attitude of the internist toward the treatment of appendicitis and gallbladder disease.

RESULTS

The accompanying charts and tables give the results of the study of 205 cases. They graphically depict the weakness of present-day methods in the treatment of lung abscess.

Chart 1 shows the results of medical treatment. In 205 cases, 133 were treated medically. Sixty-three cases, or 31 per cent, were improved. Lord, in his recent statistics of 210 cases from the Massachusetts General Hospital, showed about the same results: one in three cases improved, or about 33⅓ per cent, under medical treatment.

Seventy patients died, a mortality of 35 per cent. Seventy-two cases, or 34 per cent, were referred to surgery, on an average of 460 days from the time of the onset of the disease, and were on an average of 154 days in the hospital before operation. It will therefore be seen that the patients treated medically who died and also those which were referred to surgery had an average time of medical treatment that was very prolonged; and, as I will show later, surgery could not overcome the handicap presented.

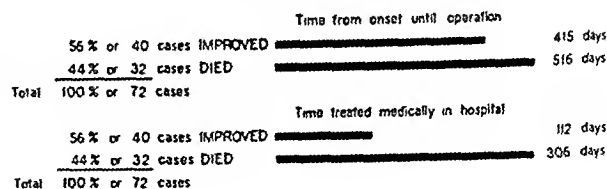


Chart 2.—Results of surgical treatment.

The second part of the chart again shows the prolonged stay in the hospital before surgical intervention—an average of over five months.

Chart 2 shows the results of surgical treatment, giving the average number of days from the time of onset until operation was performed. Forty cases, or 56 per cent, were improved but did not come to operation until an average of 415 days from the time of onset to operation. Thirty-two patients, or 44 per cent, died following operation. In this group, 516 days elapsed from the time of onset of the disease until operation was performed.

3. Leveton: Paper to be published.

4. Johnson, C. R.: Localization of Intrathoracic Structures, with Report Cases of Lung Abscess, *Am. J. Surg.* 8: 1237.

The second part of the chart shows the length of time these cases were treated medically in the hospital before surgery was advised.

Table 1 gives an analysis of the recurrences in 205 cases. After surgical treatment, twelve cases, or 6 per cent, recurred; after medical treatment forty-one cases,

TABLE 1.—Analysis of Recurrences in 205 Cases of Lung Abscess

	Onset	Per Cent
Recurred after surgical treatment	12	6
Recurred after medical treatment	41	20
Total recurrences.	53	26
Result of treatment in 53 recurrent cases		
Cured	8	15
Died	31	59
Outcome undetermined*	14	26
Total	53	100

* Lesion still present clinically and by x rays when last seen

or 20 per cent, recurred, a total recurrence of fifty-three cases, or 26 per cent.

It should be remembered at this point that no doubt some of the patients who were discharged as improved under medical treatment had recurrences. This is further shown in the second part of the chart. In

TABLE 2—Results of Surgical Treatment According to Type of Operation

	Per Cent	Pa tients	Improved		Died	
			Pa tients	Per Cent	Pa tients	Per Cent
Two stage thoracotomy	39	28	19	68	9*	72
One stage thoracotomy	44	32	15	46	17	64
Cautery pneumonectomy	85	6	3	50	3	50
Lobectomy	85	6	3	50	3	50
Total	100	72	40	56	32	44

* Two patients died before second stage was done

these recurrences eight patients, or 15 per cent, were cured and thirty-one patients, or 59 per cent, died. Patients who are discharged from the hospital and have recurrences are subject to a higher mortality.

Table 2 shows the surgical treatment and results according to the type of operation in one and two stage

TABLE 3—Surgical Treatment of Patients Operated on Within One Hundred Days from Onset*

Comparison of one and two stage thoracotomies					
20 Patients	No of Patients	Improved		Died	
		Patients	Per Cent	Patients	Per Cent
Two stage thoracotomy...	10	8	80	2	20
One stage thoracotomy .	10	4	40	6	60

* Arbitrarily chosen.

thoracotomy, performed on seventy-two patients previously mentioned.

Twenty-eight patients, or 39 per cent, had a two stage thoracotomy. Of these, nineteen patients, or 68 per cent, improved; nine patients, or 32 per cent, died.

Thirty-two patients, or 44 per cent, had a one stage thoracotomy. Of these, fifteen patients, or 46 per cent, improved and seventeen patients, or 64 per cent, died.

This very marked contrast shows the advantage of two stage thoracotomy. In six cases of cautery pneumonectomy included, three patients, or 50 per cent, improved and three patients, or 50 per cent, died. These and the cases of the lobectomy group were of long duration (about four and one-half years) complicated by marked bronchiectasis and fibrosis.

In table 3 I have arbitrarily taken patients of the operative group 100 days from the onset of the disease. Of twenty such patients, ten had a two stage thoracotomy and of these, eight patients, or 80 per cent, improved, two patients, or 20 per cent, dying. Of ten patients with one stage thoracotomy, four, or 40 per cent, improved and six, or 60 per cent, died. This shows the advantage of the two stage over the one stage thoracotomy.

Chart 3 shows the causes of death in medically and surgically treated cases, and the time of death from the onset of the disease.

The causes of death under medical and surgical treatment are very similar, and brain abscess and hemorrhage

MEDICAL TREATMENT, CAUSES OF MORTALITY

	Time from onset until death	
*77% or 54 cases Intra-thoracic spread	173 days	
9% or 6 cases Hemorrhage	268 days	
45% or 3 cases Brain Abscess	690 days	
25% or 2 cases Air Embolus	321 days	
45% or 3 cases Septicemia	105 days	
25% or 2 cases Myocardial failure	25 days	
Totals	100% or 70 cases	

*27% or 14 cases ruptured into the pleural cavity.

SURGICAL TREATMENT CAUSES OF MORTALITY

	Time from onset until death	
47% or 15 cases Intra-thoracic spread	91 days	
25% or 8 cases Hemorrhage	891 days	
19% or 6 cases Brain Abscess	1308 days	
9% or 3 cases Air Embolism	680 days	
Totals	100% or 32 cases	

*3 cases or 9% ruptured into the pleural cavity all before operation

Chart 3—Causes of mortality.

occur late in the disease. It would be only fair to believe therefore that, had operation not been undertaken, death would have occurred from similar causes under medical care.

CONCLUSIONS

In this paper I have been hypercritical and perhaps dogmatic concerning our present methods of treatment. Many will take exception to much that I have said. I am glad, however, to stir up argument and debate on this subject. Because patients get well under any and all forms of treatment, at times miraculously, it is not easy to evaluate the advantages and disadvantages of any form of treatment that may be suggested.

The tables and charts that I have presented, which I believe are not far different from other series that may be made on this basis, show definitely that both the medical man and the surgeon should take a more positive action in the treatment of lung abscess.

I hope that at some time a group report of cases throughout the country may be made under the auspices of some central body whereby both accurate statistics on the incidence, mortality and hospitalization period would be obtained and a better knowledge of the treatment of the disease disseminated throughout the profession.

COMPLICATIONS OF PEPTIC ULCER

THEIR PROGNOSTIC SIGNIFICANCE

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AND

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The more recent observations on peptic ulcer have produced many changes in opinion. Many dogmas formerly held in high esteem have been discarded, to be supplanted by beliefs that would once have been regarded with suspicion. This change in sentiment has concerned various phases of the ulcer problem—the nature and etiology of the lesion itself, the preferred status of medical or surgical treatment, and the outlook for permanent cure of the lesion.

These questions are all interrelated and their true answers depend at least in some measure on a still unsolved problem, the basic etiology of the disease. It has gradually become obvious that one must think not of cure of the disease but rather of "successful management." In fact, it may be stated that the life history of ulcer in an ulcer-bearing individual ends only with the life of the individual.

The successful medical management of the disease, the purpose of which is to produce a remission and prevent a recurrence, depends on various intrinsic and extrinsic factors. Such well known factors as limitation of nervous tension and fatigue and adherence to a careful regimen of living are at least relatively within the control of the patient and the physician. The intrinsic factors, on the other hand, comprise (1) the nature of peptic ulcer in general and (2) the nature

of the individual ulcer, particularly its location, size and complications. These are the uncontrollable factors with which the ulcer patient must reckon, and while they are not controllable factors they provide for the student of the ulcer problem many pertinent considerations. Especially interesting is the matter of outlook for successful management in ulcers with various complications.

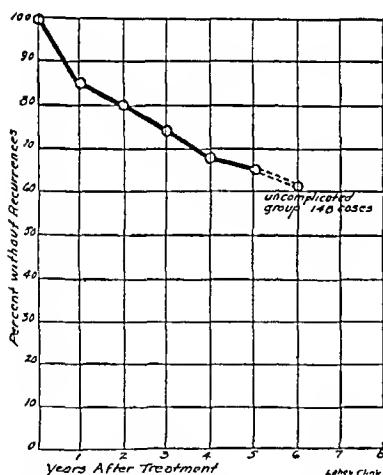


Chart 1.—Uncomplicated duodenal ulcer.

This study was an effort to provide some data on the specific question Is a duodenal ulcer with one of the common complications less successfully managed than an uncomplicated duodenal ulcer?

The data were assembled from the case records and check-up reports of patients whose diagnosis was reasonably certain, and who were followed for periods varying from six months to ten years.

The complications considered in this study were pyloric obstruction, hemorrhage and intolerance to alkali therapy.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

OBSTRUCTION

The criterion used as evidence of obstruction was gastric retention of part of the barium meal for six hours. Gastric retention in these cases can safely be assumed to be associated with pathologic changes, since other extraneous and transitory causes of pylorospasm were ruled out by repeated examination.

In the consideration of pyloric obstruction associated with duodenal ulcer, the following points were studied:

1. In what percentage of cases does medical management relieve the obstruction?
2. How often does obstruction recur in these cases?

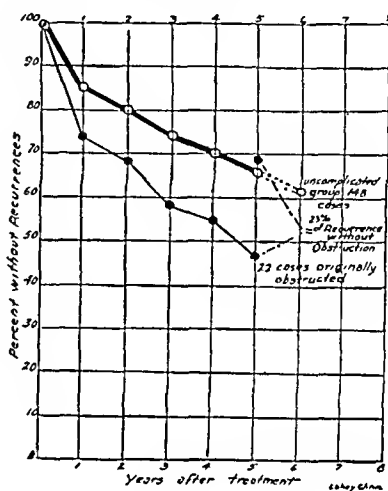


Chart 2.—Duodenal ulcer with obstruction.

3. Is the ulcer complicated with obstruction less amenable to successful management than the uncomplicated ulcer?

4. Does the degree of obstruction influence the prognosis?

The group studied comprised seventy-nine cases, fifty-six males and twenty-three females. In 77 per cent of the cases the age of the patient was above 40 years. In 68 per cent of the cases the duration of symptoms before help was sought

was over five years, suggesting that long standing inflammation and edema were partly responsible for the onset of obstruction. Vomiting, the commonest symptom indicating obstruction, was found as follows: spontaneous vomiting in sixty-five of the seventy-nine cases; self-induced vomiting in three cases; in eleven, no history of vomiting was obtained.

The four questions proposed were answered in this study by the following data:

Of the total group of seventy-nine cases, only 11 per cent required surgery for the immediate relief of obstruction. Relief was obtained in the other seventy cases (89 per cent) by hospital management for from one to three weeks, indicating that in the majority of cases obstruction is due to inflammatory changes, spasm and edema, and not to cicatrix or hyperplasia. The degree of obstruction was of no significance as far as relief by medical management was concerned, equal relief being obtained in patients with over 50 per cent retention as well as in those with 10 per cent or under.

In twenty-four, or 34 per cent, of the seventy patients relieved by medical management there were recurrences, but only nine of these had obstruction. Distress alone or with hemorrhage occurred in the other fifteen. Thus it appears that the obstructing lesion is not a distinctive type of ulcer but that obstruction may be a complication in one attack, and hemorrhage or distress without gastric retention may occur at another.

The question whether obstruction as a complication decreases the possibility of successful management is perhaps best answered by the following data:

The tendency to recurrence in a given group of patients may be more graphically shown by plotting the percentage remaining symptom free against the number

of years that has passed since the treatment was begun. Our experience with 148 cases of uncomplicated duodenal ulcer followed for five years or longer is represented by chart 1, which shows the rate at which relapses occurred. Although somewhat steeper in the first year the curve quickly assumes the character of a straight line, the direction of which is unchanged at the five year point. This indicates that the arbitrary choice of a five year period in the study of the end results of

Observations in Seventy-Nine Cases

	Number of Cases	Relief by Medical Management	Type of Recurrence		
			Distress Only	Obstruction	Hemorrhage
Group 1 (10% retention or less)	15	86%	1 case		
Group 2 (10 to 30% retention).....	19	89%	2 cases	4 cases	2 cases
Group 3 (30 to 50% retention).....	18	89%	2 cases	3 cases	1 case
Group 4 (over 50% retention).....	27	89%	3 cases	2 cases	4 cases
Total.....	79	70 cases	8 cases	9 cases	7 cases

treatment is unjustified, since the tendency to recurrence is just as great at the end of five years as it was during the previous years. In fact, a sufficient number of recurrences are known to have occurred in the sixth year to continue the curve in the same direction.

Of twenty-two cases complicated by pyloric obstruction followed for five years or more, there was recurrence in twelve cases: six in the first year, one in the second year, two in the third year, one in the fourth year, and two in the fifth year. Chart 2 shows a comparison of these figures with those of uncomplicated cases, from which comparison it may be concluded that obstruction as a complication makes the prognosis somewhat less favorable than in the uncomplicated case. The difference in the recurrences at the end of five years is 19 per cent.

Very mild obstruction, 10 per cent or less, apparently has no effect on the prognosis, but gastric retention of more than 10 per cent has an unfavorable influence; but it does not parallel the degree of obstruction.

HEMORRHAGE

In a group of forty-two patients giving a history of one gross hemorrhage, 17 per cent were found to have had a recurrence during the first year, and during the first five years 43 per cent experienced a recurrence, leaving 57 per cent with an uninterrupted remission. This indicates that hemorrhage is a sign of a somewhat more severe type of ulcer and has some, but not marked, prognostic significance.

The history of two or more gross hemorrhages is decidedly more serious. In a group of nineteen patients with this history, only 21 per cent remained free from a recurrence for five years. In another group of thir-

teen cases, followed for only two years, there were 54 per cent with recurrences. In nearly all cases the recurrence was in the form of another gross hemorrhage. Since the mortality of gross hemorrhage is 5 per cent, we frequently advise patients giving a history of two or more gross hemorrhages to have the ulcer removed.

Curves representing the groups presenting hemorrhage show a more rapid rate of recurrence. The group with two or more hemorrhages shows a particularly rapid rate during the first three years, but the change in direction here suggests that the first three years are the critical years for a patient of this type. The prognostic significance of multiple hemorrhages appears to be definitely bad.

ALKALOSIS

Alkalosis from alkali medication is a complication of therapy arising only when efforts are made to neutralize the stomach contents with sodium bicarbonate. Many patients may develop toxic symptoms at some time during their treatment, but in nearly all cases the condition is mild or transient and is easily relieved by adjusting the dosage of alkalis. A few patients, however, show a high degree of intolerance to sodium bicarbonate, and any dosage even approaching adequate control of gastric acidity produces severe symptoms of alkalosis. It has been shown that there is a definite association between intolerance to alkalis and impaired renal function, but clinical experience suggests that the etiology is much more complicated than this. There appears to be a marked correlation between the degree of intolerance to alkalis and the activity of the ulcer. Severe alkalosis may therefore indicate a particularly severe lesion and a marked disturbance in gastric secretion, as well as renal disease. That these patients do not do well under medical management is shown by our experience with twenty patients, among whom 70 per cent had a recurrence within two years.

The curve representing this high rate of recurrence shows a marked variation from the "standard."

CONCLUSIONS

Obstruction, hemorrhage and intolerance to alkalis are complications that influence prognosis in the medical management of duodenal ulcer.

Obstruction of all degrees in the group of seventy-nine cases studied was relieved in 89 per cent by medical management. It recurred later in 13 per cent.

Obstruction, hemorrhage and intolerance to alkalis were all unfavorable factors in the medical management of the disease. Single hemorrhage had the least effect on prognosis; obstruction was next in its unfavorable influence; multiple hemorrhage and intolerance to alkalis had the most harmful effect on the later course of the disease.

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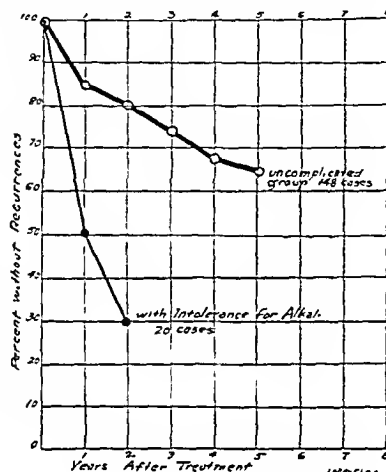


Chart 4.—Duodenal ulcer with alkalosis.

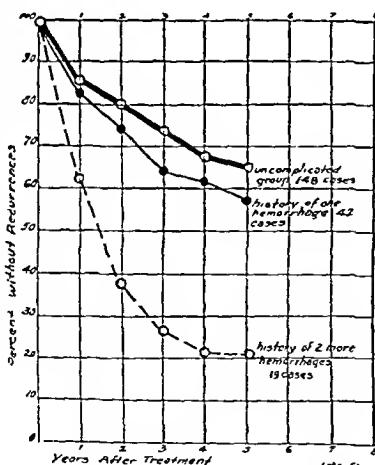


Chart 3.—Duodenal ulcer with history of hemorrhage.

ABSTRACT OF DISCUSSION

DR. BURRILL B. CROHN, New York: It is essential in discussing obstruction to realize that spasm is probably a much greater element than organic obstruction. This was taught by Sippy many years ago when he showed the remarkably good effects that could be obtained by lavage in cases of ulcer with retention. One is surprised to see complete disappearance of food stasis in patients who have as much as twenty-four or forty-eight hours residue, on using an Ewald tube to lavage the stomach. These are instances of spasm and they are in an entirely different category from obstruction. A patient should be taught to use an Ewald tube to empty his own stomach once a day. If he empties his stomach every night he may not be cured, but he is relieved of the symptoms and may go on for years. It represents a long history, a burnt-out ulcer. In cases of organic obstruction the ulcer in resected specimens is practically nothing but a small mass of scar tissue, and the pylorus is down to the size of a quill. Those patients must be operated on; no palliative treatment is good in the long run. My figure for the mortality of hemorrhage was less than 5 per cent. Actually in a series of 100 cases I found mortality of acute gross hemorrhage to be as low as 2 per cent; that is an important figure to keep in mind. There shouldn't be so much panic over gross hemorrhage. Such cases can be treated medically. It is better to accept defeat in 2 per cent than to be panicky about 98 per cent and take a radical position of advising operative treatment. If one does not roentgenograph an ulcer patient soon after a gross hemorrhage, one is liable to miss the ulcer. The hemorrhage seems to have an immediate effect in causing the healing of the ulcer. If one waits ten days or two or three weeks after the hemorrhage, it may no longer be possible to recognize the ulcer. Specimens of ulcers resected three weeks after gross hemorrhage showed complete healing of the ulcer and disappearance of the lesion. My experience is that if patients survive the first hemorrhage they are likely to survive repeated hemorrhages. The ultimate prognosis of the ulcer is not altered by the incidence of hemorrhage. The ultimate course of the case is about the same with or without hemorrhage. Eventually Dr. Jordan's and Dr. Kiefer's and my figures will come down to about 40 per cent of ultimate cures, and yet 40 per cent of ultimate cures under the medical treatment of ulcer is not a good percentage. The problem is one between the patient and his ulcer, not between the patient and his doctor or his surgeon. The patient has to learn to treat the ulcer with respect and not abuse it with alcohol or mental and physical strain.

DR. J. TATE MASON, Seattle: Since the first description of peptic ulcer was made, nearly a century ago, I am sure that no paper has been presented that has given such an intimate understanding of what may happen in complications such as hemorrhage, obstruction and intolerance to alkalosis as Dr. Jordan and Dr. Kiefer's paper has just given. I think that in these vicinities there might not be 11 per cent; however, as 11 per cent of the people had to come to operation almost immediately for relief, and a little further on 13 per cent, and probably in time a few more, it may be inferred that probably at least 25 per cent have had surgical intervention. I would pray that if patients with complications do not respond very rapidly to medical treatment, one should not hold them too long until one advises surgical relief. The operation must not only eradicate the diseased portion and the ulcer but also relieve the acidity. The surgeon will be able to do that either with the pyloroplasty or with the gastro-enterostomy, or he may eliminate acidity by a subtotal gastrectomy. And I present this problem not with reference to the technical side but to suggest that, if one decides that a patient must have a subtotal gastrectomy, one ask for a high subtotal gastrectomy to eliminate the acids, almost as high as for a near total gastrectomy in these very pronounced cases. Physicians at this meeting come from nearly all sections of the country, but I come from the far Northwest, and many of my patients live thousands of miles away. They have to go back to Alaska and stay for months at a time, and this has to be considered seriously in regard to medical treatment. The casual, ambulatory treatment has been satisfactory in 60 per cent of uncomplicated

cases of duodenal ulcer in the clinic with which I am affiliated. By treatment they were gotten to an uncomplicated stage, and from that time on a casual ambulatory treatment was as successful as any other. Serious hemorrhage after medical treatment occurred in 6 per cent of the patients. A mortality of 2 per cent attributed to hemorrhage occurred in a follow up of from two to ten years. I have observed that two thirds of the bleeding is apt to occur during the silent period; if it occurs in the period of erosion, it is likely to be much more severe.

DR. HENRY A. RAFSKY, New York: Pyloric obstruction, complicating peptic ulcer, must be divided into the inflammatory and cicatricial types. This differentiation should be made before attempting to treat pyloric obstruction, because the inflammatory type can be treated medically whereas the cicatricial type should be treated surgically. Clinically and roentgenologically it is almost impossible at times to make this distinction. The therapeutic test must be applied to do so, and various methods have been suggested for these patients. I want to show a method that can be easily applied, but before I do that I want to say a word about alkalosis in relation to pyloric obstruction. Patients with pyloric obstruction have a greater tendency to alkalosis; therefore, alkalis should be used with caution in these patients. I have found that by using very small amounts of alkalis in patients with pyloric obstruction, irrespective of how profound the stenosis was, the carbon dioxide combining power of the blood did not rise, and the blood chlorides did not fall beyond the normal limits. The tube has a prognostic as well as a therapeutic value; for, if the bucket and tube go through the pylorus in four or five days, the chances of making a recovery are good, but, if it does not go through, the patient is apt to have a recurrence of the symptoms within a very short time. It is sometimes difficult to get the bucket through the pylorus. What I did, following the suggestion made by Dr. Einhorn, was to take a small bead with a string and harness it to the duodenal bucket. The bead and string act like a team of horses and pull the bucket and tube through the pylorus, when the inflammatory process subsides somewhat.

DR. JULIUS FRIEDENWALD, Baltimore: I should like to refer again to a complication presented by a definite though small group of cases of pyloric obstruction of a rather aggravated type, which have yielded to medical management. All these cases were of long duration, presenting the typical signs of the disease as well as very definite roentgen changes, so that there can be no question that the condition must have been definitely due to actual tissue narrowing. Lucas, Vander Hoof and others have reported similar instances. It is possible that, owing to medical treatment, pyloric congestion and edema are relieved and the muscular tone of the stomach sufficiently improved to overcome the effect of the pyloric lesion. I have collected ten or twelve instances of this type among cases which have been permanently relieved over a period of from six to eight years, not only remaining free from all digestive symptoms but also revealing normal motor function as well as roentgen evidence. This group, though small, is perfectly definite, and I am convinced that in at least some instances of pyloric obstruction due to ulcer a favorable prognosis may be anticipated even without the aid of surgery.

DR. WALTER L. PALMER, Chicago: I should like to draw a rather fine line between the healing of an ulcer and permanent cure of the disease. Many of these lesions heal completely, and the patients may remain symptom free for variable periods of time, perhaps six months, six years or more, and then have a recurrence. This does not reflect at all on the efficacy of the initial treatment for the original lesion. It does show, however, that the therapy has not altered the fundamental conditions which led to the formation of the ulcer originally. These have persisted and have led to the development of a new lesion. The problem, therefore, is not that of the therapy of a given lesion but that of etiology, of preventing ulcer formation. I should like to call attention to one observation which Drs. Jordan and Kiefer have made; namely, that there was a 70 per cent recurrence in two years in the group intolerant to alkali. This high incidence of recurrence seems to me of great significance, for it constitutes further evidence of the importance

of gastric free acidity in ulcer. Mention has been made in the discussion of the beneficial effect of hemorrhage on an ulcer. I believe that this is due to the careful and prolonged treatment which the patient usually receives following a hemorrhage, rather than to a specific effect of the hemorrhage itself.

DR. RALPH C. BROWN, Chicago: The conclusions of the authors agree with my experience at the Presbyterian Hospital. There is a point I want to make with regard to alkalosis. It is not as simple a thing as one would like to believe. As the authors said, there are cases in which the basis of the alkalosis is absolutely not understandable. It may occur in the young individual with a perfect renal function, with normal arteries, with a good liver, and yet there will be just as striking an idiosyncrasy for alkalis as some persons exhibit for belladonna. Fortunately these cases are rare. The cases in which one runs into difficulty with alkalosis, and they are certainly not uncommon, are those in which one is forced to combat the destructive effect of a high grade, continued night secretion, and the only way that can be done is either by giving alkalis or keeping up a continuous aspiration of the stomach during the night hours with the Rehfuß tube. In these cases, especially in the obstructive cases, in which the chloride ion is being lost from the body by vomiting or by the aspiration of a large volume of gastric contents, with a drop in chlorides to 300 or 350 mg., one cannot safely give alkalis by day and also by night. One solution of the difficulty is to use the acid-combining power of milk as a neutralizing medium. There is sufficient albumin in milk to neutralize an equal volume of normal gastric juice. During the first week of management in these difficult cases of ulcer with a high grade continued secretion, I frequently give milk in 2 ounce feedings every half hour during the day. This permits the use of alkalis during the night hours, or, if one wishes to avoid entirely the use of alkalis for a brief period, the continued night secretion can be handled by half hour aspirations, as by an indwelling Rehfuß tube.

DR. SARA M. JORDAN, Boston: There are two words that will probably need further explanation. One is the word "obstruction," which we used in that paper to indicate any retention of barium in six hours. Dr. Crohn in his discussion said that retention by spasm was not obstruction. We considered it in this discussion as being the obstruction due to any cause and indicated by retention in six hours. The fact that 11 per cent of the patients had to be operated on during the first three weeks of treatment seems to us to indicate that probably in the highest majority of that 11 per cent the obstruction was due to cicatrization, whereas in the other 89 per cent who went on and were completely relieved of the obstruction it was due either to spasm or inflammation or to edema, and there was no way in which we could determine which did cause the retention. The other word which I think needs explanation is the word "recurrence." We have said that a certain percentage of the cases in the uncomplicated ulcer recur after so many years. By "recurrence" we mean any distress, not necessarily requiring surgery, but any distress which indicated that the ulcer was again active, frequently not as serious as the original distress, and frequently relieved by a very modified form of management; so it is not always a serious recurrence of which we are speaking. Dr. Crohn mentioned the fact that we were, or people were, getting panicky about hemorrhage, and I must confess that in multiple hemorrhage we have perhaps not gotten panicky but very serious minded, and we not infrequently feel, in a case of long-standing multiple hemorrhages, that the patient should not waste any more time on medical treatment but should have surgery and, where it is possible, we advise, as Dr. Mason said, a high resection. This may seem very radical. I was surprised that Dr. Crohn was so conservative about getting panicky on the question of introducing surgery, but we really do feel that in this particular group of cases surgery and high resection are indicated to produce an anacidity. With respect to the question of whether or not that repeated hemorrhage is due to the old original ulcer, a point which Dr. Palmer brought up, or to the fact that the patient has a tendency to develop an ulcer, that must, of course, be left undetermined in most cases; but frequently the condition found at operation will seem to indicate that it was the old, original ulcer which had partially healed and then become

eroded again, exposing, perhaps, the same blood vessel. Surgery seems to be the only treatment in those cases. The therapeutic test which Dr. Rafsky mentioned is interesting. We feel that our best therapeutic test is the period of medical management. If the obstruction is relieved in a few days or weeks, we consider that it is a very final therapeutic test or treatment.

THE UNSTABLE OR IRRITABLE DUODENUM

CLINICAL OBSERVATIONS IN ONE HUNDRED CASES

JULIUS FRIEDENWALD, M.D.

AND

MAURICE FELDMAN, M.D.

BALTIMORE

During the last few years, increased interest has been manifested in the study of disturbances of the duodenum. While up to a comparatively short time ago ulceration of the duodenum was the only disease that was clearly defined and its significance understood, the clinical importance of duodenal dysfunction in general has gradually come to be more and more realized as a factor in disease. Of the disorders associated with this portion of the bowel, duodenitis, periduodenitis, pericholecystic adhesions, duodenal stasis (continuous and intermittent), obstruction and duodenal anomalies such as diverticula and the redundances may be mentioned.

In this communication we shall endeavor to present the clinical picture of a not uncommon form of duodenal disturbance known as the irritable or unstable duodenum.

Disturbances of motility of the duodenum have long been known. Wheelon¹ has especially called attention to these changes in obstruction in this portion of the bowel and has pointed out that duodenal motility consists of rhythmic segmentation and peristaltic waves, which bear a definite relation to that of the pyloric sphincter and antrum. The regurgitation of bile and fecal matter in cases of intestinal obstruction is the result, according to this observer, of active antiperistaltic contractions with a loss of rhythmic segmentation followed by tonic closure of the pyloric sphincter, produced possibly by a toxemia. He, moreover, points out that rapid distention of the duodenum causes inhibition of the rhythmic segmentation and peristalsis. It has likewise been long established that lesions in the duodenum such as ulcer or duodenitis are commonly associated with a vigorous gastric and duodenal peristalsis, which can readily be visualized roentgenographically.

The irritable or unstable duodenum, like the irritable or unstable colon described by Kantor² and Jordan,³ is a condition which has as yet not been clearly defined and concerning which there still exists considerable confusion. The term unstable is the more preferable, since at times a decreased rather than an increased irritability is noted. As has been pointed out by Jordan in regard to the unstable colon, here too the underlying

From the Gastro-Enterological Clinic of the Department of Medicine of the University of Maryland School of Medicine and College of Physicians and Surgeons.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Wheelon, Homer: Observations on Gastric and Duodenal Motility in Duodenal Obstruction. *J. A. M. A.* 77:1404 (Oct. 29) 1921.

2. Kantor, J. L.: The Unstable Colon. *South. M. J.* 25:29 (Jan.) 1932.

3. Jordan, Sara M.: The Unstable Colon and Neurosis. *J. A. M. A.* 99:2234 (Dec. 31) 1932.

cause must be sought in an imbalance in the neuromuscular apparatus of the duodenum leading to a motor dysfunction and possibly also, to a certain degree, of a secretory dysfunction without evidence of organic disease.

ETIOLOGY

Duodenal motility may be disturbed, according to Sensenich,⁴ without evidence of organic disease, as the result of mechanical, chemical, allergic, nervous or reflex causes.

In regard to the mechanical causes, aside from the congenital factors, the conditions favoring duodenal instability are adhesions and compression of the duodenum. Adhesions ordinarily involve the first and second portions of the duodenum. Especially important in this connection are adhesive processes coming as the result of chronic cholecystitis, adhesions between the duodenum and the hepatic flexure, and those formed as the result of visceroptosis or following abdominal operative procedures. Pressure on the duodenum producing this condition may result from spinal deformities as well as from growth involving abdominal organs such as the pancreas and from pressure due to ptosis of the right kidney. The chemical causes are manifested in the form of changes in the gastric secretion as well as from regurgitation of bile and duodenal contents

incidence occurred between the twentieth and fiftieth years. Of the 100 patients, eighty were men and twenty women. It is evident, according to our observations, that this condition is far more frequent in males than in females. According to our experience, too, the unstable duodenum occurs far more frequently than a survey of the literature indicates.

SYMPTOMATOLOGY

The symptoms of the unstable duodenum are by no means characteristic. This condition may simulate duodenitis, duodenal ulcer, cholecystitis, appendicitis or other abdominal disorders. With the duodenitis or duodenal ulcer-like syndrome, symptoms of hyperchlorhydria are manifested with discomfort and postprandial pain. In other instances, when symptoms resemble those of cholecystitis, mild attacks of colic occur with tenderness in the gallbladder region. In others there is discomfort with localized pain in the lower right quadrant of the abdomen simulating appendicitis. There are some instances, however, in which the symptoms are quite atypical and in which the patient complains mainly of disturbed appetite, nausea, vomiting epigastric discomfort, and headaches. Abdominal pain is unusual, but when it does occur it is ordinarily mild in character.

The bowels are usually constipated, though intermittent diarrhea not infrequently replaces this condition. Duodenal stasis often of the intermittent type may be present and may account for certain symptoms. Owing to the patient's inability to consume a sufficient amount of food, loss of weight and strength is not unusual. Neurasthenic symptoms of a varied type are commonly present in the form of fatigue, depression, insomnia and irritability, adding further to the patient's discomfort. The symptoms associated with the unstable duodenum may occur in attacks with many periods of relief, extending over a considerable length of time during which the patient may enjoy comparatively good health.

In our series thirty-six cases presented symptoms suggesting duodenitis or duodenal ulcer, twenty-seven cholecystitis and twenty-two appendicitis. Loss of appetite occurred in fifty-six instances, nausea in twenty-three, vomiting in fifteen, epigastric discomfort in fifty-one, constipation in seventy-two, intermittent diarrhea in fourteen, duodenal stasis in twenty-four, and neurasthenic symptoms in sixty-eight.

REPORT OF CASE

The following history presents the most important features of a typical case of unstable duodenum simulating duodenal ulcer:

A. F., a man, aged 23, complained of indigestion for six months, consisting of discomfort and slight pain in the epigastrium, several hours following meals, which was relieved by the ingestion of food. The condition had recently become more constant and severe. The patient had lately complained of heartburn and acid eructations. He had always been greatly relieved of his symptoms by the ingestion of soda. Physical examination revealed no abnormalities. Tenderness in the epigastrium was absent. The gastric analysis showed a definite hyperchlorhydria. On roentgen examination the duodenal cap was found extremely irritable, filling well at times and not at others, but no deformity of the duodenum was observed. Pylorospasm was marked. As no lesion could be detected, the diagnosis of unstable duodenum was made, which was confirmed by subsequent examination.

TABLE 1.—Cases Arranged According to Age and Sex

Age	Males	Females
20 to 30	27	8
30 to 40	31	7
40 to 50	15	6
50 to 60	5	0
60 to 70	1	0
70 to 80	1	0
Total	80	20

into the stomach. This may be due to absorption of toxic material from duodenal contents retained as the result of disturbed motility in this portion of the bowel.

Gastro-intestinal symptoms due to food allergy are not uncommon, as Rowe,⁵ Gay⁶ and others have pointed out. Allergy has likewise been observed as a definite etiologic factor in certain instances of the unstable duodenum.

Derangement of the nervous system plays an important rôle in the production of this condition. It frequently arises in high strung nervous individuals and is especially noted during periods of overwork and fatigue, disappearing with rest and freedom from anxiety. In addition, general nervous symptoms such as headaches, palpitation, insomnia and depression are commonly present as evidence of its neurogenic origin.

It is interesting to note that the unstable duodenum is frequently of reflex origin, being the result of other disorders with which it is not uncommonly associated; of these, chronic cholecystitis with or without pericholecystic adhesions, cholelithiasis, gastric ulcer, chronic appendicitis and visceroptosis play an important rôle.

INCIDENCE

The material selected for this study of the unstable duodenum comprises a group of 100 cases. The highest

4 Sensenich, R. L. Duodenitis and Motor Disorders of the Duodenum, J. Indiana M. A. 25: 117 (March) 1932.
5 Rowe, A. H.: Roentgen Studies of Patients with Gastro Intestinal Food Allergy, J. A. M. A. 100: 394 (Feb 11) 1933.
6 Gay, L. P. Abdominal Allergy, J. Missouri M. A. 29: 7 (Jan.) 1932.

DIAGNOSIS

The patient is frequently of the high strung irritable neurasthenic type and often complains of various nervous symptoms such as headache, dizziness, insomnia and exhaustion. Loss of flesh is not uncommon. Spastic states may frequently be observed in other portions of the gastro-intestinal tract, such as cardiospasm, pylorospasm, gastrosplasm and spastic colitis, though in some instances, aside from the irritability of the duodenum, other involvements may be entirely absent.

The gastric analysis usually reveals an increased acidity. Occasionally, owing to the admixture of large quantities of bile, achylia may be present. Of the eighty-five cases in which gastric analyses were recorded, the gastric acidity was normal in twenty-nine; hyperchlorhydria was present in thirty-eight and hypochlorhydria and achylia in eighteen.

The diagnosis is usually extremely difficult from the symptoms alone. It should be suspected when in neurotic individuals symptoms of duodenal ulcer or cholecystitis or appendicitis occur which are not distinctly typical of these disorders. Such associations as the irritable or unstable colon, which was observed in fifty-one instances among our cases, is likewise suggestive of the presence of this condition. Of the associated conditions confirmed by roentgen examination in our cases, gastric ulcer was present in nine instances, chronic appendicitis in forty and cholecystitis in six. The liver was distinctly enlarged in four of our cases. It must, however, be borne in mind that many of these disorders may be definitely present as direct etiologic factors.

While the diagnosis is rarely possible from the history and physical examination, the roentgen evidence is far more conclusive. The roentgen signs of this condition are well defined and extremely characteristic, and a definite diagnosis can be made only by this procedure. These observations are based largely on fluoroscopic evidence by means of which changes in the form of the duodenal bulb as well as its motility can be carefully observed.

ROENTGEN STUDIES

The superior portion of the duodenum, also known as the cap or bulb, is the most frequent site in which the irritability manifests itself. The entire duodenum may present evidence of dysfunction, but in this study the irritability or unstable duodenal bulb alone will be considered. Normally the duodenal bulb fills and empties in a uniform rhythmic manner. It usually fills completely with ease and can readily be observed under the fluoroscopic screen. The contrast meal remains in the bulb only a few moments and then quickly spurts through into the second portion of the duodenum. During this interval the cap can be clearly visualized and a minute study made of its configuration and function. Any abnormality can thus be readily disclosed. In the milder types, slight variations from the normal are often difficult to interpret and may be overlooked. Frequently in the severe forms too, especially when there is extreme spasticity and irregularity, there is often doubt as to whether the condition is the result of an unstable bulb, a duodenitis or a duodenal ulcer.

The irritable bulb is characterized roentgenologically by the presence of (1) an increased motility with complete or incomplete emptying, (2) transient irregularities and fibrillation noted along the borders, (3) transient spastic manifestations, (4) tenderness and

sensitiveness over the duodenum, and (5) absence of a definite ulcer filling defect.

MOTILITY

The changes in motility in the irritable bulb may vary greatly in intensity from the mildest to the severest forms. However, the duodenal cap does not always empty itself completely, even though the motility is markedly accelerated. This is quite characteristic of the usual case. In some instances, too, the bulb may

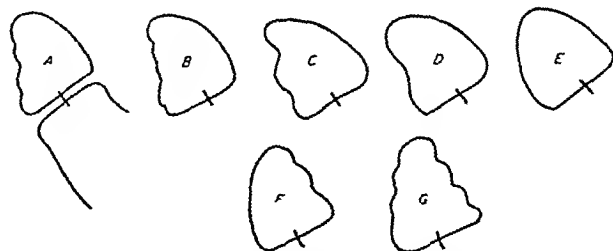


Fig 1—Diagrammatic outline, representing a group of fluoroscopic views, A, B, C, D and E illustrating the transient irregularities and fibrillation on the outer margin of the duodenal bulb. Note the shifting appearance with a return to normal bulb outline. F and G illustrate similar fibrillating irregularities on the inner margin.

empty so rapidly that it may become difficult to carry out the examination satisfactorily. At times the irritable cap may fill poorly, but ordinarily it becomes well filled. In none of the cases in our series was retention noted in the bulb but rather rapid emptying was most constantly observed. The bulb is often difficult to fill on account of the rather marked spasticity of the pylorus, which is by no means uncommon in this condition. Sluggish emptying of the cap was noted in only a small proportion of our cases.

Transient irregularities and fibrillation of the bulb occurred quite frequently and are of considerable importance in the diagnosis of the irritable cap. As an illustration, figure 1 presents this condition. The fibrillation is most clearly noted on the outer border and appears in the form of peristaltic waves moving in the direction of the second part of the duodenum. Under normal conditions fibrillations and peristaltic waves are rarely observed in the bulb, as this portion of the

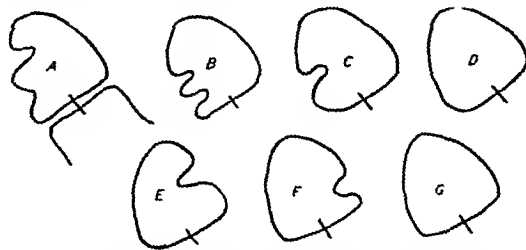


Fig 2—Tracings made from fluoroscopic views, A, B, C and D showing the transient spasticities on the outer margin of the bulb. E, F and G illustrate similar changes occurring on the inner margin. Note the shifting of the spastic defects, with return of normal bulb outline.

duodenum ordinarily empties in mass spurts. Slight transient irregularities are also noted in this condition, often producing a transient fringed appearance of the border of the cap. No violent peristaltic waves, however, could be detected and no antiperistalsis was observed in our series.

Shifting spastic manifestations of the bulb occurred in 13 per cent of our cases (fig. 2). These spastic changes are revealed roentgenologically as transient deep indentations, which occur on one or both borders of the

cap. They appear most frequently, however, on one border alone and notably the outer. Their resemblance to ulcer filling defects are often marked, but on account of their transient nature the presence of an ulcer can usually be eliminated. It must be borne in mind, however, that these changes may in some instances indicate the presence of ulceration without the typical defect. Great care should therefore be exercised in drawing conclusions. Occasionally an hour glass deformity of the cap is detected. Attention must be directed to the fact that, when spasticity of a very intense degree occurs, the presence of an ulceration or duodenitis must at least be considered, for the roentgenologic distinction between irritable duodenal cap and duodenitis or ulcer is often only one of degree.

TENDERNESS AND SENSITIVENESS OVER THE DUODENAL BULB

In most instances in the presence of the irritable cap, a definite persistent point of sensitiveness is noted in the region over the duodenal area. This tenderness is, however, usually mild in type and not infrequently only a discomfort is elicited on palpation under the fluoroscopic screen.

ABSENCE OF AN ULCER FILLING DEFECT

We have not included in our study of the irritable duodenal bulb any cases in which the slightest evidence of a filling defect could be demonstrated or in which there was the least suggestion of ulceration; in fact, every roentgenologic and clinical precaution was undertaken to exclude such a possibility.

DESCRIPTION OF THE IRRITABLE DUODENAL BULB

The size and density of the duodenal bulb is usually normal; the shape in most instances is of the cone type and the margins are clearly and sharply defined. Elongation occurs but rarely. The reticular network and granular appearance of the duodenal bulb commonly observed in duodenitis is not noted in the unstable duodenum. The capacity of the duodenum may or may not be diminished. When completely filled, it has in all respects the roentgenologic appearance of a normal bulb.

TABLE 2—Duodenal Changes Found by Roentgen Examination

	Occurrence in No. of Cases
Duodenal bulb:	
Normal emptying	2
Rapid emptying	92
Slow emptying	6
Spastic contraction of the duodenal bulb	13
Transient	42
Second:	
Normal emptying	18
Rapid emptying	58
Slow emptying	24
Duodenal stasis	18
Redundant duodenum	3
Duodenal diverticula	3

In the study of the irritable duodenum, such disorders as duodenitis and duodenal ulcer must be excluded.

In duodenitis the presence of the irritable bulb is likewise a characteristic finding. According to Kirklin,⁷ four roentgen signs are observed in this condition: (1) irritability of the bulb, (2) unstable deformity producing a mucosal pattern of a coarse irregular reticular appearance attributed to spastic contractions of its muscularis, (3) absence of an ulcer crater and (4) absence

of gastric retention. In our study of the irritable duodenal bulb, not all these characteristics could be demonstrated. We did observe rapid emptying, transient fibrillating irregularity along the margins and transient spastic manifestations. These signs, however, were not constant throughout the examination, the bulb appearing perfectly normal in all instances during some period of the investigation. The characteristic mucosal pattern, such as lessened density and reticular granular

TABLE 3—Gastric Changes Found by Roentgen Examination

	Occurrence in No. of Cases
Gastric peristalsis:	
Normal	68
Sluggish	11
Active	21
Gastric retention	2
Gastrospeasm	1
Gastric ulcer	9
Pylorospasm	42

network of the bulb described by Kirklin, is not observed in this condition. However, it must be recognized that in some instances it may be extremely difficult to differentiate the two conditions.

The presence of duodenal ulceration must likewise be eliminated; this may become difficult, especially when the clinical manifestations point directly to this disorder. The transient roentgen signs are ordinarily sufficient to rule out this condition, but even here the slight bulbar manifestations might occasionally indicate extremely early changes as the precursor of an ulcer that has not as yet fully developed.

On the other hand, according to our experience with the unstable duodenum, there is frequently an associated generalized irritability and instability of the entire gastro-intestinal tract, indicating that this condition does not possess the localized characteristics observed in ulcer. In a few instances, however, duodenal ulceration not recognized at first was found in subsequent roentgen reexamination.

Other coexisting duodenal abnormalities, such as diverticula, redundancy, adhesions and stasis, were also noted. These appear in table 2. The second part of the duodenum also presented frequent changes in motility. Marked indications of irritability of the bulb are known to occur as the result of abnormal conditions present in the distal segment of the duodenum. A low grade stasis in the distal duodenum is likewise a common cause of this dysfunction.

Duodenal adhesions secondary to gallbladder infections producing signs of right upper quadrant adhesions occurred in 33 per cent of our cases. The presence of adhesions as a cause of this dysfunction is rather significant.

Gastric changes may likewise occur. The motility of the stomach as a rule is not unduly interfered with, retention occurring in but two cases of our series as the result of spasm. Gastric peristalsis is usually normal. Associated evidence of gastric disease was noted in nine instances in the form of ulceration (table 3). Spasticity of the pylorus is observed with striking frequency in this disorder; it was present in 42 per cent of our series. The roentgen ray revealed pathologic changes in the appendix in 40 per cent, and it is evident that the irritable duodenum in these instances is of reflex origin.

The spasticity of the pylorus and the irritability of the duodenal bulb and duodenum, together with the

7. Kirklin, B. R. A Roentgenologic Consideration of Duodenitis, Radiology 12: 377 (May) 1929; Duodenitis and Its Roentgenological Characteristics, Proc. Staff Meet., Mayo Clin. 8: 629 (Oct. 18) 1933.

frequent association of the irritable colon, suggests rather clearly that the entire gastro-intestinal tract may often be involved in this dysfunction.

The frequent simultaneous occurrence of adhesions or chronic appendicitis or colitis or gallbladder disorders as well as other intra-abdominal conditions that were noted in our series of cases is evidence, at least in many instances, of its reflex origin (table 4).

TREATMENT

The treatment of the unstable duodenum is usually satisfactory in most instances. This should be directed toward a restoration of this part of the bowel to its normal tone, which is best accomplished largely by means of diet, rest and improvement of the nervous system. As Jordan has pointed out, "the unstable colon can be due to a specific irritation of the neuromuscular apparatus of the colon without the involvement of the nervous system as a whole"; and so here too irritation from indigestible food, abuse of alcohol and excessive use of condiments as well as laxatives may play a rôle in the production of the irritable duodenum in some instances. On this account all irritating foods and remedies should be omitted. The food should consist ordinarily of an acid free bland diet of high caloric and high vitamin value. It should be taken in moderate amounts and given at regular and frequent intervals. At first, absolute rest in bed may be required for some weeks. As soon as improvement occurs, this may be reduced, though rest of half an hour following meals should be insisted on for a considerable length of time. In severe and intractable cases, duodenal lavage and feeding may be resorted to with great benefit. Special attention must be directed to the nervous system in those instances in which neurasthenic manifestations are prominent. Psychotherapy plays an important rôle in this regard.

When the condition is the result of such reflex causes as gastric ulcer, chronic appendicitis, cholecystitis or adhesions, treatment must necessarily be directed to the primary disorder. When hyperchlorhydria is present, frequent feedings and the moderate use of alkalis are indicated. Belladonna or atropine are efficient remedies in overcoming spasm. The use of cold or ice applications over the region of the duodenum will often afford temporary relief.

TABLE 4.—*Involvement of Other Structures*

	Occurrence in No. of Cases
Cholecystitis and cholelithiasis.....	6
Duodenal adhesions involving the right upper quadrant.....	33
Chronic appendicitis	40
Irritable colon	51

SUMMARY

The irritable or unstable duodenum occurs more commonly than a survey of the literature would indicate. The condition has as yet not been clearly defined, and considerable confusion still exists concerning its significance. The term "unstable" is suggested, since at times a decreased rather than an increased irritability is observed. The underlying cause is to be found in a disturbance of the neuromuscular mechanism of the duodenum, which may be the result of mechanical, chemical, allergic, nervous or reflex causes.

In a study of 100 cases of the unstable duodenum, the condition was found more frequently in males than in females and more commonly between the twentieth and fortieth years. The symptoms are by no means characteristic and the condition may simulate duodenal ulcer, cholecystitis, appendicitis or other abdominal disorders, though these may be actually present as direct etiologic factors. Nervous and neurasthenic manifestations are usually prominent. Gastric hyperchlorhydria is more commonly present.

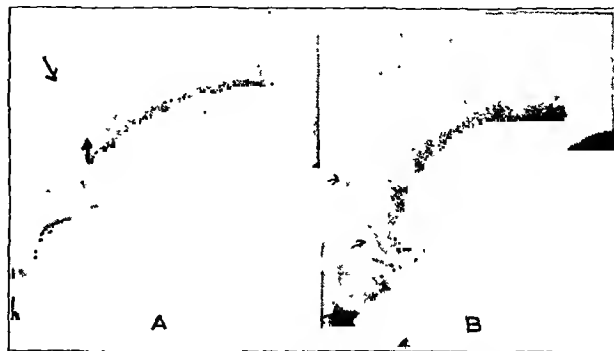


Fig. 3.—A, a deep spastic defect is shown on the outer border of the bulb, at arrows. B, same case, illustrating the duodenal bulb completely filled, with slight irregularity on the outer margin. Note the absence of the spastic defect.

Evidences of instability and spastic states in other portions of the bowel are quite frequent. The diagnosis is definitely established by means of roentgen evidence. This consists in the detection of increased motility, transient irregularities and fibrillations, spastic manifestations and sensitiveness over the duodenum, together with an absence of an ulcer filling defect in this area.

The treatment must be directed to a restoration of the duodenum to its normal tone, which is best accomplished by means of diet, rest and improvement of the nervous system. In severe cases, duodenal lavage and alimentation may be resorted to with benefit. When this condition is the result of reflex causes, treatment must be directed to the primary disorder. Belladonna and atropine are effective remedies in relief of spasm.

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ABSTRACT OF DISCUSSION

DR. ELMER L. EGGLESTON, Battle Creek, Mich.: In this paper attention is called to the unstable or irritable duodenum, the symptomatology of which is quite varied and at times difficult to differentiate from biliary tract disease or acute duodenal ulcer. May I suggest that this so-called irritable duodenum, in a considerable proportion of cases, may be the result of a rapid emptying upper gastro-intestinal tract noticed when there is a disturbed vegetative nervous mechanism. The reference to the confusion of thought relative to both the irritable or spastic duodenum and the spastic colon is well taken, but opinion relative to the spastic or irritable colon is being clarified, and I believe there is a general agreement that the irritable colon is a result of an undue parasympathetic enervation of the distal colon. Fluoroscopic observation of a vagotonic individual reveals a rapidly emptying stomach, probably in less than half the normal time. The contents are highly acid with a high peptic activity, and if there is stasis in the duodenum, injury is likely to result, with symptoms not unlike those the authors mentioned. The authors call attention to a disturbed nervous mechanism but do not definitely designate the character of the derangement. My impression is that this unstable nervous state is responsible for the greater part of the functional disturbances of the gastro-intestinal tract and

possibly constitutes a decided predisposing cause of peptic ulcer as well. There are, no doubt, other factors, such as adhesions and disturbances in the biliary tract, that may be active as causes of the irritable or unstable duodenum. The picture may be due to a nervous instability, an undue parasympathetic enervation that occurs with undue emotional stress, overtenseness of the individual who is attempting to attain success by application over too long periods of time with too little sleep. The conception of gastro-intestinal disorders must not be based on dietetic disorders or focal infections alone. It must be recognized that disordered nervous states may be the principal causative factor.

DR. JOHN G. MATEER, Detroit: Drs. Friedenwald and Feldman should be congratulated for contributing to our knowledge of the duodenum. Gastro-enterologists and roentgenologists are agreed that too little attention has been directed toward duodenal abnormalities. Those who have had experience in gastro-intestinal fluoroscopy will agree with the authors' roentgen criteria of the unstable or irritable duodenum. Emphasis should be placed on the transient character of the localized irregularities of the duodenal cap, the tenderness noted so frequently on palpation of the bulb, and the generalized spasm and rapid emptying, which lead to temporary difficulty in satisfactory visualization of the bulb. These spastic phenomena of the unstable duodenum, with the transient irregularity of the cap, can be easily differentiated, as a rule, from the persistent spasm defect of duodenal ulcer. It is common knowledge that the bulbar deformity of the unstable duodenum disappears if the patient is given atropine or belladonna up to the physiologic limit. Furthermore, this type of deformity also disappears frequently with gentle manipulation of the cap or if one waits and observes the patient fluoroscopically a second time; e. g., fifteen or twenty minutes after receiving the barium meal. The authors' observation of the fluoroscopic evidence of increased or decreased irritability in the second and third portions of the duodenum should also be emphasized. In patients with an unstable duodenum one may see active peristalsis sweeping along the entire course of the duodenum in some cases and, in others, temporary stasis of barium in the second and third portions of the duodenum. Those cases showing temporary stasis in the distal portion of the duodenum are of particular interest. This transient stasis can be differentiated readily, as a rule, from the stasis of chronic duodenal ileus by the absence of the three fluoroscopic requirements for the latter diagnosis, viz., marked and persistent delay in emptying, definite dilatation of the duodenum, and antiperistalsis, these changes persisting when the patient is examined in different positions. Furthermore, the marked character of the symptoms of reverse peristalsis, which accompany a true duodenal ileus, afford further differentiation. As to the symptomatology of the unstable duodenum, the authors found epigastric discomfort in 51 per cent of their cases, frequently in association with the symptoms of an unstable or irritable colon. I should like to ask Drs. Friedenwald and Feldman whether they feel that the abnormal duodenal irritability constitutes an etiologic factor in the production of this common type of functional epigastric distress, which has usually been attributed to pylorospasm, and the conditions resulting from it.

DR. SARA M. JORDAN, Boston: It seems to me that what has been presented concerning the irritable duodenum applies also to what has in the past been called the irritable colon, and I wonder whether physicians haven't localized a little bit too definitely in the consideration of the irritable or unstable colon. Certainly evidences of the same symptoms that are here described as being caused by the irritable duodenum are found. Is it not perhaps then a question of irritability or instability—all terms are rather unsatisfactory—of the whole digestive tract, of which pylorospasm, this condition in the duodenum, and probably many other conditions in the rest of the small intestine not yet observed, plus the irritable condition in the colon, are all integral factors? I should like Dr. Friedenwald's and Dr. Feldman's opinion about that.

DR. MAURICE FELDMAN, Baltimore: Regarding Dr. Eggleston's remarks about the emptying time of the stomach, it was of interest to note that in this condition we did not observe an unusually rapid emptying. In the majority of cases the

stomach emptied in normal time, though in some instances it did empty more rapidly. Regarding Dr. Mateer's remarks about atropine and belladonna relieving symptoms, we have found these drugs to be of value. We have also found that on repeated examinations, which we have made in a number of instances, the irritable duodenum was not constantly present. The association of pylorospasm with irritable duodenum and irritable colon, as Drs. Mateer and Jordan referred to, was very striking. For instance, in our series of 100 cases there were forty-two cases of pylorospasm and fifty-one cases of irritable colon. It occurred to us as well that we were dealing not merely with a local duodenal involvement but perhaps with a more general condition.

CONGENITAL PSEUDARTHROSIS OF THE LEG

THREE CASES TREATED BY MASSIVE BONE GRAFT

PAUL C. COLONNA, M.D.

NEW YORK

The so-called congenital pseudarthrosis of the bones is an interesting and rather rare type of fracture. Wade¹ and Inglis² of Australia have made important contributions to this subject, but it is in the Italian and French medical literature that the greatest attention is devoted to it. In the American literature the most noteworthy contribution is by Henderson,³ who in 1923 called attention to the condition and in 1928 reported seven cases. It is not merely a fracture that fails to unite but a pathologic condition in the bone or bones, causing weakness and subsequent fracture. There have been reports of congenital pseudarthrosis of the clavicle, ulna and femur, but the bones of the leg are by far the most frequent site of the lesion.

The most satisfactory grouping would appear to be that of Codivilla,⁴ who has classified the cases under three headings: (1) those in which the usual anterior angular deformity exists without fracture, (2) those presenting a typical pseudarthrosis, and (3) those pseudarthrosis cases in which more or less loss of bony substance is accompanied by marked deformity.

Even before fracture has occurred, definite changes may be observed in the bone in which the fracture will subsequently occur. In this early phase of the condition there may be noted an anterior curving of the leg in its lower half. A superficial examination may confuse the deformity with that found in congenital absence of the fibula, although in the latter condition there is a definite pattern of deformity, consisting of a dimpled scar over the summit of the curve, a pes equinus and an absence of the fourth and fifth toes without any weakening of the integrity of the tibia. The roentgenographic appearance of the bones in these early cases of congenital pseudarthrosis before fracture has occurred presents a typical and characteristic picture. There can be noted an area or areas of rarefied bone, commencing in the region of the periosteum and extend-

Read before the Section on Orthopedic Surgery at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Wade, R. B.: The So-Called Congenital Pseudarthrosis of the Tibia, *J. Coll. Surg., Australia* 1: 181-193 (Nov.) 1928.

2. Inglis, K.: Pathology of Congenital Pseudarthrosis of the Tibia, *J. Coll. Surg., Australia* 1: 194-207 (Nov.) 1928.

3. Henderson, M. S.: Nonunion in Fractures: The Massive Bone Graft, *J. A. M. A.* 81: 463 (Aug. 11) 1923; Pseudarthrosis of the Tibia in Children, *J. Bone & Joint Surg.* 7: 340 (April) 1925; Congenital Pseudarthrosis of the Tibia, *J. Bone & Joint Surg.* 10: 483-490 (July) 1928.

4. Codivilla, A.: On the Care of the Congenital Pseudarthrosis of the Tibia by Means of Periosteal Transplantation, *Am. J. Orthop. Surg.* 55: 163 (Oct.) 1906.

ing partly or completely throughout the whole diameter of the bone in the region of its lower third. It suggests a local osteitis fibrosa cystica, and a certain amount of movement may be obtained in the bone at this point, even in the absence of fracture, owing to the impairment of the bony structure. There is this notable exception, however, that in true osteitis fibrosa cystica solid bony union following fracture is not delayed. Wade has reported four cases of congenital pseudarthrosis in which fracture was incomplete and the union very slow, there being no obvious callus thrown out. In one patient he reports that the union was soft after being splinted for a period of six years. If, however, fracture occurs, an increase of the deformity is most likely to develop.

The type most commonly seen is one in which a frank pseudarthrosis is present in both bones, with a characteristic angular deformity of the lower third of the leg, as shown in the accompanying illustrations. In the older cases the proximal bone ends are pointed and

the knee and foot and not be manifested at the apex of the curve. Codivilla and Henderson express the belief that the condition is probably due to a lack of embryonal development and assume that a congenital interference with the lack of development of the nutrient artery would explain it. Frattin⁷ believed that intra-uterine pressure due to amniotic cords or adhesions might be a factor.

All observers have commented on the fact that the general condition of these patients is usually good, and whatever may be the factor or factors it must be a local one. Codivilla states that the ample collateral blood supply in the upper portion of the leg is a factor in explaining why the congenital pseudarthrosis is always found in the lower half of the leg. However, Dillehunt and LeCocq⁸ report a case of this condition occurring in the upper third of the leg with a successful bony union following operation at the early age of 2½ years. This was the youngest patient in whom a successful outcome followed operation.

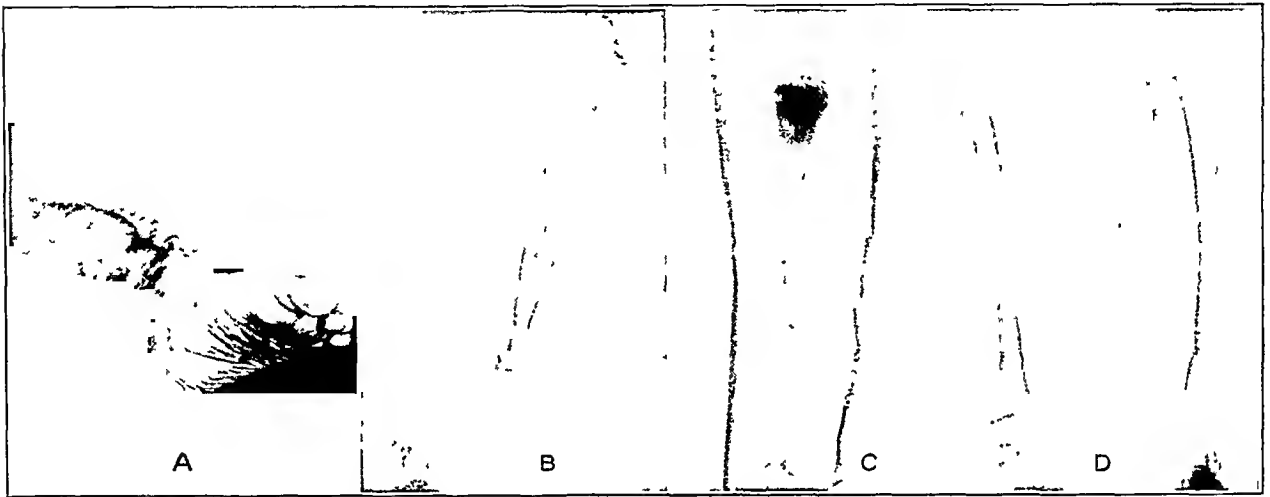


Fig. 1 (case 1)—A, condition before operation; B, preoperative appearance of pseudarthrosis; C, massive bone graft in position; D, appearance after solid bony union.

sclerosed while the distal fragments are frequently cup shaped with a varying degree of definite absorption between the bone ends, this space at operation being found filled with dense avascular tissue.

The Wassermann reaction was negative in the cases here reported, which fact coincides with the observations presented in other case reports.

There is considerable divergence of opinion regarding the etiology of the condition. Potel⁵ recognizes an initial curvature of the bone but feels from his cases that the bone is unaltered in structure. Roentgenograms of the cases reported by Wade show a definite cystic area at which fracture later occurred, and this finding may be noted in two of the cases here reported. Basseta⁶ has reported the examination of a fetus, 14 weeks old, presenting an early prefracture stage in which was found a blood clot between the ends of the bone consisting of a net of fibrin and a few stellar connective tissue cells. The effect of amniotic pressure in the development of this condition has been mentioned by several authors, but in opposition to this it would seem unlikely that the stigmas of pressure would be on

Kenwell⁹ has reported a case in which there was present also distinct blueness of the sclera and in which osteogenesis imperfecta was therefore considered. Roentgen examination and autopsy failed to reveal other fractures, but it was felt that the condition was a purely local manifestation and not a type of osteogenesis imperfecta. Inglis feels from a pathologic study of three cases that probably the centrally situated connective tissue represents marrow which was once normal and later became fibrotic, or that originally the medullary canal was occupied by connective tissue which was mainly fibrous, normal marrow being inconspicuous or absent.

The second case here reported was marked by an interesting feature. This boy was only 5 years of age when admitted to the Hospital for the Ruptured and Crippled, but even at that age he had been subjected to several unsuccessful attempts at bone grafting. While in the hospital several other unsuccessful attempts by the use of massive bone grafts were made. The

5 Potel, G. *Traité pratique d'orthopédie. Courbures et pseudarthroses des os de la jambe*, 1925, pp 74-81.

6 Basseta, quoted by Henderson³.

7 Frattin, G. *Curvature e pseudoartrosi della tibia de origine congenita*, *Arch. di orthop.* 26: 461, 1909.

8 Dillehunt, R. B., and LeCocq, J. F.: *Pseudarthrosis of the Tibia in Young Children*, *J. A. M. A.* 90: 1615-1617 (May 19) 1928.

9 Kenwell, H. N.: *A Case of Congenital Fracture of the Leg Associated with Many Other Important Anomalies*, *Buffalo General Hospital Bull.* 3: 29 (No. 2) 1925.

patient was discharged home between operations and at two separate times, about six months apart, fractured the tibia in its middle third on the sound leg. These fractures healed in the usual way with the presence of normal appearing callus and have remained healed to date. The normal bony structure was restored, while the dissolution and absorption of the transplanted graft on the affected leg continued. This, it would seem, is strong evidence in favor of the congenital pseudarthrosis being a local rather than a general manifestation. Therefore, the essential part of the pathologic condition seems to be a centrally situated connective tissue, which is partly fibrous and partly fibroblastic, occupying usually the lower third of one or both bones of the leg and initiated by a congenital lack of development of the nutrient artery.

TREATMENT

Of all the various procedures advanced for the treatment of this condition, operation is the only one that need be considered, and certain restrictions should be noted in the selection of cases and the type of operation

there was an obvious pseudarthrosis in the lower third of the leg. There was very little angulation present, but the curved and deformed fibula ends could be felt protruding just under the skin. There was no evidence of nerve injury. The patient was admitted, October 2, to the Orthopedic Service at Bellevue Hospital and was operated on, October 8. At operation the pseudarthrosis area was found filled with dense avascular connective tissue and the tibia and fibula bone ends were excised well above the area of pseudarthrosis. A large bone graft was removed from the opposite tibia and, after the right tibia was prepared for its reception, it was snugly placed in position and held there by kangaroo tendon. Bone chips were packed about the graft. No attempt was made to insert a graft into the fibula. The wound was closed without drainage and, in order to prevent undue tension on the graft, the foot was placed in an attitude of slight equinus. The postoperative course was uneventful and, six weeks after the original operation, definite evidences of bone repair could be noted in the roentgenograms. At this time the plaster was changed and an open zigzag tenotomy of the heel cord accomplished. Plaster was reapplied from the toes to the groin with the foot at right angles. Subsequent roentgenograms showed the process of bony union progressing satisfactorily, and the plaster support was removed from the leg six months after

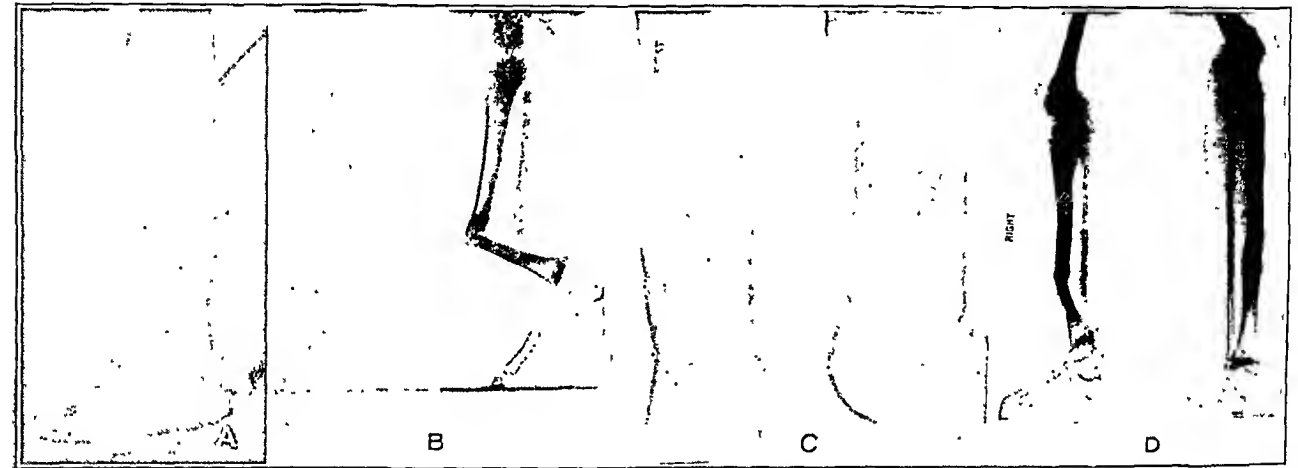


Fig. 2 (case 2).—A and B, characteristic right angular deformity of the lower third of the leg; C, massive bone graft in place; D, normal healing of fracture of the opposite tibia coincident with absorption of the massive bone graft at the site of pseudarthrosis.

employed. Codivilla practiced the use of a cutaneous osteoperiosteal pedunculated graft, swung over from the sound side to the pseudarthrosis, and others have suggested shortening the leg sufficiently to obtain approximation and apposition of the fragments. However, the osteoperiosteal graft, the inlay method of bone grafting, or the massive bone grafting method proposed by Henderson would appear to be the methods of choice at the disposal of the operator. Whatever method has been pursued, failure has been frequent, and I myself have preferred the massive bone graft advocated by Henderson.

REPORT OF CASES

CASE 1 (fig. 1).—F. F., aged 11 years, seen at Bellevue Hospital in September 1929, complained of deformity of the right leg. The parents stated that the child's leg had been crippled since birth. There was no similar family history. The patient wore a brace on the leg until the age of 7, at which time the first operation for bone grafting was done. In all, the patient had had four unsuccessful attempts to produce union by bone graft operations, the last done about a year before. On examination the child was in good general condition, wearing a brace on the right leg, presenting marked shortening of this limb and being somewhat overweight. Blood chemistry studies were negative for any change in the blood calcium and phosphorus. The leg, on its anterior and lateral aspects, presented long healed scars as results of previous operations, and

operation. The patient was fitted with a leg brace accompanied by a long leather cuff. At the present time the patient is able to walk about without support but prefers to wear a brace when playing. Solid bony union, as shown, has resulted. CASE 2 (fig. 2).—J. G., a boy, aged 5 years, had fractured the right leg when he was an infant. After several unsuccessful attempts at healing by immobilization in plaster, open operations were done at another hospital and an attempt was made to produce union at the site of ununited fracture of the tibia and fibula in its lower third. As this was unsuccessful he was fitted with a brace, which he has worn from the time he was first seen at the clinic at the Hospital for the Ruptured and Crippled. Examination at that time showed marked deformity, as noted in figure 2. There was a long scar on the anterior aspect of the lower third of the leg, and another in the region of the achilles tendon as a result of previous operation. At the right angle angulation at the lower third there was a pseudarthrosis, and a roentgenogram showed nonunion of the right tibia and fibula at the junction of the lower third, with much loss of bone substance in the fibula, so that there was no contact of the fragments. The right tibia measured 8 3/4 inches (20.5 cm.) and the left 9 1/4 inches (23.5 cm.). The patient was admitted to the hospital for preliminary stretching and bone graft operation. At the first operation, Jan. 27, 1930, there was found to be a large amount of scar tissue around the point of pseudarthrosis. With bone forceps the bone was divided at about

1 inch above and 1 inch below the pseudarthrosis and completely removed, after which the angulation could be corrected. A large massive bone graft was taken from the anterior aspect of the left leg, removed with the aid of a motor saw, and held in place in the prepared bed in the opposite side by three kangaroo tendons. Another incision was made over the outer aspect of the leg on the right, and the two ends of the fibula were exposed, which were separated about $1\frac{1}{2}$ inches. A long sliver of bone was removed from the outer aspect of the fibula and the sharp end driven in the distal fragment and held by kangaroo tendon. Plaster was applied from the toes to the groin.

After an uneventful convalescence, subsequent roentgenograms showed no evidence of bone repair. Gradual absorption of the bone graft occurred.

At a second operation, October 6, an incision was made over the anterior aspect of the right leg and a definite pseudarthrosis could be demonstrated in the region corresponding to the distal end of the old graft to the proximal end of the tibia. The false joint was opened and thoroughly curetted. A sliding bone graft was made and the whole was held firmly with circular sutures of chromic catgut. One-half teaspoonful (2 cc) of calcium phosphate was placed about the site of fracture and

June 6, he was readmitted to the hospital because of the fracture of both bones of the leg on the left, at the junction of the upper and middle thirds, received by the patient jumping from the cupboard. The fragments were in good position and a plaster was applied. It was noted at this time that there was firm bony union at the site of the traumatic fracture received on this leg previously, and callus quickly developed about the site of the fracture of the upper third of the left leg.

The last report, March 15, 1934, shows that the boy is walking about with the aid of an artificial limb on the right and that the fractures of the left tibia have healed with solid bony union.

This case, therefore, is one which, in spite of repeated attempts at bone grafting in a child about the age of 6 years, resulted in failure in each case at the site of the congenital pseudarthrosis, while the opposite leg received two fractures, both of which healed normally. This would seem to support the view that the pseudarthrosis is produced by some local phenomenon, probably an interference with the normal circulation.

CASE 3 (fig. 3)—E L, a boy, aged 10 years, was seen, Nov. 5, 1932, on account of shortening and deformity of the

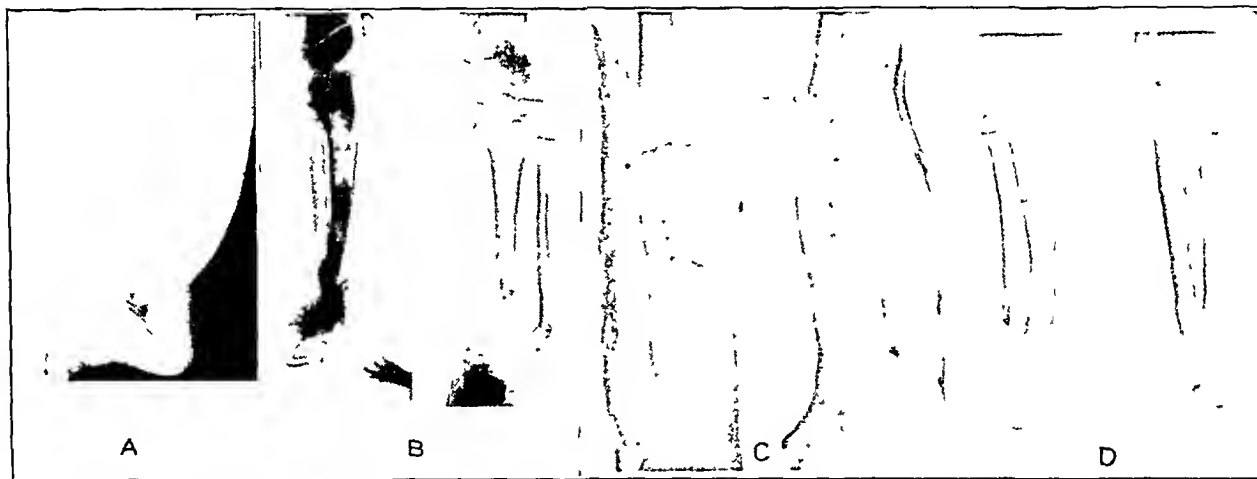


Fig 3 (case 3).—A, condition before operation, B, preoperative appearance of pseudarthrosis, C, massive bone graft in position; D, appearance after solid bony union

the wound closed in layers. Plaster was applied from the toes to the groin, the fragments being in good alignment.

Following this operation the wound broke down slightly and serum was discharged from the lower third of the leg with no evidence of infection. Clinically and from roentgenologic evidence, no union occurred following this operation. After a limited amount of weight bearing had been permitted, the child returned home in plaster.

The case was followed in the clinic for a long period and on Sept. 21, 1931, a third bone graft operation for congenital pseudarthrosis was performed, massive bone graft from the opposite leg being used for the ununited tibia. No attempt was made to treat the nonunion of the fibula at this time.

Satisfactory union did not follow this operation, and on November 14 the patient was admitted to the hospital because of a fracture of the tibia on the left side, which had been produced by a fall. The fragments were in good position. A plaster bandage was applied to this leg. It is interesting to note that, following the fracture on the opposite side, marked callus quickly developed and firm bony union rapidly followed. He continued to wear plaster and a brace on the right limb. An angulation deformity slowly developed at the site of the pseudarthrosis.

He was therefore admitted, May 4, 1932, and at his mother's request amputation was done below the knee. The wound healed by first intention and the patient was later fitted with a satisfactory artificial limb

left leg. The child's birth was apparently normal but shortly afterward the father noticed that the leg was deformed and diagnosis of fracture of the leg was made by a local physician. Reduction was accomplished and plaster applied, but the bones did not unite. The child had had five open operations with attempts to produce bony union of the left tibia and fibula. He had a scar over the anterior aspect of the opposite leg as a result of a previous bone graft being done.

On examination the boy presented deformity as noted in figure 3, with anterior angulation and pseudarthrosis of both bones in the lower third. The tibial fragments were not in contact. The length of the right tibia was $11\frac{1}{4}$ inches (28.5 cm.), and of the left was $7\frac{1}{4}$ inches (18 cm.). The child was fitted with a brace and walked about for the next few months.

Jan. 23, 1933, a massive bone graft operation was done. With the aid of rongeurs the pseudarthrosis was removed, embracing possibly 1 inch of the proximal and one-half inch of the distal fragment, and then with the aid of a motor saw a large bone graft was removed from the opposite tibia and placed in the prepared bed, being held securely by kangaroo tendon. The pseudarthrosis of the fibula was likewise removed, and bone chips were packed in the gap. The wound was closed in layers and plaster bandage applied from the toes to the groin. Post-operative roentgenograms show an increasing amount of callus formation with the bones in good alignment.

Six months after the operation there was firm solid bony union. The shortening on the affected side was treated by having the boy wear a patten.

In these three cases a massive bone graft was employed, all of which presented the typical angulation and deformity with forward bowing in the lower third of the leg and pseudarthrosis. All the children had been repeatedly operated on without success. This brings up the subject of the age when bone grafting should be attempted. Henderson in 1924 stated that "the response of these patients to surgery after puberty is much more satisfactory" and recommended careful improvement of the general health, local physical therapy and a walking caliper splint as preliminary to any operative procedure. In the three cases reported in which a massive bone graft was used, the patients had all been subjected to three or more previous bone grafting operations with subsequent failure, and, in the second case, bony union was never obtained, amputation finally being done at the insistence of the mother. In the two other cases successful union followed, one child being 11 years of age and the other 10. It is felt that subjecting a patient under the age of 8 years to this type of operation is most likely to result in failure of solid union and that, up to this age, support with plaster or a brace and general hygienic treatment would be the wiser course to pursue.

SUMMARY

1. The condition of congenital pseudarthrosis has been rarely reported in the American literature.
2. The condition of congenital pseudarthrosis of the leg would appear to be a local rather than a general cause and to occur usually in the lower third of the leg.
3. The bone or bones involved present a characteristic roentgenographic appearance of a cystic formation, which pathologic condition precedes fracture and somewhat resembles a localized osteitis fibrosa cystica. The deformity is present at birth and fracture occurs either at or shortly after birth, hardly ever healing spontaneously.
4. Under the age of 8 years, operative treatment is not indicated and the chances for success by operation increase with the age of the patient.
5. The massive bone graft technic, as recommended by Henderson some years ago, was the method employed in the three cases here reported, in two of which (66⅔ per cent) bony union was obtained.

59 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. PHILIP LEWIN, Chicago: This is a very interesting and baffling condition. The pathologic changes are evidently purely local and they are undoubtedly predetermined by a peculiar embryologic twist, which permits the interposition of soft tissue. The literature on this subject is not large. The most important articles in English were written by Henderson and Wade. There is evidently a local metabolic bone lesion the nature of which may be cystic. The bowing in these cases may be primary or secondary. The importance of the nutrient artery in some cases is considerable. Dr. Colonna's results would indicate that his method of treatment is worthy of further trial. It is my belief that, as further progress is made in the treatment of this condition, the age at which operation will be indicated will be lowered. The important points are wide excision of pseudarthritic areas and the application of a double-wedge graft with osteoperiosteal and chip graft and some bone marrow.

DR. PAUL CRENSHAW COLONNA, New York: I should like to agree with Dr. Lewin that with more general use of the massive bone graft and improvement in technic the age period for attaining union may be lowered. I hope it will prove to be so. I think it is interesting, though, that the cases that have defied attempts at successful bone grafts have all been in this lower age group.

REGIONAL (TERMINAL) ILEITIS: ITS ROENTGEN DIAGNOSIS

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NEW YORK

This is a preliminary communication based on a review of six private cases¹ that came to surgical exploration in the last six years. In four of these the operation was performed by Dr. A. A. Berg and the pathologic examination was made by Dr. Paul Klemperer at the Mount Sinai Hospital. All these cases were finally diagnosed nonspecific ulcerative granulomatous inflammation of the terminal ileum according to the criteria presented by Crohn and his collaborators in 1932.² In the remaining cases operation was done elsewhere and before the term "regional (terminal) ileitis" was introduced in the literature. Nevertheless, these descriptions also agree on the presence of ileac thickening and ulceration, and on the absence of new



Fig. 1.—Normal ileocecal filling. Film taken five hours after opaque meal with patient in the prone position. There is no filling defect anywhere in the course of the barium column from its "tail" in the terminal ileum to its "head" at the splenic flexure of the colon. Note particularly the position, shape and general symmetry of the terminal loop of ileum.

growth, tuberculosis and other known specific inflammation or tumefaction. It therefore seems fair to assume, at least for the purpose of this preliminary communication, that a homogeneous group of cases is being dealt with. A summary of the chief clinical features in these patients is presented in table 1.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. In all the cases here described, the disease involved only the terminal ileum. There is increasing evidence that other parts of the alimentary tract may be affected (Harris, Bell and Brunn,¹² Crohn and his associates²).

2. Crohn, B. B.; Ginzburg, Leon, and Oppenheimer, G. D.: Regional Ileitis—A Pathologic and Clinical Entity, *J. A. M. A.* 99: 1323-1329 (Oct. 15) 1932. Crohn, B. B.: The Broadening Conception of Regional Ileitis, *Am. J. Digestive Dis. & Nutrition* 1: 97-99 (April) 1934.

ROENTGEN INDICATIONS OF REGIONAL ILEITIS

The present status of roentgenology of the small intestine may be compared to that of the stomach twenty years ago. Despite the contribution of Mills,³ Cole⁴ and his collaborators, Case, Soper,⁵ Lawrason Brown, Ritvo,⁶ Raiford,⁷ Bloom,⁸ and Goldfarb⁹ in this country, it is probably true that this branch of gastro-intestinal

ROENTGEN INDICATIONS IN REGIONAL ILEITIS

Abnormalities may be found either in the colon or in the ileum (table 2). The changes in the colon are usually the result of spasm secondary to the ileac involvement. The situation in this regard is similar to the Stierlin¹⁰ filling

TABLE 1.—Chief Clinical Features in "Regional Ileitis"

Case.....	1	2	3	4	5	6
Sex.....	♂	♂	♂	♂	♂	♂
Age.....	19	42	32	16	33	30
Pain.....	+	+	+	+	+	+
Constipation.....	+	+	+	+	+	+
Diarrhea.....	+	+	+	+	+	+
Fever.....	+	+	+	+	+	+
Malnutrition.....	+	+	+	+	+	+
Mass.....	0	+	0	+	+	0
Hemoglobin.....	53%	—	—	68%	85%	69%
Gastric acidity:						
Free/total.....	11/37	19/55	7/37	24/52	25/61	—
Indicanuria.....	0	+	+	+	Faint	+
Previous appendec- tomy.....	+	0	+	0	0	0
Result.....	Died from perfora- tion found at oper- ation	Well 5 years after resec- tion	Well 3 years after resec- tion	Well 3 years after resec- tion	Well 3½ years after resec- tion	Well 1 year after resec- tion



Fig. 2.—Regional (terminal) ileitis. Same case as in figure 3. Film six and one-half hours after opaque meal. A, dilated ileac loops (obstruction); B, filling defect of terminal ileum; C, abnormal last filled loop of ileum; D, "string sign"; E, deformed cecum (spasm).

defect of the cecum in which the lesions are present not in the colon but in the terminal small intestine. The spasm in ileitis takes the form of a contracture, sometimes of the entire cecocolon, but most character-



Fig. 3.—Regional (terminal) ileitis. Same case as in figure 2. Film seven and one-half hours after opaque meal. Observe close similarity to figure 2. The deformity of the cecum has disappeared, indicating the absence of organic involvement of this structure.

roentgen diagnosis is not very widely practiced; hence the following description of the technic used by me may not be out of place:

1. The standard opaque meal is employed. It is administered on an empty stomach.
2. All roentgenograms are made with the patient prone, the rays being directed dorsoventrally. This posture is preferred to the erect position because in the former the ileac loops are more widely separated.
3. Observations are made at hourly intervals from the period just before the cecum fills to the normal period of ileac emptying. This means from three to nine hours after the ingestion of the opaque meal.
4. The patient is allowed to take an ordinary meal as soon as the stomach is seen to be empty. This takes place normally five hours after the barium meal.

3. Mills, R. W.: X-Ray Evidence of Abdominal Small Intestinal States Embodying an Hypothesis of the Transmission of Gastro-Intestinal Tension, *Am. J. Roentgenol.* 9: 199-225 (April) 1922.
4. Cole, L. G.: The Small Intestine, *Tr. Am. Gastro-Enterol. A.*, 26th Ann. Meet., Washington, 1933, p. 240.
5. Soper, H. W.: Roentgen Diagnosis of Lesions in the Small Intestine, *Radiology* 20: 76-78 (Feb.) 1933.
6. Ritvo, Max: Roentgen Diagnosis of Lesions of the Jejunum and Ileum, *Am. J. Roentgenol.* 23: 160-169 (Feb.) 1930.
7. Raiford, T. S.: Tumors of the Small Intestine. Their Diagnosis, with Special Reference to the X-Ray Appearance, *Radiology* 16: 253-270 (Feb.) 1931.
8. Bloom, A. R.: Lesions of the Small Bowel, *Am. J. Cancer* 18: 296-317 (June) 1933.
9. Goldfarb, S. J.: The Roentgen Diagnosis of Lesions of the Small Intestine, *New York State J. Med.* 34: 500-505 (June) 1934.

istically of the cecum proper. There is often a marked spasm of the sphincter of Busi¹¹ as well as of the cecal tip, so that this segment assumes a special budlike or teatlike appearance. In most cases of functional

10. Stierlin, E., and Chaoul, H.: *Klinische Roentgendiagnostik des Verdauungskanal*, Berlin, Julius Springer, 1928.
11. This is a sphincter separating the cecal tip from the cecum above it—a cecocolic sphincter in the strict sense (Balli, F.: *The Sphincters of the Colon*, *Radiology* 12: 484-495 [June] 1929).

spasm of the cecum or cecocolon the changes are not constant but intermittent. Furthermore, the opaque enema usually suffices to fill out the involved areas in normal fashion.

On the other hand, the colon may be actually involved by the disease process in the adjacent ileum, as by adhesion or fistula formation. In such instances a fixed



Fig. 4.—Regional (terminal) ileitis, showing multiple “string signs.” Although the degree of filling varied from time to time, the position of each involved loop and the general pattern remained unchanged during the week in which the patient was studied.

deformity results, most commonly affecting the inner (mesial) aspect of the large intestine.

In the ileum are found the most important changes. The present series of cases showed the following:

1. Filling defect. There is a constant defect in the filling of the terminal small intestine. This is manifested in all observations and offers a striking contrast to the familiar picture of the final loop of ileum as it rises out of the pelvis to enter the ileocecal valve

TABLE 2.—Roentgen Changes in “Regional Ileitis”						
Case.....	1	2	3	4	5	6
Colon						
Cecal spasm.....	++	+	+	+	+	+
“Collitis”.....	+	+	+	+	+	+
Ileum						
Filling defect.....	+	+	+	+	+	+
Irregularity of last filled loop.	+	+	0	0	0	+
Stasis.....	+	0	0	0	0	+
“String sign”.....	?	+	0	+	+	+

(fig. 1). The extent of this ileae filling defect depends on the extent of the stenotic process in the small intestine.

2. In three of the six cases the ileum proximal to the filling defect seemed abnormal in contour. The involved loops appeared irregular in shape, or else the very last segment of ileum showed a peculiar taper

point. In some cases this taper point became continuous with the “string sign” to be described.

3. Actual obstruction was present in two cases. This was manifested by stasis in the ileum nine hours or more after the opaque meal and by dilatation of the loops proximal to the filling defect.

4. Perhaps the most striking finding is the “string sign” (figs. 2, 3 and 4), a name borrowed from A. W. Crane. This is a thin, slightly irregular linear shadow suggesting a cotton string in appearance and extending more or less continuously from the region of the last visualized loop of ileum through the entire extent of the filling defect and ending at the ileocecal valve. It represents the attenuated barium filling of the greatly contracted intestinal lumen. A characteristic “string sign” is apparent in the illustration of the original article by Crohn and his collaborators,² as well as in the illustrations of Harris, Bell and Brunn¹² and of Goldfarb.⁹ Multiple or branched “string signs” may be attributed to multiple areas of involvement or to fistula formation (fig. 4).

DIFFERENTIAL DIAGNOSIS

Although easy enough to recognize when once seen, it may be possible to confuse the “string sign” with a filled appendix dipping into the pelvis and perhaps with the line of the right sacro-iliae synchondrosis. The



Fig. 5.—Differential diagnosis of regional ileitis. Sarcoma of ileum. Film six hours after opaque meal. Note atypical course of attenuated terminal ileum. The impression given is that of a loop of bowel stretched over an eccentrically located tumor. Such an appearance has not been observed in the cases of regional ileitis seen to date.

appendix shadow is likely to be more homogeneous in density and its outline more uniform than that of the “string sign.” The synchondrosis may be identified by careful comparison with the shadow of the opposite (left) side.

The “string sign” may also have to be differentiated from the streak-like filling of abnormally contracted

12. Harris, F. J.; Bell, G. H. and Brunn, H.: Chronic Cicatrizing Enteritis, Surg., Gynec. & Obst. 57: 637-645 (Nov.) 1933.

(spastic) segments of small intestine. In the case of the latter the lumen is wider, the shadow denser and the outline smoother, and, more important still, the location of these loops may vary from one exposure to another because of the freer mobility of such bowel segments. It is characteristic of regional ileitis that the "string sign" remains hour after hour and even day after day in practically the same relative location in the right lower quadrant.

When it comes to pathologic lesions, it must be noted that regional ileitis is but one of several stenotic lesions that may present a picture similar to, if not identical with, the "string sign." Circumscribed tuberculomas of the terminal ileum have been described with illustrations showing a similar thin streak or streaks of barium by Stierlin and Chaoul¹⁰ and by Schilling and Sametnik.¹³ Yet the last named authors present a second case, almost identical with their first, in which, much to their surprise, they failed to find evidence of tuberculosis or new growth and seemed to be dealing with an instance of what might now be called regional ileitis. Stenosing sarcomas of the terminal ileum have been described by Raiford and by Bagnaresi.¹⁴ Talia¹⁵ specifically states that in a case of sarcoma there was a thin strip of barium joining the terminal loop of ileum with the ileocecal valve. A similar instance has come under my observation (fig. 5). Finally, according to Talia, syphilis of the terminal ileum may present exactly the same picture.

In view of these facts one must conclude that, although the "string sign" is not necessarily pathognomonic of regional ileitis, one must always bear this disease in mind when a "string sign" is present.

REPORT OF CASE

In the following case (case 6 of the present series), the diagnosis was made before operation:

A man, aged 30, married, had noticed increased fatigue for ten years. Four years before admission he had a perianal abscess of undetermined type, resulting in a fistula, which was excised. Three years before, onset of three watery stools daily occurred. For two years there had been abdominal distress, and for one year weight loss, fever (maximum 104, average 100-101), anorexia, and blood in the stools. Eight months before he had abdominal cramps for one week, followed by temporary improvement. Four months before there was a recurrence of diarrhea, cramps and fever, and onset of vomiting.

On physical examination, May 12, 1933, the patient was of sthenic habitus, appeared acutely ill, and was pale. He weighed 142 pounds (64.4 Kg.) (ideal weight 172 pounds, 78 Kg.). The lips were dry and cracked and there was slight gingivitis present. The chest was normal. The abdomen was distended and tense; borborygmi were present; there was visible erection of the intestine in the lower midportion of the abdomen. No mass was found. The rectum was normal. The blood pressure was 102 systolic, 80 diastolic; the pulse, 120 and the temperature, 100.2 F. (rectal).

Routine laboratory tests showed hemoglobin, 69 per cent (Sahli, normal 80 per cent). Albumin, hyaline and granular casts were present in the urine; indican was increased. The fasting stomach was empty on aspiration. A test meal was not done.

On roentgen examination, May 13, the stomach and duodenum filled normally.

13. Schilling, C., and Sametnik, S.: "... anatomische und roentgenologische Studien der Fortschr. a. d. Geb. d. Röntgenstrahlen 43 403, fig. 20).

14. Bagnaresi, S.: Contributo radiologico e clinico allo studio dei tumori dell'ileo, Arch. di radiol. 7: 745-764 (July-Aug.) 1931.

15. Talia, F.: Sui tumori dell'ansa terminale dell'ileo, Arch. di radiol. G: 180-183, 1930.

Three hours after eating, the jejunal and ileac loops were markedly dilated. The cecum was beginning to fill faintly, but the terminal ileum was not visualized.

Four hours after eating, there was one stool. The cecocolon was faintly filled. The jejunum-ileum was still dilated.

Five hours after eating, there was a minute residue still present in the stomach. The colon filled faintly to the distal transverse. The jejunum-ileum was still dilated. A beginning "string sign" was noted.

Six and a half hours after eating, there were two stools. The stomach was empty. The colon was filled to the rectum. The ileum was unchanged. The "string sign" was more marked (fig. 2).

Seven and a half hours after eating, there were three stools. The colon was unchanged and the ileac loops were still dilated; the terminal ileum still showed the filling defect; the "string sign" was still present (fig. 3).

Eight and a half hours after eating, there were four stools, with the same conditions as before except that the "string sign" was not visible.

Twenty-four hours after eating, there were four stools. The cecum was contracted and the colon filled normally from the midascending position to the rectum. The ileum still showed a faint trace of barium.

Forty-eight hours after eating there were seven stools. The colon filled from the hepatic region to the rectum. The ileum was empty.

Seventy-two hours after eating, there were twelve stools. The colon was empty.

Of the opaque enema, 42 ounces was required to fill the colon to the cecum (normal amount 38 ounces). The cecal tip appeared contracted with a budlike protrusion on the mesial surface, three-eighths inch in diameter.

The diagnosis was regional ileitis; the deformity of the cecum was due either to spasm or to involvement in the inflammatory process.

Radical surgical therapy was recommended.

May 29, Dr. A. A. Berg did a resection of the terminal ileum and proximal cecocolon for typical terminal ileitis, with anastomosis of the ileum to the ascending colon.

The pathologic examination was made by Dr. Paul Klemperer. The specimen consisted of a loop of terminal ileum, measuring 23 cm., and 5 cm. of cecum and ascending colon with the appendix. The wall of the ileum was markedly thickened, the serosa was reddened, the fat tissue was penetrated by grayish white fibrous strands. When the specimen was opened, the terminal 8 cm. of ileum showed a marked stenosis. The lumen was narrowed to the thickness of a pencil. The mucosa was thickened and in places consisted of flat polypi. Along the mesenteric insertion there were longitudinal ulcerations, and there the thickening and contraction were most marked. The mucosa showed, in addition, irregularly outlined shallow and deeper ulcerations. It was grayish, and small fragments of a membrane could be pulled off. The underlying submucosa and muscularis were markedly thickened. The latter showed grayish white streaks.

Proximal to the area just described there was a widening of the lumen; the muscular coat was markedly hypertrophic. The mucosa was thickened and showed a few serpyiginous shallow ulcerations. Their base was grayish and the edges were red. At a distance of 8 cm. from the proximal termination of the severest involvement there was an almost circular ring, about 1 cm. in width, in which the mucosa was involved in a manner similar to that previously described. Proximal to this circumferential lesion there was a dilatation of the intestine with a few similar scattered ulcerative lesions and then followed again a circular involvement. Still proximal to that, the mucosa was slightly thickened and reddened, but no ulcerations were present.

At a distance of 2 cm. from the ileocecal ring, one of the ulcerations had penetrated all the coats of the intestine up to the serosa. The opening of the fistula was covered by the appendix, which had become adherent with a thickened mesenterium. The appendix at this point was also markedly

infiltrated. The mucosa of the appendix was granular and thickened.

Within the mesentery of the ileum there were a number of hyperplastic lymph nodes. The cecum and ascending colon showed only a few mucosal hemorrhages. There were no other changes. The intestinal lesions ended sharply at the ileocecal valve.

The pathologic diagnosis was nonspecific ulcerative granulomatous inflammation of the terminal ileum and appendix, with fistula.

Following the operation the patient made a smooth recovery. May 7, 1934, the general condition was excellent. The weight was 195 pounds (88.5 Kg.). The bowels moved twice a day normally.

SUMMARY

1. In obscure cases of apparent colitis a roentgen study of the small intestine may reveal the presence of a terminal (regional) ileitis.

2. The roentgen study of the small intestine is based on the careful observation of a progress meal from the time the cecum begins to fill to the time the ileum should normally be empty.

3. The chief roentgen signs in regional ileitis affect the colon and the terminal ileum. The changes in the colon, however, are likely to be reflex in nature.

4. The chief changes in the ileum are:

(a) Filling defect just proximal to the cecum.

(b) Abnormality in contour of the last filled loop of ileum.

(c) Dilatation of ileac loops just proximal to the lesion.

(d) A "string sign" representing the actual lesion.

5. The "string sign," though characteristic, is not pathognomonic of ileitis. It may be present in other stenosing processes in this region. When present, however, the diagnosis of terminal ileitis must be given consideration.

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ABSTRACT OF DISCUSSION

DR. HARRY M. WEBER, Rochester, Minn.: Dr. Kantor has described the roentgenographic evidence for the narrowing and the distortion of the terminal ileum, two of the most conspicuous and significant anatomic features of the disease now quite generally known as terminal ileitis. He endows the term "string sign," which he revives, with a new significance, as here actual organic disease is responsible for the roentgenologic appearances of which the term is vividly descriptive. A different but hardly less familiar method of visualizing the terminal ileal coils might not inappropriately be recommended here, not to replace but to supplement and serve as a check on the information elicited by the method just described. It is the primary roentgenologic method of studying these segments at the Mayo Clinic, where they are examined as an integral part of investigation of the colon, in much the same sense as examination of the duodenum is a part of examination of the stomach. Under roentgenoscopic control the terminal ileum is filled to a desired extent with opaque suspension by reflux through the ileocecal orifice. The patient is then permitted to relieve the colon of the bulk of contrast fluid it contains by defecation. The ileum normally remains more or less completely filled with contrast fluid and rests at a level higher in the abdominal cavity than at the four and six hour periods after ingestion of the opaque meal, making it more accessible for screen-controlled manipulation. More important still from the standpoint of eliciting roentgenologic evidence of relatively early pathologic change expressed on the mucosal surface, there is a minimal mixture of contrast substance with nonopaque intestinal content, since the latter has been reduced to a minimum with the preparation of the large intestine for its examination. It is felt that in this way the terminal ileum is made

almost as readily accessible for roentgenologic examination as are the stomach and large intestine, and the diagnostic results are expected to be as accurate and reliable; hence it does not seem unreasonable to demand a diagnosis of terminal ileitis from the roentgenologic examination before that stage in its development when these extensive changes have already taken place. Nor is it unreasonable to suspect that at earlier stages the disease might be amenable to less radical surgical therapeutic measures than have been found necessary up to the present time. It is entirely possible, indeed, that in early stages the disease might be arrested, even eliminated, by nonsurgical management.

DR. JAMES T. CASE, Chicago: The technic of examination of the small intestine in its terminal portion is interesting. It matters little whether one decides on using the opaque enema method or the barium meal followed through. Some will become more expert in one and others in the other. I myself prefer to use a combination of the two methods. I like to give a progress meal and follow it through. I advocate the use of frequent observations of the small bowel. In order to do that, the meal should begin early in the day. The practice of beginning meals at 1 o'clock or later in the day does not permit sufficiently frequent observations of the bowel between the fifth and ninth hours, unless one behaves unusually in habits of working hours. Barium can be taken at the ordinary breakfast in the morning, and the patient can be seen for the first time around 11 o'clock, and from then on the study should be done fluoroscopically with the patient prone on the fluoroscopic table, and with manipulation under the fluoroscopic screen. Films can be exposed under the screen at the time of fluoroscopy, which will be more illuminating than having the films made in the reverse position. It is true that one can use the opaque enema for studying the terminal ileum. I too make it a habit to give the enema until the lower coils of the ileum are visualized. That is routine, and the filling of the sigmoid by the opaque material often lifts the small intestine out of the true pelvis into a place where it can be manipulated. Manipulation under the fluoroscopic screen is an important adjunct to the roentgen study of the digestive tract. Another method is to inflate the bowel with air after the introduction of thorium dioxide or barium sulphate sufficiently to reach the terminal ileum, a minimum amount of opaque material being used; but inflating the bowel with air is rather distressing and I do not use it very often. I should like to call attention to the herring-bone appearance of the small intestine above the dilated loops. Sometimes this is the first indication of an organic lesion in the terminal ileum. As a source of possible error, I would mention that there may be found an empty loop of terminal ileum where it lies over the iliopectineal line, especially if the patient is observed prone. I should like to commend Dr. Kantor's remarks. I appreciate what he said about some doctors being "addicted" to the examination of the colon by enema alone; there are many lesions of the colon, some of them organic, which can be determined only by watching the progress of opaque material.

DR. ANTHONY BASSLER, New York: I want to express appreciation to Dr. Cohn for bringing this subject forward again, and to Dr. Kantor, and I suggest that his demonstration in the Scientific Exhibit be seen. I feel that the atonies, the spasms, the hyperplasias and the granulomas in the intestinal canal need a great deal more study than they have had so far. I don't think that they are going to be entirely understood until biologic investigation of the intestinal canal becomes a routine procedure. Perhaps some may remember that I was the first to suggest the use of the x-rays in granulomatous processes. I treated not a few of them and have seen most favorable results from the rather simple method of the therapeutic use of the x-rays with the proper type of machine. The lesion of ileitis is really a local irritation, a low grade inflammation of the mucosa. It begins in the mucosa and in all probability is due to certain of the anaerobic organisms that can be found in the intestinal canal, of which there are about eight genus types, and my observations have suggested that they are capable of producing the condition. The pathology is one of proliferation of the hematopoietic cells and mainly proliferation and irritation of the somatic cells of the intestinal wall. The granulomatous processes of syphilis and tuberculosis,

the two outstanding granulomatous processes, are due to infections. The others that occur in the intestines and rectum I feel are also due to infection, also anaerobic bacterial in type. Making allowance for the difference in the anatomy and physiology of the intestinal mucosa and the skin, in which low grade infections are common, that probably is the reason why the therapeutic doses of x-rays have been helpful in the granulomatous processes. Since the infection is a closed one, as compared with similar infections of the skin, surgical therapy may become necessary.

DR. B. B. CROHN, New York: When I first published a paper on ileitis in 1932 I had fourteen cases; to date I have had forty-two cases. I have added twenty-eight cases in two years, and that will give an idea that ileitis is not an unusual finding and that its distribution is wide, as evidenced by the fact that cases are coming from all parts of the United States. I had a letter from Amsterdam, Netherlands, stating that cases were being found over there, too. The disease is one of youth; the incidence ranges from 4½ years of age (the youngest) to 30 or 40. A case is rarely seen above the age of 30. I am grateful to Dr. Kantor for naming this manifestation in the ileum the "string sign." It is a fitting term. The string sign is absolutely characteristic. I hesitate to say it is pathognomonic, though I think it is, because in the differential diagnosis of other conditions that may create the same sign I can think of sarcoma of the small intestine, nearly always multiple, and of Hodgkin's disease, affecting the mucosa by secondary involvement, which does not give a picture similar to the string sign. Cases run for years with some diarrhea, slight elevation of temperature and slow loss of weight. Many of them are lost as cases of psychoneurosis, because the nervous manifestations are common and the diarrhea insignificant. One finally discovers this radiographic sign and the diagnosis becomes obvious. In the original conception the disease was considered to be limited to the terminal ileum, but soon, thanks to Dr. Bargen's suggestion, the possibility of involvement of the upper ileum was suspected and soon cases were found in which the terminal and the upper ileum were involved. In an involvement of the upper ileum itself it is almost invariable that the terminal ileum also is involved, and any surgical resection that fails to remove the terminal ileum is very likely to meet with failure. In twenty-five cases picked to show the segmental distribution of the disease, the terminal ileum was almost always involved. The disease transcended the ileocecal valve in only one case. It had passed over into the cecum. After Harris's publication (from San Francisco), I was on the lookout for cases of high intestinal involvement, and soon ran into cases involving more extensive segments of the ileum, and to cases involving the whole ileum and even the jejunum. I have observed four atypical cases. These cases were seen at exploratory laparotomy. The terminal ileum was seen as absolutely rigid as a hose pipe, but there was massive involvement of segments of the transverse colon and descending colon, and also in certain instances of the ascending colon. The patients were too sick for resection, with temperatures of 103 and 104 F. These cases have gone on to spontaneous recovery. I cannot classify them as ileitis. The patients had no diarrhea but only two or three movements a day. It may be necessary to revise or add to the present notion of ileitis and colitis by recognizing a combined disease in which the terminal ileum and segments of the colon are involved.

DR. JOHN L. KANTOR, New York: I am grateful to Dr. Weber for the term "twisted cord" appearance as an alternative to the "string sign" nomenclature for the characteristic x-ray appearance. I wholly agree that, by using the colon enema in such a way as to fill the terminal ileum deliberately, much valuable information can be gained. To Dr. Case all owe a debt of gratitude for his pioneer work in the radiology of the colon. He made a good suggestion, namely, to start the examination early in the day so as to give enough time for study of the small intestine. Dr. Bassler quite properly pointed out that these are the end results of the lesions of the disease and that operations, for example, may not be the whole story in the way of therapy. Dr. Crohn deserves credit, as always, for calling attention to this disease, and it is gratifying to know that he has accepted these roentgen observations.

THE EFFECT OF VITAMIN A ON THE COMMON COLD

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Vitamin A is often called the anti-infective vitamin, and this anti-infective value is believed to be especially operative in the prevention of bacterial invasion of mucous membranes.¹ Because of this alleged protective value, substances containing this vitamin are being advocated extensively, without adequate experimental proof, for prophylaxis against the common cold. The common cold and its complications are of such great importance that it seemed desirable to determine whether or not the addition of vitamin A to the diet has any effect on the prevention, duration and severity of the disease. In the present communication we are reporting the results of such a study. Recently, somewhat less detailed and shorter studies have been reported in infants by Wright² and by Hess and his co-workers.³ Our own investigation has been limited to observations made on young adults.

From a practical standpoint, it seemed far more important to compare individuals on average diets supplemented by vitamin A with those on such diets alone than to attempt the almost impossible and far less useful comparison between individuals receiving adequate amounts of the vitamin and those on an imposed deficiency diet. Although the average American dietary contains an appreciable amount of vitamin A, it is quite possible that at times there may be a deficiency of small though definite subclinical proportions.⁴ Our aim has been to determine whether the addition of substantial amounts of vitamin A to average, perhaps somewhat deficient, diets would significantly influence the incidence, severity and duration of colds.

METHODS

Material.—At the beginning of the study the experimental group consisted of 241 adult volunteers. Of these, 143 were first and second year students in the Western Reserve University School of Medicine; sixty were first and second year students in the School of Nursing, fifteen were head nurses in the Lakeside Hospital, and twenty-three were members of the profes-

Read before the Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

From the H. K. Cushing Laboratory of Experimental Medicine, Department of Medicine, Western Reserve University, and the Medical Service, Lakeside Hospital.

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sional and technical staff of the hospital. About one third were women. The mean age was 24 years. At the end of the experiment the total number had fallen to 211.

Duration of Experiment.—Vitamin administration was begun in the latter part of January 1933 and was discontinued the first week of March 1934. The period of observation of colds began Feb. 4, 1933, and ended March 3, 1934, a total of fifty-six weeks.

Administration of Vitamins.—Vitamin A was given in the form of halibut liver oil.⁵ In view of the well

WEEKLY REPORT ON RESPIRATORY INFECTIONS		
FOR WEEK ENDING	Check	No Remarks
NO SYMPTOMS	-	
SYMPTOMS		
1 Nasal discharge ..		
2 Nasal obstruction		
3 Cough		
4 Sputum ..		
5 Sore throat		
6 Fever, thermometer ..		
7 Aching ..		
8 In bed		
DATES Onset illness		Termination
Maternal taken Yes No		
NAME,		

Fig. 1—Card sent out weekly for collection of data regarding respiratory infections

recognized fact that vitamin A is stored for some time in the tissues of animals and man, the material was given for greater convenience weekly rather than daily. Each weekly dose contained 200,000 international units (I. U.) of vitamin A and definitely exceeded the usual amount taken in a week when the vitamin is prescribed on the customary daily basis. In addition, each dose of halibut liver oil contained 4,000 international units of vitamin D.

Although the fact of storage is generally accepted, it was considered necessary to demonstrate experimentally in animals that vitamin A in sufficient amounts could be given at weekly intervals and still protect against manifestations of deficiency. For this purpose twenty-five white albino rats between the ages of 3 and 4 weeks, weighing from 40 to 50 Gm., were selected. The dosage of vitamins given to these rats was proportionate by body weight to the amount administered to the volunteers.

The rats were divided equally into five groups and all were fed Sherman's basal vitamin A-free diet⁶ ad libitum throughout the period of observation. A weigh-back on their diets was made daily. Animals in group 1 received no vitamin A, but each was given 0.5 international unit of vitamin D daily. Each animal in group 2 received a daily supplement of 15 international units of vitamin A and 0.5 international unit of vitamin D. Each rat in group 3 received a single weekly dose of 105 international units of vitamin A and 3.5 international units of vitamin D. In group 4 each animal received at two week intervals a dose of 210 units of vitamin A and 7 units of vitamin D. In group 5 each rat was given a single dose, at intervals of three weeks, of 315 units of vitamin A and 10.5 units of vitamin D. The vitamin supplement was dropped

directly into the mouth of each animal in such a fashion as to insure his receiving the entire amount. All animals were weighed every other day and they were examined at frequent intervals for any manifestations of disease.

By the end of the sixth week the rats in group 1 (those receiving no vitamin A) failed to maintain their initial gain in weight and began to eat less than previously. Two weeks later they had definite manifestations of vitamin A deficiency characterized by a generally unkempt appearance, circumorbital swelling, and infection of the eyes; by this time they had lost 30 per cent of their body weight and were eating only one half of the maximum basal diet they had taken previously. All animals in the other four groups continued to grow and to gain weight normally and at the end of the eighth week, when the experiment was terminated, showed no evidence of disease.

Selection of Groups.—The volunteers were divided into groups A, B and C. Both random sampling, to avoid the error arising from an unequal distribution of so-called cold susceptibles, and probable continued equality of groups were sought for by placing individuals in the three groups as follows: On the basis of scholastic standing and beginning with the highest student in a given class, individuals were assigned in turn to each group; i. e., first man in his class to group A, second man to B, third to C, fourth to A again and so on. The remaining thirty-eight were selected at random by alphabetical draw. The groups at the beginning contained: A, seventy-six; B, eighty-three; C, eighty-two. At the end of the experiment they numbered respectively sixty-seven, seventy-one and seventy-three. Group A received halibut liver oil. The other two were controls: one, group B, was given the viosterol equivalent of the halibut liver oil administered to group A, and the other, group C, received plain maize oil. Special efforts were made to have individuals taking part in the experiment ignorant of their group in order to prevent a prejudiced point of view. To aid

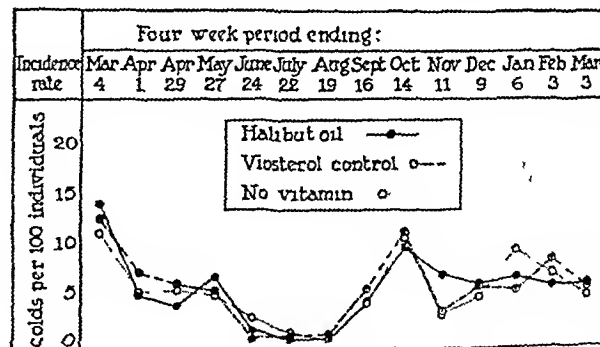


Fig. 2—Incidence rate of colds in test and control groups. The figure shows the weekly percentage incidence averaged for successive four week periods.

in this, the material was well disguised in a small amount of tomato juice (which contains only a little vitamin A).

Collection of Data.—At the beginning of the experiment a careful presentation of the problem and a detailed discussion of the character of colds and their symptoms was entered into with the entire group. Although all taking part had a medical point of view, each factor in detail was clearly defined. Such conferences were renewed from time to time throughout the experiment. For actual collection of data regarding

⁵ This experiment was made possible through the courtesy of Dr. C. E. Bills of Mead Johnson & Co., who placed large quantities of halibut liver oil and viosterol at our disposal.

⁶ Sherman, H. C., and Smith, S. L. The Vitamins, New York, Chemical Catalog Company, 1931, p. 258.

7. The test group was made slightly smaller to reduce cost.

respiratory infections, cards (fig. 1) were sent out each Monday for the week immediately preceding. Whenever symptoms were reported, the individual was seen personally and all details were carefully checked.

Definition of Common Cold.—For this study we have included mild to moderately severe infections of the upper respiratory tract of the typical type usually called "common cold," characterized by definite coryza, rhinitis and nasopharyngitis. We have not included simple follicular pharyngitis, follicular tonsillitis, influenza (so classified on the basis of severe constitutional reaction with prostration and minimal involvement of the upper respiratory tract), hay fever, and short respiratory attacks of a duration of twenty-four hours or less.

RESULTS

Effect of Vitamin A Supplement on Incidence of Colds.—In analyzing the incidence of colds in the vitamin A group and in the controls, the problem has been approached from two angles. First, a comparison has been made of the weekly incidence rates in the groups as a whole, all participants in the experiment being used, and, second, comparisons have been made of the individual attack rate in those subjects only who completed the whole fifty-six weeks period of study. As noted, the three groups did not remain at full strength. The drops in groups A, B and C were respectively seventy-six to sixty-seven, eighty-three to seventy-one, and eighty-two to seventy-three, or a total drop from 241 to 211. This loss was fairly evenly scattered throughout the experimental period.

The attack rate was calculated on the basis of the number of colds per hundred individuals weekly. The results are shown graphically in figure 2, in which the incidence rate is charted as the weekly percentage incidence averaged for successive periods of four weeks. The total number of colds entering into this analysis is 753. Examination of this figure shows that the three curves are essentially identical. In other words, no evidence is forthcoming from these data that supplemental vitamin A has any influence on the incidence rate of colds. The curve is of interest in that it shows the sharp epidemic peaks noted by Townsend⁸ and other observers in the early fall and winter months.

In order to compare the average individual incidence of colds in the vitamin A group with that in the control groups, it was necessary to include only individuals who participated in the experiment throughout the entire period of fifty-six weeks and whose final colds were complete when we terminated the study. The results of the analysis showed the average number of colds per individual to be: group A, 3.42 ± 0.14 ; group B, 3.56 ± 0.13 , and group C, 3.06 ± 0.15 . When all who completed the experiment are included, with an increase in the number of individuals respectively in the three groups of nine, eight and five, the average individual incidence is: group A, 3.41; group B, 3.53, and group C, 3.25. This is further clean-cut evidence that supplementary vitamin A in excess of that contained in the usual dietary has no influence on the incidence of colds. These results are in entire harmony with the observations of Hess and his co-workers³ and of Wright.²

Influence of Vitamin A Supplement on Severity of Colds.—In a disorder as mild as the common cold, determination of relative severity is a difficult task. In attempting this, previous observers have used some or

all of the following standards: fever, malaise, absence from school or work, going to bed, complications and duration. The following three criteria have been selected arbitrarily for this study: (1) aching or malaise, (2) fever at onset as recorded by a thermometer, (3) going to bed. The factor of duration will be considered separately and in general is not necessarily related to severity of infection. When a cold was reported with one only of the three criteria noted, it was designated +, the presence of any two of these led to the designation ++, and when all three were present the cold was called +++.

Of the total of 753 colds reported, 158, or 21 per cent, were classified as + to ++++. The distribution of these relatively severe colds in the groups is shown in table 1. It will be noted that their incidence is essentially identical in the three groups. This is true not only of severe colds as a whole but also of the three individual categories. Although the number of these relatively severe colds is comparatively small, their strikingly similar incidence in the three groups points strongly to the probability that supplementary feeding of vitamin A leads to no significant reduction of colds of relatively severe types.

TABLE 1—Distribution of Relatively Severe Colds*

Severity of Cold	Number of Colds		
	Group A Halibut Liver Oil	Group B Vioosterol Control	Group C No Vitamin
+	29	26	27
++	18	15	17
+++	8	10	8
Totals	55	51	52

* Severity determined on basis of presence of (a) aching or malaise; (b) fever, with thermometer, (c) going to bed; + indicates any one of foregoing, ++ any two, and +++ all.

Effect of Vitamin A Supplement on Duration of Colds.—Precise information regarding the duration of colds is notoriously difficult to secure. Some individuals consider that their colds have terminated as soon as their relatively acute symptoms are over, others have a substrate of mild chronic nasopharyngitis, and still others have a definite background of chronic sinusitis. It took us several weeks at the beginning of the study to realize our difficulties and to educate our experimental subjects in the matter of accurate reporting of termination.

Our criteria for determination of duration were: In the case of subjects who have had a background of chronic nasopharyngitis or sinusitis, a new acute infection was considered terminated at the point when, in the opinion of the subject, it had receded to the approximate level of the usual chronic symptoms. Each decision in this group generally required repeated careful consultation with the individual concerned. The numbers of these subjects in each group were respectively nine, nine and ten. One point that was most difficult to settle in such individuals was the differentiation between mild exacerbations of a chronic condition and true new infections. For all others in the experiment, a cold was considered as ended when all symptoms had completely disappeared. Such symptoms often arose from secondary manifestations as purulent nasopharyngitis or sinusitis, laryngitis, tracheitis or bronchitis. The mean duration of colds in the control groups with the exception to be noted below was 12.5 days. This

is 2.5 days shorter than the duration of colds in students as reported by Doull.⁹ It is possible that this difference may be accounted for on the basis of our exclusion of symptoms of a definitely chronic nature from the duration of acute colds.

As noted, supplementary feeding with vitamin A has had no influence on the incidence or severity of colds. The results are unequivocal. In the matter of duration, the experimental data have been somewhat more difficult of interpretation. When the results were first analyzed, it became apparent at once that the colds in

TABLE 2—Distribution of Colds of Varying Lengths*

Length of Cold	Group A		Group B		Group C	
	No. of Colds	Per centage	No. of Colds	Per centage	No. of Colds	Per centage
10 days or less	151	65.0	150	60.8	129	64.0
11 to 20 days.	68	28.4	72	27.6	75	31.4
21 to 30 days.	13	5.6	20	7.6	21	8.8
30 days or longer	2	1.0	10	4.0	14	5.8
Totals....	232	100.0	261	100.0	239	100.0

* Number and percentage incidence are shown

the vitamin A group were consistently shorter than those in the two control groups. When all completed colds (732) were included, the mean average duration was found to be: group A, 9.59 ± 0.12 ; group B, 11.07 ± 0.22 , and group C, 12.51 ± 0.23 .

These preliminary figures were taken to Dr. G. E. Harmon of the Department of Hygiene and Bacteriology for examination and he reported that they were significant statistically, provided duration had been determined on the same criteria and with equal accuracy in all groups. With his assistance we proceeded to analyze the data in detail from several angles as

TABLE 3—Relationship of Duration of Colds to Number of Attacks per Individual

Indls Having	Group A				Group B				Group C			
	No. Indls	Total Colds	Average Duration		No. Indls	Total Colds	Average Duration		No. Indls	Total Colds	Average Duration	
No colds	1	0	0		1	1	0		2	0	0	
1 cold	6	6	5.33		7	7	0.29		13	13	11.00	
2 colds	12	24	9.17		8	16	15.00		14	28	10.75	
3 colds	10	30	7.20		12	36	8.89		14	42	10.40	
4 colds	15	60	11.00		17	68	11.06		12	48	13.21	
5 colds	6	30	7.80		13	65	10.14		6	30	14.73	
6 colds	7	42	10.48		3	18	11.33		4	24	10.83	
7 and 8 colds	1	7	0.14		2	14	0.70		3	23	13.85	
Totals and av.	58	199	9.38 ± 0.30		63	224	10.88 ± 0.36		68	208	12.14 ± 0.43	

described in an effort to discover whether this apparent difference in duration was consistent throughout or whether it was associated with some particular extenuating factor.

When the percentage incidence of colds of varying lengths in the three groups was studied (table 2), it was found that colds of intermediate length (from eleven to twenty days) occurred with about equal frequency in all groups and that the number of short colds (ten days or less) was greatest, and of long colds (twenty days or longer) least, in group A. This was more or less expected and merely supports the finding that colds in group A were of somewhat shorter average duration than in groups B and C. That this is equally

true in subjects having one cold or several during the period of observation is brought out in table 3, which is based on 631 colds occurring in 189 individuals. Here it will be noted that, irrespective of the number of attacks suffered by the individual, the average duration of the colds was always shorter in the group taking vitamin A.

When the factor of season was investigated, interesting and possibly pertinent information was obtained. For this analysis, colds were classified arbitrarily as winter colds when beginning in the periods (a) Feb. 4 to April 29, 1933, and (b) Nov. 12, 1933 to March 3, 1934; spring and summer colds, those arising in the period April 30 to August 19, and fall colds, those included in the period August 20 to November 11. The time periods designated were selected on the basis of the fairly well demarcated incidence peaks as shown in figure 2. Only the colds of those who completed the experiment and whose colds had ended have been included. Table 4 shows the results.

TABLE 4.—Relationship of Duration of Colds to Time of Year When They Occurred

Period of Year	Group A 58 Individuals		Group B 63 Individuals		Group C 68 Individuals	
	Number of Colds	Average Duration	Number of Colds	Average Duration	Number of Colds	Average Duration
1st winter period Feb. 4 Apr. 29	69	7.36 ± 0.41	102	9.23 ± 0.47	110	12.45 ± 0.82
Spring and summer colds Apr. 30 Aug. 19	26	10.04 ± 0.70	0.45	10.80 ± 0.93	0.40	11.50 ± 1.24
Fall colds Aug. 20 Nov. 11	54	11.04 ± 0.77	0.93	11.21 ± 0.77	0.92	11.88 ± 0.74
2d winter period Nov. 12 Mar. 3	60	9.58 ± 0.46	103	12.47 ± 0.73	105	12.90 ± 0.80
Totals and averages	199	9.38 ± 0.30	214	10.88 ± 0.36	208	12.14 ± 0.43

If the first group of winter colds is left out of consideration for the moment, certain definite facts appear: (a) Spring and summer colds and fall colds are of approximately the same duration in all groups. (b) Winter colds in the group receiving vitamin A are shorter by nearly three days than those in the two control groups. If it were not for the fact that the observations for the first winter period, particularly with respect to the viosterol control group, are not quite consistent with those in the second winter period, these data would lead logically to the conclusion that vitamin A, as given, shortens the duration of colds in winter but has little effect on summer colds. It is true that the colds in the group receiving vitamin A were distinctly shorter in the first winter period, but colds in the viosterol control group, though longer than these, are definitely shorter than those in the group receiving no vitamin. To be consistent, colds in the last two groups should have been of equal length, as they have been through all other periods. As suggested, during the first winter period our data on duration may have been somewhat less exact than later when we had thoroughly educated our subjects in the matter of accurate

⁹ Doull, J. A.; Herman, N. B., and Gafafer, W. M. *Am. J. Hyg.* 17: 536 (Mar.) 1933

reporting of termination. This may be an explanation of the discrepancy but should be accepted with caution, as errors in reporting should have been equalized by random selection. Nevertheless, in spite of this inconsistency the evidence that vitamin A shortens colds moderately in the winter months must be considered suggestive.

Infections Other than Colds.—In the period of observation, ninety-five infections of the upper respiratory tract other than colds occurred in the group. These included acute attacks of tonsillitis, pharyngitis, laryngitis, bronchitis and influenza, of which we had only two cases in the period of observation. They were not studied in detail. They are of interest mainly in the fact that their distribution in the three groups was approximately equal, being respectively thirty-four, thirty-two and twenty-nine, thus indicating that supplemental vitamin A has no influence on their incidence. These results are in harmony with the observations reported for children by Hess and his co-workers.³

SUMMARY AND COMMENT

With a view to ascertaining whether supplementary feeding with vitamin A would influence the incidence, severity or duration of colds, a group of young adult volunteers, numbering 241 at the beginning of the experiment and 211 at the end and divided into test and control groups by random selection, has been kept under observation for a period of fifty-six weeks beginning February 1933. Vitamin A in the form of halibut liver oil was administered in excess in large weekly doses to the test group. That this more convenient method of giving the vitamin weekly is as effective as when given daily was demonstrated experimentally by the successful protection of rats against characteristic vitamin A deficiency when the material was administered in adequate amounts at intervals of one, two and three weeks.

The results in regard to incidence indicate clearly that supplemental feeding of vitamin A in no way reduces the number of colds. The weekly attack rate as charted in figure 2 shows an incidence curve that is essentially the same in the vitamin A group as in the controls. The average incidence rate per person for the total period of fifty-six weeks was practically identical in the three groups, being 3.41 colds per person for the vitamin A group, 3.56 for the viosterol control group and 3.25 for the group receiving no vitamin at all. Respiratory infections other than colds also appeared with the same frequency in the three groups. Vitamin A failed to influence significantly the relative severity of colds. Although severity in colds is not a conspicuous finding, when judged by the standards adopted, 158, or 21 per cent, of the total colds observed fell into this class. Of these, almost exactly equal numbers fell into the test and control groups.

With respect to duration, the experimental data have been less easy of interpretation. Colds occurring in spring, summer and fall showed very little difference in length in the three groups. In winter infections, however, there was definite shortening, by two or three days, of the average duration of colds occurring in the group taking vitamin A. Certain inconsistencies in our results, as noted, have made us feel the necessity for caution in drawing positive conclusions. The evidence, however, is at least suggestive that vitamin A has a slight shortening effect on colds occurring in the winter. Whether this difference in winter as compared with

spring, summer and fall bears any relationship to the reduction of leafy vegetables in the diet in the winter months with consequent decrease of provitamin and whether, if confirmed, it represents a seasonal deficiency analogous to that associated with avitaminoses in general is a matter for speculation.

SUMMARY AND CONCLUSIONS

1. The effect of vitamin A on the incidence, severity, and duration of the common cold has been studied.
2. It has been shown that vitamin A in the form of halibut liver oil may be administered effectively in large single weekly doses.
3. Vitamin A has no effect on the incidence or severity of colds.
4. Suggestive but not conclusive evidence indicates that vitamin A shortens colds slightly in the winter months.

ABSTRACT OF DISCUSSION

DR. K. K. CHEN, Indianapolis: In presenting their almost negative results with vitamin A for the treatment of the common cold, Drs. Shibley and Spies have rendered a great service to the medical profession. For some years vitamin A was supposed to prevent infection, but evidence is accumulating to show that the claim is not justified. It was shown that vitamin A is useless in the treatment of pneumonia or tuberculosis, in the prophylaxis against respiratory infections among infants and school children, and in the reduction of incidence of otitis media in scarlet fever. Drs. Shibley and Spies have now concluded that vitamin A has no bearing on the number or severity of common colds. Whether or not it shortens the duration of colds in the winter months is a question requiring additional proof.

DR. TOM D. SPIES, Cleveland: Dr. Shibley and I found out that one can protect rats, even in their most susceptible period of life, against vitamin A deficiency by giving a large amount of the vitamin at varying weekly intervals. That may or may not be of clinical importance. We make no claim. We don't even advise pediatricians to try it. I do happen to know that some babies do not like cod liver oil, do not like other preparations, and therefore do not take ample quantities. At the present time there are new methods. The potencies have been so increased that one could struggle perhaps with a weekly or biweekly dose a little easier than with a daily dose. However, neither do we make this as a recommendation.

DR. WILLIAM J. KERR, San Francisco: The authors suggest that vitamin A has little value in protecting the nose from colds. The autumnal rise in the incidence of colds was not prevented by the use of vitamin A, which is abundantly available during the summer and fall months in the dietary. At the University of California we have not been able to transmit the common cold to susceptible persons, even though they are known to have many colds during the year, so long as we keep the environment constant and at a comfortable level. It has seemed to me that probably the defect or fault is a constitutional one and is connected with the autonomic nervous system. These individuals were unable to respond normally to the environment and fail to respond when the cooling power of the air is suddenly increased.

DR. RUSSELL L. HADEN, Cleveland: Dr. Shibley is very much interested in the reproduction of the common cold in the chimpanzee. I wonder whether he has tried the effect of vitamin A on the experimental production of the common cold in the chimpanzee.

DR. GERALD S. SHIBLEY, Cleveland: I must answer Dr. Haden's question in the negative. The main reason is that chimpanzees cost from \$350 to \$700 and that therefore one would have too few animals for results of statistical significance. We have, as a matter of fact, kept our animals up on all vitamins but they still catch colds just as human beings do. I am rather interested in Dr. Kerr's remark about the noninfectiousness of colds. I was associated for a number of

years with Dr. Dochez in attempts at the experimental transmission of colds. We were successful in a large proportion of cases, tried not only with chimpanzees but also with human beings. It is true that we did not have the air conditioning but we had thermostatic control. There is one question which I should like to ask which is rather interesting in the light of Dr. Kerr's statement that one has no chilling, under the conditions of his experiments, and therefore gets no colds. It is a fairly well known fact that explorers who have gone to the north pole for as long as two or three years, in spite of exposures to cold, to fatigue, and to practically every type of elemental exposure, never get colds. The minute they hit civilization, where colds are present, back come colds again.

A NEW BIOLOGIC TEST FOR HORMONES IN PREGNANCY URINE

PRELIMINARY REPORT

A. E. KANTER, M.D.

C. P. BAUER, M.D.

AND

A. H. KLAUANS, M.D.

CHICAGO

It has been known that male fish of certain species undergo color changes during the breeding season and develop what is known as the "wedding dress." These chromatophore reactions have been developed artificially by stimulation with various hormone preparations.¹ Following the same principle it was thought that analogous reactions might be obtained on female fish of species that have an externally visible oviduct. Tozawa² found that males of the Japanese bitterling (*Acherlognathus intermedium*) developed a chromatophore reaction to hormones injected only during the breeding season, April 15 to July 1. In 1932 Fleischmann and Kann³ reported that female bitterlings show an enlargement of the ovipositor following injection of an estrogenic preparation (Progynon) in doses of from 40 to 120 mouse units, while physiologic solution of sodium chloride and an anterior pituitary extract yielded no reaction. These authors claim a lengthening of the oviduct with estrogenic substance during the quiescent period. In 1933 Szusz⁴ tested female bitterlings with boiled and unboiled urine from pregnant women, male urine, estrogenic substance (Progynon and Hogival), and anterior pituitary extract (Glandu-antin), 10 cc. of each to 1 liter of water in which the fish are placed. During the breeding season forty-eight fish were tested and all showed lengthening of the ovipositor in from thirty-six to seventy-two hours with both the boiled and the unboiled urine. Six fishes tested with anterior pituitary extract showed no changes. Urine from twenty nonpregnant females gave twelve positive and eight negative reactions. Male urine caused some lengthening in seven of the thirty-seven tested, greater lengthening in twenty-two instances, and no reaction in eight. This author tested twenty-two fish

from July 1 to August 15 and all gave negative reactions. Szusz does not know what is responsible for the reaction. He concluded that full lengthening of the ovipositor takes place in seventy-two hours, that the test can be positive only during the breeding season, that male urine may cause a positive reaction, and that a negative reaction during the breeding season is absolutely indicative of the absence of pregnancy.

The senior author felt that the possibilities of the female bitterling test deserved further investigation. After sporadic attempts at testing on the various problems associated with this research, the results became so confusing that it was felt tests could not be conducted along scientific lines until the fish had been standardized; i. e., it was necessary to know in advance whether each fish was capable of responding positively to urine from a known pregnant woman and that the same fish would not react to the urine from a patient who was not pregnant. Although a great number of tests have been carried out, only those run subsequent to Aug. 1, 1934, at which time our supply of fish was standardized, are included in this report. In this process of standardization it was found that some fish did not respond to pregnancy urine because of immaturity or stunted size, while others of apparently mature size were refractory to the active principle for some unknown reason. Because of the number of fish that fell in this classification, it is imperative that this standardization process be carried out. After a positive test it requires from fourteen to twenty days for the ovipositor to return to its normal length, during which time the fish cannot be used for testing purposes.

TECHNIC

A previously standardized fish is put in a two quart bowl which contains one quart of water at the proper temperature, about 75 F. The fish is observed to make certain that the oviduct is not beyond normal limits. Four cc. of the urine to be tested is put into this water. The fish is observed at twenty-four hour intervals. If the test is found to be positive after the first twenty-four hours the test is discontinued; if negative, it must be carried out for seventy-two hours before a definitely negative report may be given, in spite of the fact that about 80 per cent of our positives were positive at the end of the first twenty-four hours. Normally the oviduct is about 2 mm. in length and reaches less than half the distance to the end of the ventral fin. With a positive reaction the ovipositor reaches past the edge of the ventral fin or to a length of 15 to 25 mm. After the test is completed the fish is put into a tank for recovery and left for from two to three weeks in order to allow for the regression following the positive reaction. It may then be used for other tests.

RESULTS

At the outset it was deemed advisable to run the fish tests parallel to Friedman tests in order to determine the relative merits of the two. The laboratories of the Presbyterian and Mount Sinai hospitals graciously cooperated with us in this work by giving us urines and reports on their Friedman tests. To date we have thirty-one such tests, with twenty-seven absolute checks and four discrepancies between the two tests. The four cases in which there were differences of result are as follows:

1. An ectopic pregnancy, ruptured, proved at operation. Fish test positive. Friedman test negative.

Read before the Chicago Gynecological Society, Nov. 16, 1934.
From the Obstetric and Gynecologic Clinic of Prof. N. S. Heaney, Rush Medical College of the University of Chicago.

1. Saphir, William: Artificial Production of the "Wedding Dress" in *Chrosomus Erythrogaster*, *Proc. Soc. Exper. Biol. & Med.* 31: 864-866 (April) 1934.

2. Tozawa, Tomiya: Experiments on the Development of the Nuptial Coloration and Pearl Organs of the Japanese Bitterling, *Folia Anat. Japon.* 7: 407-417, 1929.

3. Fleischmann, Walter, and Kann, Susanne: Ueber eine Funktion des weiblichen Sexualhormons bei Fischen (Wachstum der Legeröhre des Bitterlings), *Arch. f. d. ges. Physiol.* 230: 662-667, 1932.

4. Szusz, Ferenc: Researches Conducted with *Rhododus Amarus* for Determination of Early Pregnancy, *Orvosi Hetil.* 77: 905-906 (Oct. 7) 1933; *Untersuchungen mit Bitterlingen zur Erkennung der Schwangerschaft*, *Monatschr. f. Geburtsh. u. Gynäk.* 66: 292-296 (March) 1934.

2. Woman, aged 51; three months amenorrhea with subsequent menstruation. Fish test positive. Friedman test negative.
3. Patient four days beyond expected date for menstruation. Sterile five years. Fish test negative. Friedman test positive. Pregnancy still unproved. Later fish test positive.
4. Patient four days past expected menstruation. Fish test negative. Aschheim-Zondek test (commercial laboratory) negative. Six days after expected menstruation, fish test negative, Friedman test positive. Twelve days after expected period, fish test negative. Histologic studies of curettage material revealed the presence of a very early pregnancy.

There have also been tests run on five ectopic pregnancies proved at operation, which have all been positive but which had not been checked against the Friedman test.

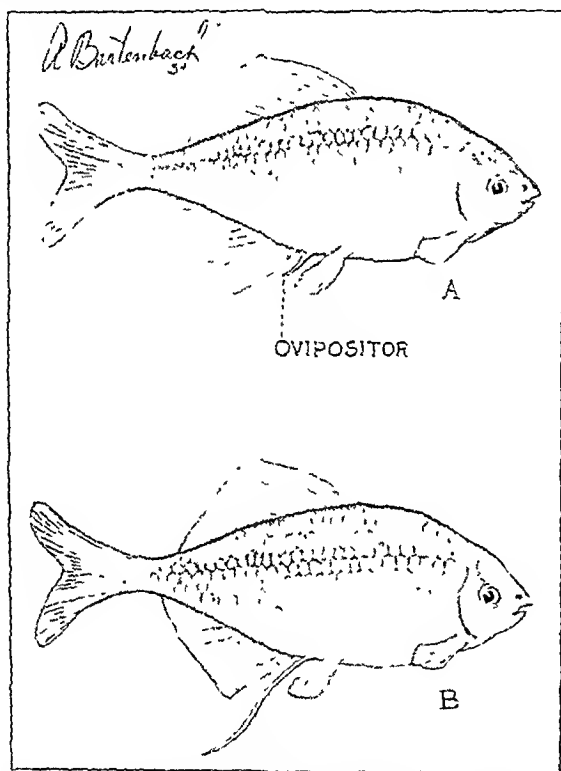
COMMENT

We believe that we have a test for some element which exists in excess in the urine of pregnant women, most probably estrogenic substance. From a study of the literature and its correlation with our observations such

Our results will probably be more consistent and better classified when we have developed our technic both for handling the fish and for the actual carrying out of the tests. This test will prove of clinical value with advantages over the Aschheim-Zondek and the Friedman test. The fish are primarily cheaper than rabbits or mice, are easier to maintain because of the small amount of space, food and care required in their handling, and at the end of the test it is not necessary to operate on the experimental animal and destroy it, as the fish may be used repeatedly for testing purposes. Another point in favor of this test is the fact that most positive results are obtained in twenty-four hours, while the other tests must run from forty-eight to seventy-two hours.

Should our predictions prove correct, the fields of research that may be opened by such a test are virtually boundless. To cite a few problems that we contemplate attacking as soon as our supply of test animals becomes sufficiently numerous: quantitative determinations for estrogenic substance at periods of physiologic and pathologic variation (menopause, puberty, various stages in the menstrual cycle, so-called functional amenorrheas, menorrhagias and metrorrhagias, and feminizing and defeminizing tumors); quantitative tests in hydatidiform mole and chorionepithelioma; tests for the presence of excess hormones associated with fibroid tumors and malignant conditions; methods of assay for the retention of potency and standardization of commercial hormone products; tests for the differential diagnosis of ectopic pregnancy. It is very important that we determine at an early date the time during pregnancy when the positive test first appears and the time during the puerperium when the test becomes negative.

310 South Michigan Avenue — 55 East Washington Street.



Japanese bitterling (*Acheroglyphus intermedius*). A, normal, or negative test; B, positive test.

a conclusion can be reached. First, the authors referred to all had uniformly positive results with the use of estrogenic hormones and fairly consistent negative results with anterior pituitary extracts. Boiling destroys the gonadotropic factor of pregnancy urine, yet boiled urine gave results identical to those obtained with unboiled urine. At certain times in the life of a woman there is a physiologic excess of the follicular hormone, particularly during the onset of the menopause, and we take the liberty of citing case 2 as being illustrative of this, explaining the negative Friedman test on the basis that that test is dependent on the presence of an excess of anterior pituitary-like gonadotropic hormone rather than estrogenic substance. Several tests that we have carried out with some commercial products have given positives with estrogenic preparations and negatives with gonad-stimulating products.

Clinical Notes, Suggestions and New Instruments

SUPERIOR LARYNGEAL NEURALGIA RELIEVED BY OPERATION

DEAN H. ECHOLS, M.D., AND JAMES H. MAXWELL, M.D.
ANN ARBOR, MICH.

True neuralgia of the superior laryngeal nerve is a distinct clinical entity comparable to trigeminal and glossopharyngeal neuralgia. It is characterized by paroxysms of unilateral, lancinating pain, which radiates from the side of the thyroid cartilage to the angle of the jaw and sometimes to the ear. There is a trigger zone at the plica of the nerve in the pyriform sinus. The pain is ordinarily initiated by swallowing but can be produced by touching the trigger zone with a probe. The other objective finding is a pressure point on the skin surface just above and lateral to the thyroid cartilage, where the sensory branch of the nerve pierces the hyothyroid membrane. Between the seizures, which may last from a few seconds to a minute, the patient is free from discomfort. As in other cranial nerve neuralgias, the attacks usually appear after middle age and increase in frequency and intensity. As a rule there is no disease of the pharynx or larynx present. Treatment directed at a coexisting tonsillitis or laryngitis is as futile as the extraction of teeth for the *douloureux*. Superior laryngeal neuralgia should not be confused with the more or less constant pain due to a malignant condition or tuberculosis of the larynx and epiglottitis. The laryngeal crises of tabes must also be ruled out. It is most important to differentiate it from glossopharyngeal neuralgia, in which syndrome the pain radiates to the ear from the tonsillar region, which is the trigger zone.

From the Departments of Neurology and Otolaryngology, University Hospital.

Although there are few case reports, especially in English, this condition is probably not uncommon. It was first described by Avellis¹ in 1900. Hutter² reported a series of cases, some of which were treated by alcohol injection. Bailey³ and Harris⁴ both consider this to be a clinical entity, and the latter reported a case cured by alcohol injection.

Before our case is presented, the anatomy of this nerve will be abridged as follows: It is a branch of the vagus, arises from the ganglion nodosum, descends by the side of the pharynx behind the internal carotid artery, and divides into the internal and external branches. The internal branch, which is the one concerned in our report, pierces the thyrohyoid membrane and is distributed to the mucous membrane of the epiglottis, the base of the tongue, and the larynx above the vocal folds. The external branch is largely motor, supplying mainly the cricothyroideus.

REPORT OF CASE

N. K., a mechanic, aged 51, was admitted in September 1933. Nine months previously he began to have lancinating, burning pains in the left side of the neck, which radiated from the thyroid cartilage toward the angle of the jaw. At first the attacks were infrequent and lasted only a few seconds, but they gradually increased in number and duration. He was often awakened at night. Later he became aware that swallowing produced the pain. Considerable weight had been lost.

Observation showed that the patient was having attacks of excruciating pain about every twenty minutes. During the seizures, which rarely lasted over ten seconds, he would press the hand on the neck and hold the breath. Between the paroxysms he was comfortable but apprehensive.

Examination showed mildly inflamed tonsils, and a smooth, pea-sized nodule on the left vocal cord. The cords functioned normally. The cranial nerves were negative except for a tendency of the tongue to protrude to the right. The uvula rose in the midline on phonation and the gag reflex was present. Probing the tonsillar region caused no pain. Sensation was normal over the entire tongue and palate. There were no sensory changes on the neck, but there was a point, just above and to the left of the thyroid cartilage, which was painful to pressure. Tendon reflexes were normal. The physical examination showed little more than moderate peripheral arteriosclerosis and an adenomatous goiter. The blood pressure was 110 systolic, 60 diastolic. The Kahn test was negative. Urinalysis showed a trace of sugar on two occasions. Roentgenograms showed normal lungs and an increase in thyroid tissue with deposits of calcium.

Several days after admission, the vocal cord nodule was excised but without relief. Microscopic examination showed chronically inflamed and dilated mucous gland ducts. On two occasions complete relief from pain was obtained for a ten hour period by the injection of 1 per cent procaine hydrochloride into the region of the internal branch of the superior laryngeal nerve. The nerve was located by probing with the needle until the neuralgic pain was reproduced.

Under local anesthesia the hyoid attachments of the omohyoid and thyrohyoid muscles were sectioned (by J. H. M.) through a left collar incision at the level of the hyoid bone. The internal branch of the superior laryngeal nerve was exposed and identified by inserting a needle, typical pain being produced. Absolute alcohol was injected and a 1.5 cm. section of nerve excised. Microscopically, it showed congestion.

When last heard from, seven months later, the patient was in good health and completely free from pain.

COMMENT

The similarity of laryngeal, trigeminal and glossopharyngeal neuralgia was strikingly demonstrated by this case. The essential difference lies in the location of the trigger zone and the distribution of the pain. Our patient suffered paroxysms of

lancinating pain in the side of the neck which were brought on by swallowing. Between attacks he was entirely comfortable. Stimulating the nerve reproduced the pain, procaine injection gave temporary relief, and section gave permanent relief (seven months, plus).

As neuralgia frequently returns after section or alcohol injection of a peripheral nerve, it is possible that our patient may have a recurrence. In that event, section of the vagus nerve just above the ganglion nodosum will be considered. Although neuralgia should be looked on as a symptom and not a disease, the cause in most cases is unknown. The mild tonsillitis and small vocal cord cyst in our patient were undoubtedly incidental occurrences of no significance.

Council on Physical Therapy

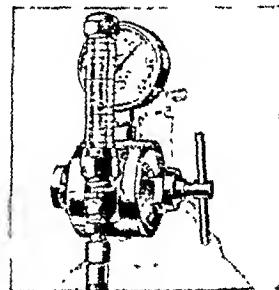
THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

AIRCO OXYGEN THERAPY REGULATOR ACCEPTABLE

The Airco Oxygen Therapy Regulator, Style 8481 (Float-Gage Type), is manufactured by the Air Reduction Sales Company, Jersey City, N. J. The purpose of this instrument is to control and to meter the flow of oxygen to a tent, chamber, catheter or inhaler.

This regulator is known as a double reduction or two stage regulator; that is, there are two stages of pressure reduction. In the first stage the pressure is reduced from cylinder pressure, which may be as high as 2,000 pounds per square inch, down to approximately 65 pounds per square inch. In the second stage this 65 pound pressure is reduced to a pressure the exact value of which is determined by the degree of strain imparted to the adjusting spring by means of the adjusting screw. (This second-stage pressure in no case is greater than approximately 15 pounds per square inch for a full scale reading of the float gage.) It will be seen that the oxygen entering the regulator, after passing through the glass wool filter, is permitted to discharge from the high pressure nozzle under control of the high pressure seat. The high pressure seat is carried in the short end of a valve lever the exact position of which is determined



Airco Oxygen Therapy Regulator.

by the position of the high pressure diaphragm. If the pressure beneath this diaphragm tends to fall at any time, the first stage control spring forces the diaphragm inward and consequently rocks the lever in such a manner as to permit a freer discharge of oxygen from the high pressure nozzle, so that the pressure beneath the diaphragm is again restored to its normal level. The reverse takes place in case the pressure beneath the diaphragm tends to become excessive. The result is that a rate of discharge from the nozzle is maintained equal to the rate of discharge from the regulator.

The oxygen leaves the high pressure stage of the regulator by means of two diagonal vent holes in the guide thimble and then through the annular space afforded between the low pressure seat and the low pressure valve lip, the latter being machined directly into the regulator body. The discharge through this low pressure valve into the low pressure cavity is under control of the low pressure diaphragm and the adjusting spring. Any tendency for the pressure in the low pressure chamber to drop is compensated by an inward movement of the diaphragm, a greater separation of the low pressure seat from the valve lip and consequently a greater discharge of gas into the low pressure cavity. The reverse is true for any tendency for the delivery pressure to increase.

1. Avellis, G.: Typische Form von Kehlkopfneuralgie, Munchen. med. Wehnschr. 47: 1592 (Nov. 13) 1900.

2. Hutter, F.: Ueber Neuralgien des Nervus laryngeus superior, Monatschr. f. Ohrenh. 63: 402 (April) 1929.

3. Bailey, Percival: Neuralgias of Cranial Nerves, S. Clin. North America 11: 61 (Feb.) 1931.

4. Harris, Wilfred: Neuritis and Neuralgia, London, Oxford University Press 1926.

The oxygen leaving the regulator passes directly into a flowmeter of the float-gage type in which the upward movement of the oxygen through a transparent, divergently tapered tube causes a stainless steel ball to rise to a level that is proportional to the rate of flow. The meter is graduated in liters per minute from 0.5 liter to 15 liters.

One unit was investigated in a clinic acceptable to the Council. The claims of the manufacturer were substantiated. The Airco Oxygen Therapy Regulator, therefore, is included in the Council's list of accepted devices.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

BORCHERDT'S DRI-MALT SOUP EXTRACT WITH ADDED POTASSIUM CARBONATE

Manufacturer.—Borchardt Malt Extract Company, Chicago.

Description.—Powdered, nondiastatic malt extract containing added potassium carbonate.

Manufacture.—Borchardt's Malt Soup Extract with added potassium carbonate (THE JOURNAL, Nov. 24, 1934, p. 1623) is further evaporated in "vacuum" at 71 C. to a powder and packed in cans.

Analysis (submitted by manufacturer).—	per cent
Moisture	3.8
Ash	2.9
Potassium carbonate.....	1.4
Fat (ether extract).....	0.0
Protein (N X 6.25).....	8.7
Reducing sugars as maltose.....	71.1
Dextrins (by difference).....	13.5

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—Used in the preparation of Keller's Malt Soup, also as a laxative modifier in the diet of obstinate cases of constipation in bottle fed babies.

VITAMIN D FORTIFIED PASTEURIZED MILK

Distributors.—

Amsterdam Dairy, Schenectady, N. Y.
Baker's Dairy, Boise, Idaho.
Blue Ribbon Creamery, Jackson, Miss.
The Guernsey Dairy Company, Owosso, Mich.
Lawrence Sanitary Milk & Ice Cream Co., Lawrence, Kan.
Peerless Dairy, Ltd., Windsor, Ontario, Canada.
M. H. Renken Dairy Co., Brooklyn.
Sanitary Dairy Company, Muskegon, Mich.
Sturtevant Ice Cream Company, Rock Island, Ill.
Superior Dairy Company, Davenport, Iowa.
Vitex Laboratories, Tacoma, Wash.
West Coast Dairy, Everett, Wash.
Williamsport Milk Products Co., Inc., Williamsport, Pa. (Hurr's)
Yakima Laboratories, Yakima, Wash.
York Sanitary Milk Company, York, Pa.

Description.—Bottled pasteurized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 400 U. S. P. X (Revised, 1934) vitamin D units per quart.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D.

Vitamins.—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used.

Claims of Distributors.—A vitamin D fortified, antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

NOURON

Manufacturer.—Nouron Products Corporation, New York.

Description.—Dried granules of a dough composed of soy beans, whole durum wheat flour and dried egg yolk.

Manufacture.—Washed soy bean is softened with steam, mashed and mixed with formula proportions of whole wheat flour and egg yolk in a macaroni mixing machine. The dough is mechanically kneaded, forced by hydraulic pressure through dies containing small apertures, cut into small pieces by revolving knives, and dried on trays by air currents. The method of manufacture is essentially that for the preparation of macaroni.

Analysis (submitted by manufacturer).—	per cent
Moisture	5.8
Ash	2.4
Fat (ether extraction method).....	9.3
Protein (N X 6.25).....	26.2
Reducing sugars before inversion as dextrose.....	2.0
Reducing sugars after inversion as dextrose.....	7.0
Sucrose (copper reduction method).....	4.8
Crude fiber	3.1
Carbohydrates other than crude fiber (by difference)...	54.2
Lipoid phosphoric acid as P ₂ O ₅	0.049
Calcium (Ca)	0.10
Phosphorus (P)	0.16
Iron (Fe)	0.0016
Copper (Cu)	0.0012
Manganese (Mn)	0.01

Calories.—3.9 per gram; 111 per ounce.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—

Better Dairy, Barnesville, Ohio.
Burnett Brothers Dairy, Bradenton, Fla.
Excelsior Sanitary Dairy, Frederick, Md.
Lorain Creamery, Lorain, Ohio.
George E. Lucas Dairy, Massillon, Ohio.
Med-O-Bloom Dairy, Kokomo, Ind.
Miami Home Milk Producers Assn., Miami, Fla.
Oatman Brothers, Inc., Aurora, Ill.
Peters Dairy, Michigan City, Ind.
The Producers Milk Co., Cleveland.
Riggle Dairy, Newcomerstown, Ohio.
St. Paul Milk Company, St. Paul.
Sunbury Milk Products Co., Sunbury, Pa.
Sunshine Farms, Inc., Lafayette, Ind.
Superior Dairy, Canton, Ohio.
The Sycamore Dairy, Haines City, Fla.
Victory Creamery, Emporia, Kan.
Virginia Dairy Company, Richmond, Va.
Warren County Dairy Assn., Warren, Pa.
Wendt's Dairy, LaSalle, N. Y.
Williamsville Dairy, Williamsville, N. Y.
Willowcreek Dairy, St. Clairsville, Ohio.
Winona Milk Company, Winona, Minn.
Woodlawn Farms Dairy, Kirkwood, Mo.

Licensor.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla extract. See Krim-Ko Chocolate Flavored Drink, THE JOURNAL, June 30, 1934, page 2187.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 29, 1934

THE MOTION OF GROWTH

Just what growth is, why it happens, how it can be influenced and why it is frequently abnormal are questions of great importance. This is especially true in relation to the great advances that have been made in our knowledge of nutrition. Heretofore most of the studies of growth have dealt mainly with the determination of changes in weight and height, the statistical analysis of these values and the correlation between them.

In a recent series of publications with the general title "On the Motion of Growth," Norman C. Wetzel has indicated clearly that there is little to be learned from more studies of growth that are limited in their scope to the measurement of absolute changes in weight and height alone. This investigator regards growth as a mode of motion and treats it by the methods of energetics and classic dynamics. This fundamental and original method of attacking the problem has necessitated critical redefinition of the phenomena of growth and metabolism.¹ Wetzel concludes that growth is determined by at least four distinct quantities, which he has termed the "resistance," "inductance," "permittance" and "net external work."² By the interplay of these four quantities the rate of growth is determined, and the latter is affected by alteration of any one or of more than one of these factors. The dependence of the rate of growth on these four quantities Wetzel has shown in a general mathematical expression.^{2a}

The most remarkable single contribution in this series of studies appears to be the finding of a direct dynamic relation between basal metabolism and growth.³ This is of great interest in the case of human beings, especially infants and children.⁴ Wetzel has developed the

first mathematical expression from which can be constructed ideal curves of both cumulative gain in weight⁵ and basal heat production^{3a} in man, from the early fetal to the adult stage. These studies make it possible to comprehend the difference between the metabolism of youth and of old age, whether in bacteria,^{3b} plants, tissues in vitro, amphibians,^{3c} birds, lower mammals, or man.⁶ In all these, according to this author, his fundamental equation is satisfied.^{2a}

Of significance is the establishment for the first time⁷ of a critical period in the life of a human being at birth, at which time there is a maximum rate of gain. Of still greater practical significance is the finding of a minimum rate of gain,⁵ rate of growth⁶ and basal heat production^{3a} at the end of the period of infancy, at which time there is "comparative rest in the motion of growth." These three curves remain at an unusually low level for several years following the end of infancy, offering an explanation for the well known poor appetite and failure to gain of children in this age period.

In these studies,⁸ starvation (in which the rate of growth is negative) and its effect on heat production have received the consideration they deserve. Wetzel has been led to conclude⁶ that excessive rate of gain during infancy and childhood is accompanied by an even greater rate of wasteful heat production. This may be a matter of serious concern in the case of the premature infant, for whom an excessive rate of gain may have grave consequences. By establishing a relationship between heat production and growth, Wetzel has thrown new light on data already available^{3c} and has given a new stimulus to the study of the fundamentals underlying the phenomenon of growth in general.

PUERPERAL GYNECOLOGY

In the development of obstetrics, few contributions have been so worthy of note as to constitute landmarks. Invention of the obstetric forceps, recognition of the cause of puerperal infection, the use of anesthesia, the development of the various technics of delivery, and recently the fundamental studies in endocrinology with their one important practical result, the pregnancy test, might be mentioned as of great significance. The uncertainties and hazards of childbirth have been materially reduced; the end results, however, as has been pointed out repeatedly, are still not all that they might be. The newer contributions to obstetrics are unfortunately not universally applied; the incidences of morbidity and of mortality remain all too high. Apart from these, what may be termed remote morbidity, and even mortality

1. Fundamental Relations and Quantities of Growth and Metabolism, Proc. Soc. Exper. Biol. & Med. 30:1044 (May) 1933.

2. (a) Introduction to the Energetics of Growth and Metabolism, Proc. Soc. Exper. Biol. & Med. 30:224 (Nov.) 1932. (b) Footnote 1.

3. (a) The Determination of and the Energetics of Human Basal Metabolism, Proc. Soc. Exper. Biol. & Med. 30:233 (Nov.) 1932. (b) Energetics of Bacterial Growth and Heat Production, *ibid.* 30:360 (Dec.) 1932. (c) The Connection Between Growth and Heat Production in the Amphibian *Bufo Vulgaris* from Fertilization to Metamorphosis, Proc. Nat. Acad. Sc. 20:183 (March) 1934.

4. Prolegomena to the Clinical Study of Human Growth and Metabolism, J. Pediat. 3:252 (July) 1933.

5. Human Growth in Weight from Early Fetal to Adult Life, Proc. Soc. Exper. Biol. & Med. 30:227 (Nov.) 1932.

6. Clinical Aspects of Human Growth and Metabolism, with Special Reference to Infancy and Preschool Life, J. Pediat. 4:465 (April) 1934.

7. Footnotes 5 and 6.

8. Further Analysis of Energetics of Heat Production, with Special References to Basal Metabolism During Prolonged Human Fasting, Proc. Soc. Exper. Biol. & Med. 30:354 (Dec.) 1932; Rate of Loss in Weight for Minimum Metabolism, *ibid.*, p. 358.

not immediately credited to childbirth, are factors in the health of the community that receive little attention. The poor health of the woman with relaxed perineal and pelvic structures for varying periods of years following delivery or the plight of the woman with lacerations and erosions of the uterine cervix, which later becomes the seat not only of infection but ultimately of malignant change, may often reasonably be charged against obstetrics. Thus it is recognized that the concern of the obstetrician really does not cease with delivery of the baby and survival of the mother; the subsequent health of the mother should in considerable degree be his responsibility also.

In the trend of the clinician to specialize, obstetrics and gynecology have branched apart. Perhaps this schism has become too great. Bubis¹ has pointed out the tremendous advantage to the parturient entailed in the immediate, or almost immediate, repair of the genital tract. Relaxation of the birth canal and laceration of the cervix are said to occur in at least 75 per cent of women who have borne one or more children. Often this may consist only of a small tear in the cervix, a slight displacement of the uterus, a tendency to cystocele or urethrocele, or a small laceration or slight relaxation of the perineum. But, as Bubis has emphasized, no such lesion is small enough to neglect, as nature rarely cures even these satisfactorily. Thus he has reported² 1,353 cases in which immediate or semi-immediate gynoplastic repair was done with a low morbidity rate and an unusually low mortality rate. The subsequent health of the parturients, relative to gynecologic complaints, was unusually good. In addition, a tremendous economic and sociological advantage accrued to these patients. Many of them, had they not had immediate surgical treatment, would have had to return to the hospital at some subsequent time for this attention; others would have gone through life with the ill health attendant on the damage resultant from parturition, in many cases with superimposed pathologic changes, which similarly often fail to be treated. The advantage to the patient of a single rather than of two or more sojourns in the hospital must be obvious. Bubis has estimated that the resultant economic saving to the community in his series of 1,353 cases alone, in the obstetric service of but a single hospital, amounted to more than \$450,000. This must be a small item, however, compared to the benefit to the health of these women, who in many cases were spared years of semi-invalidism. Only a comparatively small proportion of

patients find it expedient to return to the hospital for subsequent treatment; others go through years of needless physical disability.

These procedures, while advocated by many obstetricians, have been criticized by other obstetricians and by gynecologists on various grounds. The contusion of the tissues incident on parturition, it is said, makes the extent of the injury difficult to evaluate and renders the parts unsuitable for extensive repair. Hemorrhage is said to be more severe and the incidence of infection higher than normal. Other objections also have been raised. But the fact that in recent years a considerable number of obstetricians have adopted, with notable success, immediate or semi-immediate gynoplastic repair as a standard procedure indicates that in experienced hands (in those cases in which certain pathologic conditions and infections do not render it unsafe) the hazard of this type of surgery is not prohibitive and the advantages are considerable.³

AMINO ACID—GLYCINE—THERAPY IN THE MYOPATHIES

Recent investigations of the influence of amino acid therapy on the unbalanced creatine-creatinine metabolism associated with certain types of myopathies have yielded interesting results. These appear to be of particular significance when the alterations in creatinuria are related to the favorable prognosis in this clinical syndrome. Gibson and Martin¹ and Brand, Harris, Sandberg and Ringer² were among the first to recognize the importance of glycine³ in their investigations of the origin of creatine. The latter workers showed that the ingestion of this amino acid or of gelatin, which is high in glycine, by patients with progressive muscular dystrophy was followed by a large increase in the creatinuria. This significant relationship between glycine, a substance that the normal person can readily synthesize, and creatine, which has been demonstrated to play an important part in muscle function, suggested to several investigators that the prolonged administration of the amino acid might have an influence on the clinical and metabolic course of muscular dystrophy. Striking confirmation of this hypothesis was reported from the laboratory of Karl Thomas in Leipzig.⁴ Six cases were studied during eight experimental periods each of a few months' duration. The daily ingestion of from 15 to 20 Gm. of glycine increased the daily excretion of creatine to a value that was from 100 to 1,000

1. Bubis, J. L.: The Immediate Repair of the Cervix After Childbirth, *Cleveland M. J.* 17: 149 (March) 1918; The Relation of the Immediate Intermediary Operation to Modern Obstetrics, *Ohio State M. J.* 19: 259 (April) 1923; Ten Years' Experience with Gynoplastic Repairs of Old Lacerations Following Childbirth, with Report of 1,019 Cases, *Am. J. Obst. & Gynec.* 16: 57 (July) 1928; *Ohio State M. J.* 25: 109 (Feb.) 1929; The Interrelation Between Obstetrics, Gynecology and Abdominal Surgery, *ibid.* 25: 711 (Sept.) 1929; Physical and Economic Advantages of Gynoplastic Repairs for Old Lacerations at or Shortly After Childbirth, *J. Michigan M. Soc.* 30: 418 (June) 1931; *Tr. Sect. Obst., Gynec. & Abd. Surg., A. M. A.*, 1931, p. 128.

2. Bubis, J. L.: Puerperal Gynecology, *West. J. Surg.* 41: 411 (July) 1933.

3. Bishop, Eliot: Recent Advances in Obstetrics, Long Island M. J. 23, June-August, 1929. Wood, G. A.: Cervical Inspection and Repair, with Special Reference to Primary Cervical Repair, New York State J. Med. 30: 1150 (Oct. 1) 1930. Bloss, J. R.: Advisability of Repairing Old Lacerations of Cervix and Perineum at Time of Subsequent Delivery, *J. South. M. A.* 27: 439 (May) 1934; The Obstetrical Application of Surgical Progress, *West Virginia M. J.* 30: 337 (Aug.) 1934.

1. Gibson, R. B., and Martin, F. T.: *J. Biol. Chem.* 49: 319 (Dec.) 1921.

2. Brand, Erwin; Harris, M. M.; Sandberg, M., and Ringer, A. I.: Studies on the Origin of Creatine, *abstr. Thirtieth International Physiological Congress, Boston, 1929*, p. 29.

3. Glycine, which is amino-acetic acid, should not be confused with a photographic developer sold under the trade name of "Glycin," which is parahydroxyphenylamine-acetic acid and is poisonous.

4. Milhorat, A. T.; Techner, F., and Thomas, Karl: *Proc. Soc. Exper. Biol. & Med.* 28: 609 (Feb.) 1932. Milhorat, A. T.: *Deutsche med. Wchnschr.* 59: 169 (1933).

per cent higher than the previous creatinuria level. After a period of some weeks the creatinuria began to decrease despite the continued administration of glycine, falling finally to the former control level. Coincident with this diminished creatinuria there was an increased excretion of creatinine and an improvement in the patients' ability to retain ingested creatine. These interesting alterations in the metabolism were accompanied by remarkable improvement in the condition of the patients. Muscles that previously had felt tired now seemed refreshed and the patients often expressed the desire to make muscular movements that had not been possible for a considerable period. Interruption of the glycine treatment resulted in a gradual disappearance of the improvement, and the disease eventually returned to its previous status. Resumption of the glycine administration again resulted in the previously described improvement.

These important results have stimulated many clinicians to use glycine, with and without ephedrine, in the treatment of various types of myopathies. However, conflicting opinions have arisen regarding the various metabolic relationships and therapeutic effects following either glycine or glutamic acid therapy, the latter amino acid having also been found to be efficacious by some workers. This disagreement is probably due to a considerable extent to the failure to distinguish accurately the various types and stages of muscular dystrophy and to evaluate correctly those muscular atrophies which are secondary to pathologic lesions in the central nervous system. A good summary of this literature, together with an account of metabolic studies on thirty-four patients, representing eleven distinct types of myopathies and atrophies, has been recently presented by investigators of the Louisiana State University Medical Center.⁴ Either glycine or glutamic acid therapy was demonstrated to be capable of augmenting the creatinuria present in each of ten different types of cases. Concomitant with this increased excretion of creatine, an objective and subjective improvement was present, the magnitude of which was dependent on the nature of the myopathy. In general, the cases classified as primary myopathies and myasthenia gravis showed distinct clinical improvement, except in a few cases of the former type in which the disease had advanced to the stage of complete muscle degeneration. However, while some of the muscular dystrophies were greatly benefited, no objective improvement was observed in the neuromuscular atrophies, despite the fact that the creatinuria present was influenced by the amino acid therapy. In a few instances of the latter disease there was subjective improvement or merely an arrest of symptoms.

These investigations serve to emphasize anew the importance of the amino acid treatment in certain of

the myopathies, to add metabolic evidence of the differences existing among these various muscle diseases, and to elucidate the function and importance of creatine and creatine precursors in muscle physiology.

Current Comment

FEDERAL FOOD AND DRUGS ACT APPROPRIATIONS

For the enforcement of the federal Food and Drugs Act during the current fiscal year, which ends June 30, 1935, Congress appropriated \$1,161,477. Thus, Congress authorized the expenditure of less than one cent each for every man, woman and child in the United States to protect them during an entire year from the dangers of adulterated and misbranded food and drugs. The appropriation for the current year, too, shows a decrease as compared with the appropriation for the fiscal year ended June 30, 1934, which in turn was less than the appropriation for the preceding fiscal year. This apparent tendency to appropriate less and less money for the enforcement of the federal Food and Drugs Act seems hardly consistent with the increasing federal expenditures in other fields. Irrespective of the outcome of proposals to revise the federal Food and Drugs Act now in force, so as to increase its protective value, the Seventy-Fourth Congress, which convenes January 3, should not hesitate to make available funds sufficient to afford the utmost protection to consumers that is possible under the existing law. The officials of the Food and Drugs Administration will, it may be assumed, give to Congress facts on which it may form an intelligent judgment when it considers the appropriation for carrying on such activities. Elsewhere in this issue appears a résumé of the activities during November. These are but a slight indication of the good that this department, with sufficient support, might accomplish for the health of our people. There is much talk of new legislation. Why not make even more effective the provisions we now have for this service?

Association News

MEDICAL BROADCASTS Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be delivered by Dr. W. W. Bauer. The titles will be as follows:

- January 3. Housing and Health.
- January 10. Diphtheria Must Go.
- January 17. The Good Old Days.

National Broadcasting Company

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The two broadcasts will be as follows:

- January 1. Holiday. No broadcast.
- January 8. Research in Surgery, Thomas S. Cullen, M.D.*
- January 15. Causes of Death in 1933, W. W. Bauer, M.D.

* Dr. Cullen will speak from the National Broadcasting Company's Studios in Washington, D. C., by special arrangement.

4. Tripoli, C. J.; McCord, W. M., and Beard, H. H.: Muscular Dystrophy, Muscular Atrophy, Myasthenia Gravis and Strabismus, J. A. M. A. 103: 1595 (Nov. 24) 1934.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Cad A. Henry, Clarendon, has been appointed director of the Saline County Health Department, succeeding Dr. T. C. Watson, who plans to engage in private practice.

Society News.—The Benton County Medical Society was entertained at dinner at Siloam Springs, November 8, by Dr. and Mrs. Lester L. Scott. Speakers were Drs. Lewis M. Henry, Fort Smith, on "Differential Diagnosis of Common Ear Conditions," and Frederick H. Krock, Fort Smith, "Carcinoma of the Cervix."—Dr. Jacques Forestier, Aix-les-Bains, France, discussed the treatment of arthritis before the Pulaski County Medical Society in Little Rock, November 30.

District Meetings.—Dr. William T. Pride, head of the department of obstetrics, University of Tennessee College of Medicine, Memphis, was the principal speaker before the Eighth Councilor District Medical Society at its meeting in Little Rock, December 5. Clinics formed the larger part of the scientific program. The eighth district encompasses the counties of Pulaski, Faulkner, Perry, Pope, Conway and Johnson.—Speakers before the Ninth Councilor District Medical Society in Harrison, December 4, included, among others, Drs. Herbert Fay H. Jones, Little Rock, on urologic backache, and Solomon F. Hoge, Little Rock, early syphilis.

CALIFORNIA

Society News.—A symposium on obstetrics was presented before the Alameda County Medical Association, December 17, by Drs. Theodore W. Weller, John W. Sherrick and Clarence A. DePuy, Oakland, and Clarence W. Page, Berkeley.—The Sonoma County Medical Society was addressed, November 8, by Dr. Thomas E. P. Gocher, San Francisco, on "Treatment of the Sympathetic Nervous System and Its Effect on Post-operative and Post-Traumatic Industrial Injuries."—At a meeting of the San Joaquin County Medical Society in Stockton, November 1, Dr. Carl L. Hoag, San Francisco, among others, discussed "Common Surgical Problems, with Special Reference to Appendicitis."—At a meeting of the San Bernardino County Medical Society, December 4, Drs. Donald H. Brumbaugh, Redlands, discussed "Hemorrhoids and Myles' Hemorrhoidectomy," and Norman J. Kilbourne, Los Angeles, "Local Anesthetics Producing Prolonged Anesthesia for the Elimination of Pain After Rectal Operations."—Dr. James W. Sherrill addressed the San Diego County Medical Society, December 11, on "Present Status of Diabetes Mellitus."—Attorney Joseph N. Sweet, San Francisco, addressed the Solano County Medical and Bar associations in Vallejo, November 13, on "The Problems and Opportunities of Our Professions."—The Los Angeles Society of Neurology and Psychiatry was addressed, November 21, by Drs. Charles LeRoy Lowman on "Orthopedic Reconstruction in Neurologic Cases" and Leo J. Adelstein, "Surgical Treatment of Brain Abscess."

CONNECTICUT

Fellowships for Study of Adolescence.—THE JOURNAL published a news item, December 8, announcing the establishment of five fellowships by the Rockefeller Foundation at Yale University School of Medicine for the study of adolescence. It was stated that "appointments are to be for two years and they are to expire in alternate years so that one of the two men will always have had one year's experience on the project." This quoted statement does not pertain to these scholarships but to a different project recommended by Dean Milton C. Winternitz in his annual report, the appointment of assistants to aid senior staff members in research.

ILLINOIS

Society News.—Dr. James R. Nakada, St. Louis, addressed the Belleville meeting of the St. Clair County Medical Society, December 5, on tularemia.—Dr. Irving H. Neece, Decatur, among others, addressed the La Salle County Medical Society in Streator, November 22, on "Importance of Hematuria in Diagnosis."—Dr. David J. Davis, Chicago, addressed the Kankakee County Medical Society, December 13, on "Relationship of the State University School of Medicine to the Medical Profession."

Chicago

Memorial to Dr. Billings.—A bronze tablet has been placed in the Country Home for Convalescent Crippled Children as a memorial to Dr. Frank Billings and bearing the inscription: "In Memory of Dr. Frank Billings 1854-1932, the great physician whose wise counsel and unfailing encouragement were an enduring benefaction to this home." The tablet is the gift of the home.

Medical Faculty Entertains Biologic Group.—The University of Illinois College of Medicine presented a program, December 7, when the biologic faculty from the university at Urbana visited the school. Speakers included the following:

Richard L. Webb, Ph.D., Mesenteric Lymphatics.
Dr. Lars F. Gulbrandsen, Passage of Bacteria Through Intestinal Wall.
Dr. William F. Petersen, Biologic Reflections of Meteorological Variability.
Dr. Eric Odberg, The Contribution of Neural Surgery to Medicine.
Dr. Ernst Gellhorn, The Influence of the Oxygen and Carbon Dioxide Tensions of the Inspired Air on Sensory Processes.
Dr. Robert W. Keeton, Studies in Obesity.

Society News.—At a meeting of the Chicago Tuberculosis Society, December 13, Drs. Elven J. Berkheiser spoke on "Bone and Joint Tuberculosis"; Meyer R. Lichtenstein, "Immunity in Tuberculosis," and Leo L. J. Hardt, "Gastro-Intestinal Tuberculosis."—Speakers before the Chicago Surgical Society, December 14, included Drs. Alexander B. Ragins, who presented a clinical report of "Strangulated Hernia Simulating Appendicitis."—The Chicago Ophthalmological Society was addressed, December 17, among others, by Drs. Carl O. Schneider on "Use of Prosthesis Over Unightly Eyes" and Harry S. Gradle, "Prevention of Blindness."—Speakers before the Chicago Society of Allergy, December 17, were Drs. Meyer R. Lichtenstein on "The Patch Test for Gold Hypersensitivity" and Ben Z. Rappaport, "Cartridge Method for Intracutaneous Tests."—Dr. Frederic J. Cotton, Boston, conducted an operative clinic at Cook County Hospital, December 20.

Personal.—Dr. David J. Davis has been made president of the Institute of Medicine of Chicago, succeeding Dr. Joseph L. Miller.—Mr. John B. Zingrone, roentgenologist of Mercy Hospital for twenty-two years, was awarded the Cross of Chevalier of the Order of the Crown of Italy at a banquet in his honor, December 6. Speakers included Mayor Edward J. Kelly, Dr. Philip H. Kreuscher, past president of the state medical society, and Dr. Julius H. Hess, president elect of the Chicago Medical Society.—Dr. John E. Gorrell, for the past two and one-half years assistant to the superintendent of the University of Chicago Clinics, resigned recently to become superintendent of the Falk Clinic at the University of Pittsburgh.—Miss Evelyn Wood, secretary, Central Council for Nursing Education and for the last five years president of the Illinois League of Nursing Education, died, November 27, of pulmonary embolism. Miss Wood was also secretary of the American Conference on Hospital Service.—Dr. Francis A. Dulak has been appointed a member of the Chicago Board of Health, succeeding Dr. Edward F. Dombrowski.

INDIANA

Society News.—The Seventh District Medical Society held a meeting in Martinsville, December 13; the program was devoted to symposiums on headache, dyspepsia, backache and chest pain.—A symposium on contagious diseases was presented before the Indianapolis Medical Society, December 18; speakers were Drs. Howard B. Mettel, Matthew Winters and Byron K. Rust. Dr. Howard Fox, New York, conducted a clinic on diseases of the skin before the society, December 11, and gave an address on common diseases of the skin.—Speakers before the Henry County Medical Society in New-castle, November 22, were Drs. Charles R. Bird and Albert Murray De Armond, Indianapolis, and Clyde C. Bitler, New-castle; their subjects were elementary diagnosis in everyday fracture, syphilis of the central nervous system, and Vincent's infection of the lung.—At a meeting of the Noble County Medical Society in Ligonier, December 4, Dr. Lyman T. Rawles, Fort Wayne, discussed sickness insurance and state medicine.—Dr. Oliver O. Alexander, Terre Haute, addressed the Sullivan County Medical Society in Sullivan, December 5, on cholecystitis and cholecystectomy.—A symposium on peptic ulcer constituted the program of the Clinton County Medical Society in Frankfort, December 6; speakers were Drs. Furman L. Pyke, Floyd A. Loop, Ray G. Ikons and Floyd T. Romberger, all of Lafayette.—The Jay County Medical Society, Portland, heard Dr. Grover C. Penberthy, Detroit, discuss the surgical treatment of children and the treatment of burns, December 7.

KENTUCKY

Society News.—Dr. William H. Park, New York, addressed the Jefferson County Medical Society, Louisville, December 3, on "BCG Vaccine and Its Control of Pulmonary Tuberculosis."—At a meeting of the Muldraugh Hill Medical Society, Elizabethtown, December 13, speakers were Drs. Charles L. Sherman, Millwood, on "Asepsis in the Home"; Robert Sory, Richmond, trachoma; Carl C. Howard, Glasgow, spinal anesthesia; William T. McConnell, Louisville, low forceps delivery, and Reason T. Layman, Elizabethtown, physical therapeutics.—Speakers before the Third District Medical Society in Bowling Green in October included Drs. Milton S. Lewis, Nashville, on "Treatment of Eclampsia"; Owsley Grant, Louisville, "Extrarenal Symptoms of Renal Disease"; Virgil E. Simpson, Louisville, "Use of Serums and Vaccines," and Paul York, Glasgow, "Hematuria."—Dr. Jacob Leland Tanner, Albany, addressed the Henderson County Medical Society, November 12, on "Treatment of Asthma."—Dr. Louis J. Karnosh, Cleveland, addressed the Campbell-Kenton County Medical Society, November 1, on "Difficulties in Cerebral Localization."

LOUISIANA

Society News.—Speakers before the Orleans Parish Medical Society in a symposium on cancer, December 10, were Drs. Edwin H. Lawson, Martin T. Van Studdiford and Ambrose H. Storck. The society was addressed, October 22, by Drs. Charles A. Bahn on "Recent Advances in the Treatment of Squint and Heterophoria" and by Hans E. A. Schroeder on "Glaucoma, a Nutritional Edema."

Personal.—Dr. Jackson J. Ayo, Raceland, has been named superintendent of the East Louisiana State Hospital at Jackson, succeeding the late Dr. John A. Thames.—Dr. Clarence Pierson, Pineville, was recently named special consultant to the three state eleemosynary institutions for the insane and feeble-minded: Central Louisiana State Hospital, Pineville; East Louisiana State Hospital, Jackson, and State Colony and Training School, Alexandria. Thirty years of Dr. Pierson's life has been spent as superintendent of the Central and East Louisiana state institutions.

Uniform Narcotic Act Adopted.—At the November session of the legislature, the state narcotic law was repealed and supplanted with the uniform narcotic drug law, effective December 6. The new law makes the same requirements for prescribing, dispensing, administering, handling and dealing in narcotic drugs in the state as are in force under the federal law and regulations, with one exception: that cannabis and its derivatives, including marihuana, are included under the state law as narcotic drugs. The use of the state narcotic order forms is discontinued, the only form necessary being the federal narcotic order form. Filling and filing of prescriptions and keeping of records must comply with the federal regulations. Twelve states have enacted the new uniform narcotic drug act.

MARYLAND

Memorial to Dr. Keating.—A bronze plaque was recently dedicated at the Rosewood State Training School, Owings Mills, in commemoration of the late Dr. Frank W. Keating, superintendent for thirty-eight years. Dr. Keating died February 18.

Society News.—Speakers before the Maryland Academy of Medicine and Surgery, November 20, in Baltimore, were Drs. George E. Bennett and Dean Lewis on "Diagnosis and Treatment of Lumbosacral and Sacro-Iliac Lesions" and "Tumors of the Breast," respectively.

Personal.—Dr. John M. T. Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine, Baltimore, has been appointed a consultant to the Baltimore City Health Department.—Dr. William E. Martin, Randallstown, has been appointed health officer for the second district of Baltimore County, succeeding the late Dr. Harry F. Shipley.—Dr. Allan R. Dafoe, Callander, Ont., Canada, was the guest of Dr. Howard A. Kelly, Baltimore, recently.

MASSACHUSETTS

Personal.—Dr. George R. Minot, Boston, winner of the 1934 Nobel Prize in medicine, addressed the Royal Society of Medicine, London, November 29, on anemia.—Dr. Richard P. Strong, professor of tropical medicine, Harvard Medical School, Boston, has been named a member of the board of trustees of the Carnegie Institution.

Graduate Course.—The second annual graduate medical extension course of the Massachusetts Medical Society opened

December 11 and concluded December 19. Sessions were conducted in various places throughout the state and the subjects considered were cardiovascular disease, nutrition in health and disease, endocrinology, obstetrics and gynecology, surgery and industrial medicine.

Roentgenograms of Freshman Class.—Roentgenograms of the chests of all members of the freshman class at Massachusetts State College, Amherst, were taken early in December to discover incipient respiratory diseases. This is the first time that an entire class has received the test, which, in the future, will be a part of the regular physical examination. The project, which is carried on in cooperation with the state department of health, is an extension of similar work in the secondary schools.

Society News.—It was voted to reestablish a cancer clinic in Franklin County at the meeting of the Franklin District Medical Society in Greenfield, November 13. Dr. Roderick Heffron, Boston, addressed the meeting on "Lobar Pneumonia and Its Serum Treatment."—Dr. Gerardo M. Balboni, Boston, discussed "The Development in the Treatment of Pulmonary Tuberculosis from 1696 to the Present Time."—At a meeting of the Greater Boston Medical Society, December 4, Dr. William Jason Mixter, Boston, discussed "Common Medical Symptoms in Neurologic Surgery."—The Boston Society of Anesthetists was addressed, December 4, by Dr. Stanley J. G. Nowak on "The Carotid Sinus and Its Relation to Various Anesthetics."

Free Medical Lectures at Harvard.—January 6 will mark the opening of a weekly course of free medical lectures by Harvard University Medical School, to continue until March 24. The following speakers will participate:

Dr. Roy G. Hoskins, Gland Factors in Personality.
Dr. Howard B. Sprague, What Causes Heart Disease?
Dr. Alice Hamilton, Dangerous Trades.
James O. Pinkston, Ph.D., The Body Temperature.
Dr. Henry D. Chadwick, Tuberculosis as a Children's Disease.
Harry C. Trimble, Ph.D., Minerals in Our Bodies and Our Foods.
Dr. Howard F. Root, Diabetes.
David B. Dill, Ph.D., External Influences on Physical Activity.
Dr. Elliott C. Culler, Cancer.
George H. Parker, Sc.D., Twins and Social Biology.
Clarence B. Vaughan, D.D.S., Facts Regarding the Control of Diseases of the Gums.
Dr. Frederick C. Irving, Inheritance.

MICHIGAN

Cancer Survey.—Dr. Frank L. Rector, field representative of the American Society for the Control of Cancer, has been authorized to make a cancer survey of Michigan. The date to begin the survey has not been decided.

Personal.—Dr. Thomas H. Johnston, West Branch, director of the Children's Fund health unit number 2, comprising the counties of Alcona, Iosco, Oscoda and Ogemaw, has resigned on account of ill health after four years' service. He has been succeeded by Dr. Gladys J. Kleinschmidt, Ann Arbor.

Hospital News.—A new roentgenotherapy department was dedicated in Hackley Hospital, Muskegon, November 18, with Dr. James T. Case, professor of radiology, Northwestern University School of Medicine, Chicago, as the principal speaker. Dr. Leland E. Holly is head of the new department. The ceremony marked the thirtieth anniversary of the formal opening of the institution.

Meeting of School Physicians.—Four resolutions were adopted at a meeting of the Michigan Association of School Physicians in Lansing, November 8, which urged the enactment of suitable legislation requiring the examination of teachers, students and school health workers. The inclusion of the tuberculin test and roentgenograms in these examinations is a notable feature. Dr. John Sundwall, Ann Arbor, was elected president of the association; Dr. Clarence D. Barrett, Lansing, vice president, and Dr. Vladimir K. Volk, Pontiac, secretary.

MINNESOTA

State Society to Attend Science Meeting.—The eighty-second annual meeting of the Minnesota State Medical Association has been arranged to take advantage of the annual session of the American Association for the Advancement of Science at the Minneapolis Auditorium, June 24-26. There will be two joint sessions of the organizations, Tuesday morning and evening, June 25, at the University of Minnesota. Regular sessions of the science association will be confined to mornings so that members may attend the medical meetings in the auditorium in the afternoons.

Society News.—At a meeting of the Lyon-Lincoln Counties Medical Society in Tracy, November 11, the speakers were Dr. Francis J. Savage, St. Paul, president, and Mr. George Larson, field representative, of the Minnesota State Medical

Association.—The Red River Valley Medical Society was recently addressed at Thief River Falls by Drs. William G. Paradis, Crookston, on the comparative value of tuberculin tests; Edward Bratrud, urography with special reference to diagnosis, and Vernon L. Evans, Thief River Falls, tumors of the suprarenal.—At a meeting of the Renville County Medical Society at Bird Island, November 6, Mr. George Larson, St. Paul, discussed federal relief and compensation; Dr. John S. Holbrook, Mankato, perforated duodenal ulcers, and Dr. Max H. Hoffman, St. Paul, pneumonia.—Dr. Roy E. Swanson, Minneapolis, addressed the Rice County Medical Society, Northfield, November 27, on leukorrhea.—The Southwestern Minnesota Medical Society was addressed in Fulda, November 5, among others, by Drs. Harry W. Christianson and Lucius Haynes Fowler, Minneapolis, on proctology and appendicitis.—Dr. Harold S. Diehl, Minneapolis, addressed the Monroe County Medical Society in Rochester, October 16, on "The Common Cold."—Dr. Orwood J. Campbell, Minneapolis, discussed appendicitis before the Washington County Medical Society, November 13.

MISSOURI

Dr. Overholser Honored.—The Cass County Medical Society paid tribute to Dr. Milton P. Overholser, Harrisonville, at a recent meeting, in honor of his completion of fifty years in the practice of medicine. A charter member of the county society, Dr. Overholser has served as a member of the state board of health, of the pension board of examiners and as president of the Missouri State Medical Association.

Society News.—Drs. Leonard T. Furlow and Ernest Sachs discussed "The Care of Acute Brain Injuries" before the St. Louis Medical Society, November 30; Dr. Samuel B. Grant showed moving pictures on pernicious anemia. The Coronado Hotel has set aside a room to be known as the "St. Louis Medical Society Room," where members of the society may gather after regular meetings for "social relaxation." A symposium on vascular diseases of the extremities was presented before the society, November 20, by Drs. William H. Olmsted, Isaac Y. Olch and Paul S. Lowenstein.

Reestablishment of R. O. T. C. Urged.—At a meeting of the St. Louis Medical Society, December 4, a resolution was adopted urging the reestablishment of the medical reserve officers' training corps units as soon as possible. The resolution points out that the federal economies, which necessitated the discontinuance of these units, are harmful to national defense, since about one half of the new medical reserve officer personnel is supplied by these units. The society believes that the embarrassment of procuring new medical officer personnel will increase to serious proportions after a few years. Resolutions were forwarded to the war department, the surgeon general of the U. S. Army, the congressmen from Missouri, the American Medical Association, the Missouri State Medical Association, and the directors-general of the American College of Surgeons and the American College of Physicians.

NEBRASKA

Society News.—A symposium on diabetes formed the program of a meeting at Wahoo, November 19, of the Sixth Councilor District Medical Association. Speakers were Drs. Frank M. Conlin, Esley J. Kirk, William H. Stokes and Alfred J. Brown, all of Omaha.

Western Clinical Assembly.—The Eleventh and Twelfth Councilor District Medical Societies sponsored the Western Nebraska Clinical Assembly at Sidney, November 12-13, in conjunction with the Western Nebraska Dental Society. The program included the following speakers:

Thomas P. Mullins, D.D.S., Chadron; Ira C. Brownlee, D.D.S., Denver, and Dr. Frank Lowell Dunn, Omaha, Oral Infections.
Dr. Sanford M. Withers, Denver, Practical Considerations in the Treatment of Cancer.
Dr. Thomas D. Cunningham, Denver, Allergy in General Medicine.
Dr. John R. Nilsson, Omaha, Traumatic Surgery.

NEW JERSEY

Society News.—Dr. Eldridge L. Eliason, Philadelphia, was the speaker at a meeting of the Cumberland County Medical Society, October 9, on "Surgical Emergencies of the Abdomen."—Dr. George W. Crile, Cleveland, addressed the Atlantic County Medical Society, Atlantic City, November 9, on "The Adrenal Sympathetic System and Its Diseases."—A symposium on maternal mortality was presented before the Camden County Medical Society, Camden, December 4, by Drs. Frank L. Kennedy, Frank M. Moore, Albert B. Davis and Gordon F. West. Dr. Hyman I. Goldstein spoke on "Liver Therapy in Anemia."—Dr. Francis Ashley Faught, Philadelphia, addressed the Hudson County Medical Society, November 7,

on "Medical Practice Under State Medicine in the United States."—Dr. George M. Levitas, Westwood, addressed the Bergen County Medical Society, Hackensack, December 11, on "Important Biological Factors in Fertility and Sterility."—Drs. Frederic Maurice McPhedran and Eugene M. Landis, Philadelphia, addressed the Burlington County Medical Society, Mount Holly, recently, on "Childhood Tuberculosis" and "Practical Application of Recent Experimental Work on the Circulation and Blood Vessels," respectively.

NEW YORK

Accident Death Rate.—New York's death rate for accidents in 1933 was 68.1 per hundred thousand, the lowest except for one year since 1907, the first year in which statistics of accidental deaths were tabulated. Mortality from automobile accidents held first place, followed in order by drowning, burns, poisonous gases and railroad accidents. Of the 4,671 deaths upstate for which the type of accident was known, 37.9 per cent were motor vehicle accidents, 33.8 per cent home accidents, 18.9 per cent public (exclusive of motor vehicle) and 9.6 per cent industrial (exclusive of motor vehicle).

Institute on Conservation of Vision.—Dr. Harry S. Gradle, Chicago, delivered an address on prevention of blindness, November 6, before a joint meeting of the Onondaga County Medical Society and the Syracuse Eye, Ear, Nose and Throat Club, held in conjunction with an eye institute arranged by the state commission for the blind. The institute, which continued through November 6 and 7, was the third of its kind in the state held for the purpose of increasing the knowledge of lay workers, public health and school nurses, teachers and social workers of eye conditions and to give them an understanding of their significance. The program included papers on anatomy of the eye, nutrition in relation to the eye, errors of refraction, the art of illumination, education of the visually handicapped, and adequate care and follow up of eye cases. Dr. William F. Snow, New York, director of the American Social Hygiene Association, summarized the program at the end.

Plan to Reduce Mortality Rate.—A committee of the Medical Society of the County of Erie, appointed in April 1934 to investigate maternal mortality rates and institute measures to reduce them, made a report at a meeting of the society, November 19. In view of various detailed investigations that have been made, the committee decided not to make a local survey but to put into effect recommendations growing out of other surveys with such local modifications as may be necessary. It is planned to appoint within a few weeks a committee on obstetrics with an associate group made up of representatives of the Buffalo Health Department, Buffalo Academy of Medicine, University of Buffalo, Buffalo Council of Social Agencies, Child Welfare Committee, Visiting Nurse Association, Junior Chamber of Commerce and Buffalo Foundation. Plans for action will include the following features: education of the public, improvement of medical obstetric practice, improvement of hospital standards, the amending of the birth certificate to include information on type of delivery, and supervision of midwives.

Society News.—Dr. Richard Kovacs, New York, addressed the Sullivan County Medical Society, Monticello, December 12, on physical therapy in gynecology.—Dr. Joseph Earle Moore, Baltimore, addressed the Niagara County Medical Society, Lockport, November 16, on "The Wassermann-Fast Patient."—Drs. William P. Healy and George T. Pack, New York, addressed the annual meeting of the New York State Committee of the American Society for the Control of Cancer at Rochester, December 11, on "Diagnosis and Treatment of Uterine Cancer" and "Recognition and Curability of Gastric Cancer," respectively.—Dr. Louis W. Sauer, Evanston, Ill., addressed the Buffalo Academy of Medicine, December 12, on "Whooping Cough—Early Diagnosis, Prevention and Treatment."—Dr. W. Russell MacAusland, Boston, will give an address, January 8, in Buffalo before a combined meeting of the Medical Society of the County of Erie, the Buffalo Academy of Medicine and the Eighth District Medical and Dental Societies, Buffalo Dental Association, on "The Importance of the Oral Cavity in General Health and the Far Reaching Consequences of Abnormal Mouth Conditions."

New York City

Health Demonstration Turned Over to City.—The Bellevue-Yorkville Health Demonstration, established ten years ago as a model for neighborhood health work, was turned over to the department of health, November 15. It will be maintained as a district health station, Commissioner Rice said.

Gifts to Columbia.—The following gifts for medical purposes were recently announced by Columbia University:

Udo M. Reinach, to establish the bulletin of the Neurological Institute Fund, \$2,500.

Columbia University Club, for scholarships, \$2,000.

National Tuberculosis Association, for research in tuberculosis, \$1,020.

The late Dr. Cornelius G. Coakley, for research in otology, \$1,000.

National Oil Products Company, \$500 for research in food chemistry directed by Henry C. Sherman, Ph.D., and \$300 for research in chemical pathology.

Eli Lilly and Company, for chemical pathology research fund, \$600.

Course in Forensic Medicine.—A new course in forensic medicine designed primarily for physicians now holding positions as coroners' physicians or for those who wish to prepare themselves for such work is announced by New York University and Bellevue Hospital Medical College, to begin early in 1935. Formal instruction, occupying the morning hours during two semesters of five months each, will include conferences and work in the pathologic and toxicologic laboratories of the chief medical examiner of the city. The course will be supervised by Dr. Charles Norris with the assistance of Alexander O. Gettler, Ph.D., and Drs. Douglas Symmers, Harrison S. Martland, Armin V. St. George, Thomas A. Gonzales, Benjamin M. Vance, Milton Helpner and Kurt Landé. A long course in forensic medicine, inaugurated this year, covers a period of from three to five years.

Health and Hospital Budgets Reduced.—When the board of aldermen adopted the city budget for 1935 at a meeting, December 3, the estimates submitted by the health department and the hospital department were seriously reduced, the *New York Times* reported. Eight new persons were requested for the staff of the health department, most of them to be full time directors of the several services. Several other positions were eliminated. The department of hospitals also requested salary increases in order to provide full time pathologists and roentgenologists for the city hospitals. The New York Academy of Medicine and the United Hospital Fund held special meetings protesting against the cuts made by the aldermen. The academy pointed out in a resolution that the health department budget had already been reduced to a minimum and asserted that the work would be crippled to a degree out of proportion to the economy achieved. The resolutions urged the mayor to veto the budget as submitted.

NORTH CAROLINA

Society News.—Among speakers at a meeting of the Fifth District Medical Society, Sanatorium, October 18, were Drs. Jabez H. Williams, Sanatorium, on "Surgery in the Treatment of Tuberculosis"; Joseph Rush Shull, Charlotte, "Roentgen-Ray Treatment of Hodgkin's Disease," and Hamilton W. McKay, Charlotte, "Relief of Retention of Urine."—Dr. George E. Pfahler, Philadelphia, addressed a meeting of the North Carolina Radiological Society with the Forsyth County Medical Society, October 20, on epithelioma of the skin, and Dr. Clayton W. Eley, Norfolk, Va., demonstrated ventriculograms.—Dr. George R. Livermore, Memphis, Tenn., was guest speaker at the annual meeting of the North Carolina Urological Association at Winston-Salem, October 24, on "Stone in the Kidney."—Speakers at the regular meeting of the Catawba Valley Medical Society, Lincolnton, November 14, were Drs. Lester A. Crowell Jr., Lincolnton, on "Pneumothorax in the Treatment of Lobar Pneumonia"; Edith A. Goodwin, Morganton, "Treatment of Pneumonia in the Home," and Alfred A. Kent Jr., Granite Falls, "Pneumonia in Childhood."—Dr. Frank Howard Richardson, Brooklyn, addressed the Buncombe County Medical Society, Asheville, November 5, on "Emotional Developments in Children: Some Mechanisms." Dr. Charles Hartwell Cocke, Asheville, addressed the society, October 1, on "Leukopenia in Tuberculosis."—Dr. Isaac H. Manning, Chapel Hill, addressed the Mecklenburg County Medical Society, Charlotte, October 2, on hospital insurance.

OHIO

Hospital News.—A new tuberculosis hospital which is shortly to be built in Lucas County is to be named for William W. Roche, for many years a political reporter on the *Toledo News-Bee*, it was announced after Mr. Roche's recent death. Mr. Roche is credited with having instigated a reorganization of the county hospital about twenty years ago. The hospital is to be built as a FERA project.

Society News.—Dr. Leonard G. Rowntree, Philadelphia, addressed the Academy of Medicine of Cleveland, December 21, on "Therapeutic Application of Newer Developments in Endocrinology."—Dr. Irvin Abell, Louisville, Ky., was guest speaker at a meeting of the Cincinnati Academy of Medicine, December 3, on "Diverticulitis and Diverticulosis of the Gastro-

Intestinal Tract." The academy joined the Cincinnati Dental Society in a meeting, December 7, at which the speaker was Dr. Robert H. Ivy, Philadelphia, on "Care of Injuries to the Face and Jaws."—Dr. Lloyd B. Johnston addressed the Cincinnati Obstetrical Society, December 13, on "Late Surgical Treatment of Uterine Inversion."—Dr. Abram L. Van Horn, chief of the division of child hygiene, state department of health, Columbus, addressed the Logan County Medical Society, Bellefontaine, December 7, on "Present Problems of Infant Health."—Dr. Ora O. Fordyce, superintendent of the Toledo State Hospital, addressed the Toledo Academy of Medicine, December 7, on mental disease; members of the staff presented a general clinic.

OKLAHOMA

Personal.—Dr. David W. Griffin, superintendent of the Central Oklahoma State Hospital, Norman, was honored at a reception given by the hospital staff and other friends, recently, in celebration of his completion of thirty-five years at the head of the institution.—Dr. John L. Day, Norman, has been appointed superintendent of the State Hospital, Supply, to succeed the late Dr. James W. McClendon.

PENNSYLVANIA

Illegal Practitioner Fined.—Charles Hayssen, Mobile, Ala., was recently found guilty of practicing medicine illegally and sentenced to pay a fine of \$100 and the costs of prosecution and to spend thirty days in the Dauphin County prison.

Philadelphia

Society News.—Drs. Francis G. Harrison and Alexander Randall addressed the Philadelphia Urological Society, December 17, on "Carcinoma of the Sigmoid with Rupture into the Bladder" and "Surgery of the Upper Ureter," respectively.

Hospital News.—The fourth public health talk at Mount Sinai Hospital was given by Dr. Eugene Rush, December 26, on "How to Keep Your Children Healthy." The fifth will be presented by Dr. Sigmund S. Greenbaum, January 23, on "Care of the Skin and Hair."

Personal.—A portrait of Charles H. La Wall, Ph.D., dean of the Philadelphia College of Pharmacy and Science, was presented to the college, December 5, by the artist, Leon A. Spielman, a graduate of the school and a practicing pharmacist.—Dr. Basil R. Beltran has recently received the Palme Académic decoration of the Ministry of National Education of France for services rendered to the French during the World War and to the French in Philadelphia.

SOUTH CAROLINA

University News.—Dr. Frank A. Hoshall, Baltimore, has been appointed assistant professor of orthopedics at the Medical College of South Carolina, Charleston.

Society News.—Dr. Lawrence P. Thackston, Orangeburg, was elected president of the South Carolina Urological Association at the annual meeting in Columbia, October 9. Dr. Montague L. Boyd, Atlanta, was the guest speaker at the meeting.—Drs. Thomas R. Gaines, Anderson, and William A. Strickland, Westminster, addressed the Oconee County Medical Society, October 18, on indications for the removal of tonsils and the technic and management of the operation, respectively.—Dr. Montague L. Boyd, Atlanta, addressed the Columbia Medical Society, Columbia, October 8, on "Malignancies of the Urinary Tract." Dr. Joseph Akerman, Augusta, Ga., addressed the society, September 10, on "Obstetric Superstitions and Traditions."—J. Nelson Frierson, LL.D., Columbia, was reelected president of the South Carolina Tuberculosis Association, which met in Columbia, November 1.

TENNESSEE

Society News.—Dr. Willis F. Manges, Philadelphia, addressed the Nashville Academy of Medicine, November 20, on "The Relation Between Sinus and Lung Infections and Between Sinus and Mastoid Infections."—Drs. Edgar Jones and Clarence S. Thomas, Nashville, addressed the medical society of Benton, Carroll, Henry and Weakley counties in McKenzie, November 15, on diseases of the white blood cells and headaches, respectively.—Drs. Phillip H. Levinson and Jesse B. Swafford were the speakers at a meeting of the Hamilton County Medical Society, Chattanooga, November 22, on "Urinary Urobilinogen: the Value of Routine Estimation" and "Normal and Abnormal Behavior," respectively.—Dr. Tom R. Barry discussed "Urology and the General Practitioner" at a meeting of the Knox County Medical Society,

Knoxville, October 30.—Dr. Sam B. McFarland, Lebanon, addressed the Wilson County Medical Society, December 6, on gastric ulcer.—Speakers at a meeting of the Washington County Medical Society, November 1, Johnson City, were Drs. Emmett E. Byrd, on the physician and his profession; Marvin H. Sandorf, gastric analysis, and Raymond D. Tompkins, heart failure.—Physicians of Dickson, Hickman and Humphreys counties recently reorganized the Tri-County Medical Society, with Dr. William J. Sugg, Dickson, as president, and Dr. Harold E. Paty, Lyles, secretary.—Drs. Cobb Pilcher, Tinsley R. Harrison and John B. Youmans, Nashville, addressed the Montgomery County Medical Society, Clarksville, October 19, on edema.

VIRGINIA

Personal.—Dr. John C. Neale Jr., Hilton Village, has been appointed health officer of Henrico County, succeeding Dr. Ernest L. Stebbins, who recently went to the New York state department of health.

New District Health Office.—The state health department has established a new district office in Abingdon with jurisdiction over thirteen counties. Dr. Edgar C. Harper, Richmond, who was formerly associated with the department in various capacities, will be in charge of the new area beginning January 1.

Society News.—The Southwestern Virginia Medical Society held its semiannual meeting in Radford, recently; among other speakers, Dr. Edmund M. Chitwood, Wytheville, delivered his presidential address on "Infections of the Blood Stream."—Drs. Ernest G. Scott and Hunter B. Spencer were the speakers at a meeting of the Lynchburg Academy of Medicine, October 1; their subjects were "Von Gierke's Disease" and "Roentgen Therapy," respectively.—Dr. Frank B. Stafford, Charlottesville, addressed the Medical Association of the Valley of Virginia, Staunton, recently, on "Upper Respiratory Infections Simulating Tuberculosis."

WASHINGTON

Society News.—Drs. Charles B. Ward and Allison T. Wanamaker, Seattle, addressed the Chelan County Medical Society, Wenatchee, October 17, on "Treatment of Malignancy" and "Relation of Biochemistry to Nose and Throat," respectively.—Speakers at a meeting of the King County Medical Society, Seattle, December 3, were Drs. Torleif Torland and Edwin A. Nixon, Seattle, on "Vaginal Hysterectomy by the Clamp Method" and "Observations on the Treatment of Varicose Veins," respectively. At the meeting November 19, speakers were Drs. Lester J. Palmer, on "Care of the Surgical Diabetic Patient"; David C. Hall, "University Health Service and State Medicine," and Inslee B. Greene, "Medicine at the Crossroads."

PHILIPPINE ISLANDS

Society News.—Drs. Andreas Trepp and Sixto A. Francisco addressed the Laguna Medical Society in San Pablo, September 23, on treatment and prevention of tuberculosis.—The Tayabas Medical Association, a newly organized society, held its first meeting in Lucena, September 3, with Dr. Pedro N. Villasenor as the speaker, on management of dysentery.

Health Commissioner Appointed.—Dr. Jose Fabella has been appointed commissioner of health and welfare of the Philippine Islands. Dr. Fabella is 46 years old and a graduate of Rush Medical College, Chicago, class of 1912. Dr. Fabella and Dr. Jose P. Bantug, of the staff of the bureau of health, were guests of honor at a meeting of the Bulacan Medical Society in Manila, September 8. A reception and dance were given at the Cosmos Club, Manila, October 6, in honor of Dr. Fabella by the Philippine Islands Medical Association, the Colegio Medico-Farmacutica and the Philippine Federation of Private Medical Practitioners.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

Mount Sinai Hospital, New York, \$25,000 by the will of the late Mrs. Isabella Kritzman; \$1,000 from the late Sydney Ballin.

National Jewish Hospital, Denver, \$4,175 by the will of the late Alexander M. Blumenstiel.

Washington Home for Incurables, Washington, D. C., \$5,000, to establish a cancer ward by the will of the late Mrs. Eleanor Foster Lausing.

Automobile Fatalities in Four Weeks.—The bureau of the census, U. S. Department of Commerce, announces that eighty-six large cities in the United States reported 865 deaths from automobile accidents during the four weeks ended November 24, as compared with 734 for the four weeks ended Nov. 25,

1933. Of the total number 665 occurred within city limits. For the fifty-two week periods ended Nov. 24, 1934, and Nov. 25, 1933, the totals for all cities were 8,822 and 8,077, respectively, which indicate a recent rate of 23.6 per hundred thousand as against an earlier rate of 21.4.

Changes in Status of Licensure.—The Michigan State Board of Registration in Medicine reports the following action:

Dr. Joseph Henry Hanson, Detroit, license restored, recently, for one year of probation. At expiration of this year, final action for complete restoration or revocation will be taken.

Dr. William Kelley, license revoked, recently, for conviction and federal sentence for violation of the Harrison Narcotic Act.

The North Carolina Board of Medical Examiners reports the following:

License of Dr. Thomas Art Smith, Charlotte, restored at its June meeting.

The Oregon Board of Medical Examiners makes the following statement:

License of Dr. George Ernest Darrow, Los Angeles, to practice in Oregon revoked for moral turpitude.

The New York State Board of Medical Examiners reports the following:

License of Dr. Burdette Martin Christianson, New York, restored in September after six months' suspension.

Government Services

Changes in Public Health Service

Surg. Paul D. Mossman, relieved at Ellis Island, N. Y., and assigned to duty at Naples, Italy, in the office of the American consul.

Passed Asst. Surg. Ralph B. Snavely, relieved at Stapleton, N. Y., and assigned at the National Institute of Health, Washington, D. C.

Surg. Mark V. Ziegler, relieved at Raleigh, N. C., and assigned at Washington, D. C.

Passed Asst. Surg. Edwin G. Williams, relieved at Naples and assigned at Ellis Island.

Acting Asst. Surg. Austin H. Smith, relieved at Fort Eustis, Va., and assigned at the U. S. Penitentiary, McNeil Island, Steilacoom, Wash.

Asst. Surg. Bert R. Boone, relieved at Seattle, Wash., and assigned at the marine hospital, Detroit.

Drs. John R. Heller and Charles S. Sample Jr., appointed and commissioned as assistant surgeons.

Drs. Joseph R. Ridlon and Randolph M. Grimm, promoted and commissioned as medical directors.

Food and Drug Seizures for November

Nearly 16,000 bushels of apples bearing poison residues exceeding the limits of safety were seized by the Food and Drug Administration of the U. S. Department of Agriculture during November after they had been shipped from New York, Michigan, Illinois, Missouri and other central states. Fifty-two shipments of cream totaling more than 3,000 gallons, and 11,676 pounds of unfit butter were confiscated and destroyed. Among other seizures were sixteen of canned shrimp, amounting to 4,000 cases; eleven of canned mackerel totaling 4,300 cases. Nineteen shipments of edible oil, 7,000 cans filled with cottonseed oil, corn oil and bean oil with little or no olive oil, were also seized; all were labeled so as to lead a purchaser to believe the products were composed largely or entirely of olive oil or were of foreign origin. In the drug field seizures included shipments of chloroform, tincture of opium and witch hazel extract. Recent prosecutions reported by the administration include: The Oelwein Chemical Company, Oelwein, Iowa, fined \$200 for shipping livestock preparations bearing unwarranted claims of vitamin potency; Natural Products Company, Eugene, Ore., \$900 for shipping misbranded mineral waters; Steketee's Family Medicines, Grand Rapids, Mich., \$200 for shipping "patent medicines" bearing false therapeutic claims, and the Alaska Year Round Canneries Company, Seattle, Wash., \$300 for shipments of canned salmon consisting partly of decomposed fish. Many other fines ranging from \$1 to \$200 were reported.

CORRECTION

Cultivation of the Virus of Lymphogranuloma Inguinale.—In Dr. Elmore B. Tauber's discussion in THE JOURNAL, December 15, page 1833, is the following sentence: "By using a special medium, I think I have succeeded in cultivating this virus." Dr. Tauber writes that this is incorrect and should have read as follows: "I am informing you of the cultivation of a virus, the work of Dr. Joseph Tamura." Dr. Tauber meant merely to call attention to Tamura's work, to whom all credit for this work, he says, is due.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 1, 1934.

Asthma Research

The Asthma Research Council was formed in 1927 to direct research into asthma and was supported by public subscription. Under the auspices of the council, asthma clinics have been established at some of the principal hospitals. The report for the year ended last October shows that the clinic at Guy's Hospital continues to expand. During the year there were 5,575 attendances and 450 new cases. Such a large number has given a better insight into the natural history of the disease. Dr. L. J. Witts has shown that the most striking difference between the asthmatic and the normal is the high incidence of protein hypersensitivity and the frequency of lesions of the upper and lower respiratory tract. In conjunction with the experimental work of Dr. R. S. B. Pearson, these results have confirmed the value of the skin tests, which at one time were the subject of much criticism. Treatment has been directed to attacking the lesions of the respiratory tract by respiratory exercises, inhalations, vaccines and operations, while the protein hypersensitivity has been dealt with by avoiding the harmful agents and attempts at specific and nonspecific desensitization. Though the essence of asthma still seems to escape analysis, the conviction grows that protein hypersensitivity and respiratory damage are the stimuli that make manifest a biochemical difference between the asthmatic and the normal, which should be susceptible to simple treatment. Dr. Pearson has continued the study of skin tests to common allergens and proved the superiority of the intradermal over the scratch technic of skin testing. It has been found that positive skin reactions are not uncommon in apparently normal persons, so that no sharp distinction can be made by them between the asthmatic and the healthy. It is not hypersensitivity that is pathologic but its persistence in exaggerated degree. Skin tests have shown that the majority of asthmatic persons are sensitive to several proteins, which they are constantly inhaling—house dust, feathers, orris root (face powder), pollens, horsehair and other animal hairs. Concentrated solutions of each have been prepared and reactors have received a course of inoculations. Good results have been obtained, especially with oily solutions and in the predominantly nasal cases. It is recommended that vasomotor rhinitis and paroxysmal rhinorrhea be treated on allergic lines, as relief is quickly obtained in the majority of cases. At St. Mary's Hospital the main treatment has been on bacteriologic lines. A special method has been used whereby the organisms to be incorporated in the vaccine are selected after the bactericidal power of the patient's blood has been tested against the various organisms isolated from the patient. Those which have stood the bactericidal action of the blood are used.

HAY FEVER

The prevention and treatment of hay fever by injection of large doses of grass pollen extract gives relief in nearly 100 per cent of cases. The results are controlled by skin tests and the result aimed at is the complete desensitization of the patient, as indicated by negative skin reactions. The amount of pollen extract required to abolish skin sensitivity and give complete relief varies and frequently necessitates the use of doses of 100,000 units of extracts.

BACTERIAL SENSITIZATION

An experimental investigation is being carried out on the significance and mechanism of the late inflammatory skin reactions to bacterial products seen in cases of bacterial hypersen-

sitiveness. In the past, many workers have investigated sensitiveness to bacteria and their products but so far the mechanism of induced sensitization and the production of inflammatory skin reactions are by no means clear. It is thought probable that active antibacterial immunity and hypersensitivity to bacterial products are brought about by two distinct portions of the bacterial cell. Dr. Harley has shown that the immunizing antigen of pneumococci can be obtained free from bacterial protein and other cellular substances and that this is the portion of the pneumococcus responsible for the production of immunity. It appears that sensitiveness to bacteria is not induced by the immunizing antigen but by the bacterial protein and that the animal sensitized by either the whole organism or the bacterial protein reacts to these but not to the isolated immunizing antigen; conversely, treatment of an animal with the isolated antigen produces immunity but not hypersensitivity to the organism. It is thought that the final results of this investigation will have considerable bearing on the treatment of bacterial hypersensitivity.

Pay for the Treatment of Road Accidents

According to the new road traffic act, in case of bodily accidents (including fatal injuries) the person using the vehicle that caused the accident must pay the physician rendering emergency treatment a fee of \$3 for each patient and a mileage fee of 12 cents a mile for any distance over 2 miles. If more than one physician administers treatment, the first to do so will be entitled to make a claim. The same payments must be paid to hospitals that render these services. If the accident is due to the negligence of some party other than the vehicle user, the latter is entitled to recover from the former the amount payable to the physician or hospital. The act has also been made water tight as regards insurance companies which issue various restrictions in their policies, such as that a car must not be used for business purposes and then decline to pay under these circumstances. In future it will be the duty of the insurance company to pay for all third-party risks, and any limitations contained in a policy as to age, physical condition of the driver or other conditions will be void. This means that the insurance policy of the user of the vehicle (which is compulsory) must cover such third-party risks.

The Protection of Radium Workers

At the British Institute of Radiology, Dr. G. W. C. Kaye, director of the physics department of the National Physical Laboratory, made a communication on the protection of radium workers. The two main factors of gamma ray protection are to place the radium source as remote as is feasible and to enclose it in protective material. To double the distance from the source is equivalent to increasing the lead protection by nearly 3 cm. But in many cases there is no alternative to lead protection, and for this a transmission curve of gamma rays in lead under conditions as near as possible to those of practice has been worked out at the National Physical Laboratory and leads to the following practical conclusions: The tolerance distance for unprotected radium of 0.2 Gm. and upward is greater than the distance between adjacent beds in a ward, so that precautions should be taken if patients undergoing irradiation are in the same ward as other patients. For nurses and other attendants the tolerance distance for 0.2 Gm. of unprotected radium is about 2 meters, so that they should approach within that distance only when necessary. For quantities of 0.5 Gm. the tolerance distance is 3.5 meters. Therefore the staff should not remain in the vicinity of patients undergoing treatment with such quantities. The carrying boxes used for transport of radium of ordinary amounts are usually small and made of wood, lined with lead of 1 cm. thickness. These are suitable for occasional transport of small quantities, but if larger quantities are frequently transported larger boxes,

with centrally situated small containers and more adequately protected, should be provided, and these should be conveyed by trolley rather than by hand. As to transmission by the British parcel post, which has the limitations of 11 pounds in weight and 6 feet for length plus girth, it has been found that distance is superior to lead protection. A bulky parcel containing no lead may have only half the weight and be thrice as effective as a small packet with the maximum of lead protection. Moreover, bulky packages are more likely to be transmitted in the post by vehicle than by hand, which is an advantage. With regard to radium beam therapy, nurses and attendants should not remain for any appreciable time at distances within 1.5 meters behind the bomb, 2.5 meters from the side of it, or 4.5 meters in front of it, in the direct beam.

PARIS

(From Our Regular Correspondent)

Dec. 3, 1934.

Congress on Colon Bacillus Infections

It is the custom in France to hold meetings at the various resorts at which the springs have medicinal virtues. At these meetings the most distinguished members of the profession are invited to read papers describing their experience with diseases that the particular spring aims to relieve. Chatel-Guyon, in the center of France, is noted as a resort that specializes in the treatment of gastro-intestinal ailments. Like most of the large medicinal watering places in France, it is well organized so far as medical supervision and physical therapy are concerned.

An instructive paper read at the Congress on Colon Bacillus Infections recently at Chatel-Guyon was by Noel Fiessinger and Hutet of Paris. Attention was called to the danger of making the colon bacillus responsible for too many conditions until proof had been given of such etiology. No one can deny that infection of the urinary tract due to the colon bacillus exists, but to employ too easily the term "colibacillosis" for infections of the alimentary tract, even though they are of mild character, as well as for fevers of undetermined etiology, is not warranted by the facts. This is especially true of colon bacillus infections of the urinary tract. Here the colon bacilli, which are present normally in the lower alimentary tract, are supposed to traverse the intestinal wall and the portal and pulmonary circulations, to be finally eliminated through the kidneys. There has been no proof of this in the form of a positive blood culture. The authors of this rather frank criticism have sought in vain a colibacillemia in persons suffering from constipation. Only in two severe cases of septicemia due to the colon bacillus was the blood culture positive. The passage of the bacilli from the colon into the circulation occurs but rarely. If the organisms were in the blood, they could not escape detection by culture methods.

Colon bacillus infection of the urinary tract is quite common in women without any accompanying symptoms. One must take every precaution in securing urine for bacteriologic study, because the normal urine is constantly infected by the colon bacilli in the vulva, even after a catheterized specimen has been obtained. The only way to decide whether such a contamination has taken place is to inoculate culture mediums within an hour after the specimen is obtained. Even with these precautions, cultures were positive without any accompanying symptoms. The female urethra, on account of its relatively small size, constantly allows growth of colon bacilli. This does not occur in the male urethra. The presence of colon bacilli in the urine therefore is not synonymous with infection of the urinary tract by these organisms. The authors are opposed to the theory of Heinz-Boyer that the colon bacilli traverse the intestinal wall. The real factor that aids the development of the colon bacilli in the urinary tract is the

oliguria that occurs at the beginning of menstruation. This favors the growth of the organisms in the urine. In the enterorenal syndrome it is the decreased absorption of fluid that is lacking and not an infection of the blood by the colon bacilli from the intestine. A colon bacillus septicemia is an effect and not a cause of the urinary tract infection.

The only other colon bacillus infection is that which involves the gallbladder. It is not due to an ascending infection along the common duct from the duodenum. The authors have observed a colon bacillus cholecystitis in only two fifths of their cases, never in cases presenting urinary infection with colon bacilli.

The conclusions reached by these authors are contrary to those of many French clinicians, that in the majority of cases colibacillosis is a local and not a generalized infection. The more normal the digestion of food, the more colon bacilli one finds in the stools.

In severe enterocolitis, typhoid, cholera and dysentery the number of colon bacilli in the intestine decreases in proportion to the increasing gravity of the disease. When the colon bacilli begin to grow again on culture mediums, the disease is near its end.

The elimination of obstructions in the urinary tract and large quantities of fluid will do more to eliminate colon bacillus infections than any other treatment.

Suicides of the Adolescent

An instructive survey of the causes of the increasing number of suicides of the adolescent is contained in an article of Dr. Gilbert Robin. One reads articles by psychiatrists in which the causes are given as melancholia, epilepsy or dementia praecox. This is far from explaining the majority of cases. Adolescence is the period of life in which the parents, if they wish to give any advice, should never use harsh measures in the form of commands or injunctions. There is revolt and an inevitable struggle on the part of the recipient, whose personality at this period is too strong for the world, which is opening its doors to assimilate them. The point of view of the adolescent is not that of the adult. The adolescent believe themselves to be heroes and hence there arise misunderstandings between them and adults. According to Robin, it is the contact of this intense personality, which considers that it cannot live in the adult world and seeks any means to avoid it, which plays the leading part in suicides of the adolescent. In some cases the contrary occurs. The personality is groping to find its place in organized society and it is at the end of a fruitless search. Others become too introspective, regarding themselves for hours in a mirror, in the effort to find in the physiognomy the reflection of the movements of the soul. They overlook the real appearance to come into contact with an unreal personality. Among the adolescent there are those who commit suicide because of an exaggerated sense of honor, which they flatter themselves that they possess, often to merit, post mortem, the appreciation which they considered that they were entitled to during life. They believe that in committing suicide they are inflicting punishment on those who failed to appreciate their merits during life.

Other causes are found in two extremes of society, those who have been raised in poverty and have never seen the brighter side of life, and, at the other end of the scale, those who have had parents too rich or too cowardly to refuse anything, wherefore every thrill has been exhausted and there is only ennui left.

Experimental Production of Actinomycosis

In the *Annales de l'Institut Pasteur* for September, Grooten reports the results of successful experiments made to determine whether human actinomycosis is transmissible to rabbits. The organisms were isolated from two cases of the disease in

the human jaw and one in the neck. The cultures incorporated in Veillon gelatin were injected into the peritoneal cavity of rabbits. The gelatin seems to protect the organisms from attack by the polymorphonuclear leukocytes sufficiently long to combat phagocytosis. It requires several months for the typical yellow granules to develop.

Antistreptococcus Serum of Vincent in Obstetrics

The subject chosen for his graduation thesis by Brimon-Cherbuliez was the antistreptococcus serum of Vincent in obstetrics. The work reported was based on twenty-seven cases observed in the Maternity Department of the Boucicaut Hospital. The serum has been employed in cases of septicemias with positive blood cultures as well as in septicopyemias and other prolonged postpartum infections. If given in sufficiently large doses and over a long enough period, as emphasized by Vincent, the results will be gratifying. The only failures were in cases due to other organisms than the streptococcus.

As a prophylactic measure, the serum ought to be given in all cases of hemorrhage due to placenta praevia or other uterine lesions, as well as in those in which there are retained cotyledons or membranes, in amniotic infections, in endometritis, in acute sore throat, in influenza, in intra-uterine intervention or in artificial delivery. In these cases, 20 cc. should be given daily for three days.

The percentage of postpartum infections following intra-uterine operations during delivery has fallen from 30 to 15 as a result of the prophylactic use of the Vincent serum.

Immunity of Cubans to Yellow Fever

At the November 6 meeting of the Academy of Medicine, A. Recio presented an interesting paper based on the examination of the blood of Cuban natives (black and white) born before or after the last epidemic of yellow fever; i. e., since the last case was reported in 1908. Of sixteen individuals born prior to 1901, the date of the last severe and generalized epidemic, twelve, or 75 per cent, were found to be immune. Of eleven persons born between 1902 and 1908, during which interval there were small localized epidemics, none were found to be immune. The same was true of fourteen others, born since 1908, since which date no case has been reported.

In the discussion, Dominguez emphasized the importance of Recio's study. Up to the present time the native Cuban has always been regarded as immune to yellow fever. If another epidemic occurred, the majority of the Cubans would be just as susceptible as those not born there.

BERLIN

(From Our Regular Correspondent)

Oct. 29, 1934.

Congress of German Ophthalmologists

At the recent fiftieth Congress of German Ophthalmologists, Best spoke on hereditary glioma of the retina, which sometimes may be dominant, other times recessive. The importance of heredity must not be overemphasized, since most children having glioma die before the age of puberty and, above all, since 85 per cent of cases are unilateral, despite the influence of heredity, which is essentially the same in the eyes of twins. Others found that, of forty-eight cases of glioma, twenty-seven showed no hereditary factors or influence from familial intermarriage. The occasional familial event of a phenotypic healthy married couple whose children all suffer from glioma certainly points to hereditary influences. In such cases the glioma is mostly bilateral. The lack of heredity in sporadic cases as well as the frequency of it in familial cases may be explained by mutation. Families presenting glioma are otherwise hereditarily healthy, so that a combination with any other gene is not to be taken into consideration. According to Best, the mendelian laws do not definitely apply to gliomas and to other

severe ocular deformities. Sterilization should be done in clear sporadic cases.

Serr reported on autohemic injections into the anterior chamber in tuberculous iritis according to Schieck. He found a rapid improvement of clinical symptoms in thirty-two eyes and in five after continued treatment. Permanent results were generally satisfactory. Treatment was unsuccessful in ten eyes, and one patient showed definite deterioration.

Marchesani read a paper on juvenile recurring vitreous hemorrhages, which have heretofore been interpreted as probably of tuberculous origin, in that tuberculosis of the venous walls was assumed. In a number of such cases the author observed signs of thrombo-angiitis obliterans. The anatomic differentiation of a tuberculosis of the veins from other types of vascular changes cannot be definitely made, for giant cells may appear on the vascular walls without tuberculosis.

Schieck spoke about the changes in the vortex veins and vessels of the choroid in glaucoma. The latter are especially widened at the point where they enter the veins, while the lumen of the vortex veins was almost obliterated. A pathologic condition of the wall was no more in evidence than an obstruction of the beginning part of the vessel through the sinus wall; rather, the pressure on the sclera had merely forced the obliquely transpassing veins together.

Several papers treated of operative methods for detachment of the retina. Special attention was given to electro-endothermy. Meesmann of the Berlin Charité Augenlinik improved the method by developing electrodes, which allow an exact measure of the heat produced in the various tissues of the eye, so that mistakes in dosage, caused by the different electrical conductivity of various tissues, can be excluded. The temperature is most effective in an exceedingly low degree; namely, between 158 to 167 F. Heat greater than this may bring about severe injuries, such as intra-ocular hemorrhages, with bad prognosis. Underdosage can be easily avoided.

Mylius maintains that not enough attention has been given to diseases of the eye in renal diseases. Yet there are hardly any symptoms to be found. Eleven cases of benign sclerosis were anatomically without any special symptoms. In twenty-one cases of renal diseases, severe changes in the blood vessels of the ciliary body may be recognized. The following symptoms are worthy of mention: proliferations of the intima from the mildest to the most advanced degree with obliteration of the vascular lumen in addition to simple hyaline and sclerotic degeneration of the vessels, severe hypertrophy of the muscularis, especially swelling, lipid infiltration and disintegration of the wall. Von Hippel was concerned with the subject of bacilemia in diseases of the eye. The results of his tissue cultures which are of great diagnostic value in these cases were:

Of 46 cases of iritis, 12 positive.

Of 1 case of sympathetic ophthalmia, 1 negative.

Of 21 cases of perivasculitis of the retina, all negative.

Of 19 cases of retrobulbar neuritis, 6 positive.

Of 27 cases of other diseases, including scleritis, interstitial and phlyctenular keratitis and choroiditis, 6 positive.

Of 11 cases of perforated injuries, 3 positive.

With respect to the successful treatment of sympathetic ophthalmia, von Szily performed grafting experiments on chickens and monkeys as well as further transplantation from animal to animal. He obtained new specific results, among which round cell clusters predominated to the point of building real lymph follicles. The supposedly specific virus is ineffective on the cornea as compared with herpes virus; it does not spread diffusely through the central nervous system and does not produce encephalitis or any otherwise general symptoms. There are many differences of opinion regarding the histology of sympathetic ophthalmia in human beings. A specific pathologic agent probably lies at the bottom of this disease.

Incidence of Cripples

A census taken for all of Germany in 1906 showed that 1.48 per cent of every 1,000 inhabitants are crippled children. The difficulty of accepting such statistics begins in definitions. According to Dr. Landwehr of the Municipal Health Department of Cologne, cripples are persons "who as a result of abnormalities of the motor apparatus are so permanently injured in using it that their ability to compete in the working market and earn a living is diminished."

The national census of cripples for 1925-1926 gives as the total number of cripples around sixty to every 10,000 inhabitants (without including those injured in the war); of these almost two thirds are classed as severely crippled. The severely injured are defined as "persons whose normal motor ability has been permanently impaired or whose body form deviates strongly from the norm." It is difficult to determine the amount of orthopedic defects in the population and it is almost impossible to evaluate them, especially because in cripples the interrelation of the factors producing the irregularity are more varied than in any other field of social biology. In 1932 and 1933 Dr. Landwehr classified 2,500 cases of the Public Welfare Office in Cologne. These statistics comprise only children and young people up to 25 years of age, including weak minded and mentally unbalanced patients. Of these cases, 16 per cent were minor impairments (syndactylia, slight foot or spinal deformities), 40.2 per cent of the patients were crippled (that is, with recent bone tuberculosis, severe curvature of the spine, deformities of the large joints, loss of a limb, and some were in need of institutional care); 43.8 per cent were still under observation. From the sociological point of view, 18.3 per cent of 2,500 people under welfare station care are classified as severely crippled; of these, 10.3 per cent are unable to walk; 20.7 per cent evinced a high degree of kyphosis; this group includes patients presenting internal injuries and fistulas, and dwarfs; 14.7 per cent showed arm impairments such as stiffening of the large arm joints in an unfavorable position, complete paralysis of these joints and severely mutilated hands; 16.4 per cent are one handed and have arm and hand paralyses that are attributable to the loss of the hand; 37.9 per cent show such leg abnormalities as unsteady, dragging walk, and congenital and spasmodic paralyses; this also includes persons with bulky prostheses. At this point it should be mentioned that body injuries, as the loss of an arm dating from birth, so seldom offer physical difficulties to the persons afflicted that many of them are capable of normal business occupations. The number of congenital cripples varies. In a census taken in one of Berlin's larger districts, for example, the total number of cripples amounted to 5.5 per cent, whereas the national census of crippled children and adults up to 20 years of age is 32.9 per cent and in the advanced age groups 16.6 per cent. Therein lies the great tendency to assume in young cripples the presence of a birth injury, although it may not have been proved. Closer analysis might reveal that 16 per cent of "congenital defects" more closely approaches the true situation and is perhaps the minimal estimate.

Campaigning for Deliveries at Home

A decree of the Prussian minister of the interior concerning the problem of deliveries at home and deliveries in special institutions is an interesting contribution to the new racial policy in Germany. Numerous and various organizations together with wide sections of the population interested in increasing the birth rate have recently taken great pains to prevent deliveries in obstetric homes or clinical institutions as far as possible in order to reduce the death rate of mother and child. This conviction is based on the idea that the fundamental transference of all births to lying-in institutions is a necessary measure. According to the minister of the interior this point of view does not agree with present-day experiences

in medicine. Clinical delivery is naturally to be recommended in every case in which complications are expected or in which living conditions are especially unfavorable. On the other hand, recent scientific investigations and experiences have revealed that the chances for a favorable and normal course of delivery are no less in one's own home than in a clinical institution. The only disadvantage attendant on a delivery at home is that when an emergency operation is needed it may be too late to call a doctor or too late to transfer the patient to a hospital. But there are advantages worth mentioning, such as the uninterrupted care by the same midwife, the gradual transition from puerperal bed to house work, and the valuable experience of learning how to relax. The transition from clinical care to house work is often marked by unfavorable effects. The danger of puerperal fever or other infectious diseases is generally no greater for the mother in a delivery at home than in an institution. Furthermore, confinement at home makes the members of the family feel closer to one another, which agrees with the National Socialist program of life, whereas the attempt to transfer all confinement cases to institutions would in many ways produce a sense of familial estrangement. Finally, the support of medically unimportant institutions is a double burden to the community in that it is necessary to tax public funds to keep them up and that it imposes on the time and services of all available competent physicians, midwives and nurses. After all, the establishing of any non-self-supporting lying-in homes should in any case be opposed and the demands made by such established homes should be carefully examined from this point of view. The tendency to transfer puerperal patients to institutions should be discouraged unless on expert advice.

Campaign Against Tuberculosis

The tuberculosis societies of Germany united in a congress for the promotion of health, held during September at Salzflun, a German spa. Among others, Dr. F. Kreuser of Stuttgart read a paper on tuberculosis as a vocational disease. With respect to the incidence, it may be said that there are only a small number of cases presenting occupational infection. However, active tuberculosis infection must be guarded against in the future by having applicants for work submit to a thorough physical and roentgen examination. Likewise, roentgenograms should be made of the personnel during and after periods of exposure to infection. In addition to instructing the attending personnel, attention should be focused on procuring healthy working conditions in every locality. For those afflicted with disease and those who have become rehabilitated, a work adjustment board should be established, which would not permit completely healthy people to work side by side with their sick co-workers.

The connection between women workers and tuberculosis was discussed by Dr. A. Hofbauer of Erfurt. The unfavorable effect of industrial work on tuberculosis in women is generally caused by burdensome work. Especially deleterious effects are produced in women who have a double task to perform; namely, the duties of mother and housewife as well as those of daily wage earner. Women should be eliminated, especially from dusty occupations. An increase in tuberculosis of women would result in racial deterioration.

H. Krusch of Gotha commented on the conducting of medical examinations in the tuberculosis public welfare stations. The state of Thuringia is an example of what a well conducted public welfare office can do. Each principal attending physician in 1932 had on an average of 5,000 roentgenoscopies (388.8 to every 10,000 inhabitants) and about 4,500 physical examinations (386.7 to every 10,000 inhabitants), sometimes even more. Dr. Krusch believes that it is necessary to follow up all those in the neighborhood of cases of open tuberculosis by thorough roentgen examination. The understanding of the "neighbor-

hood" should be further widened so that the neighborhood of recently appearing closed tuberculous patients should be investigated. Immediate examination of all collaborators is important; the greatest danger of infection in conditions of bodily strain lies in the close contact between workers. One will always find fewer cases of open tuberculosis in the environmental than in the serial examinations. Here lies the importance of the environmental examination, which the smaller dispensaries are in a position to conduct, while the making of serial roentgen examinations requires an elaborate technical and medical set up.

A decree of the Prussian Ministry of Science, Art and Popular Education concerns the protection of school children against any danger to their health from tuberculous teachers. The reports of official physicians required with the application for entrance into the normal school during the course of study there and on assuming regular employment must be accompanied by a roentgen examination of the lungs. The minister adds that experience has proved that these conscientious evaluations of roentgenologic examinations afford an effective protection against tuberculosis in school children. The demand for roentgenograms is also conducted in an economical fashion, so that the costs of paper films come to only 0.40 R. M. Despite the careful observation and elimination of applicants for teaching positions, special attention must be applied to the danger of tuberculous diseases in all classes. It should be the duty of the school board to demand a facsimile of a certificate of health from an official physician or even from a specialist in cases suspected of tuberculous infection or of tuberculous invasion; as soon as the disease manifests itself, proper measures should be instituted.

Infection Due to Bang's Bacillus

From Oct. 1, 1932, to Sept. 30, 1933, 483 cases of infection due to Bang's bacillus were reported in Germany. Of these, 350 were in men, 131 in women, and 2 undetermined. Diagnosis was made on the basis of serologic examinations of the patients. During the three years previous the number of cases reported were as follows: 1929-1930, 626; 1930-1931, 520; 1931-1932, 498. Most cases occurred in middle aged patients. No cases of infection from Bang's bacillus in connection with abortion were observed. Those reported were always individual diseases; transmission of infection from person to person was not observed in one instance. Of four deaths observed, only one was directly attributable to the Bang bacillus infection.

BELGIUM

(From Our Regular Correspondent)

Oct. 11, 1934.

Radio Medical Consultations on the High Seas

As a consequence of the initiative of Dr. Bernard, mentioned in a former letter, the service of radio medical consultations on the high seas has been developed considerably. The journal *Wandelaar*, published under the auspices of the navy, reports that since 1927 twenty-three nations have given their adherence and as a result ninety-three coastal stations have been equipped. The complete list is given in the fourth edition of the Nomenclature of Berne (international telegraphic bureau), which has just appeared. Besides Belgium (one station, Ostende-Radio), France (six stations), Germany (two stations), England (ten stations), Holland (one station), Norway (three stations), Sweden (five stations), Ireland (two stations) and Denmark (two stations), one finds also Australia (fourteen stations), Colombia (one station), Costa Rica (one station), the United States (twenty-five stations), Fiji Islands (four stations), Guatemala (one station), Honduras (three stations), Marianne Islands (one station), Marshall Islands (one station), Nicaragua (three stations), New Guinea (one station), Panama (two stations), territory of Papua (one station), Samoan Islands (one station), Faeroe Islands (one station) and Greenland (one

station). The Pacific has been especially equipped, while the South Atlantic has not yet been equipped but is supplied by the continuous increase of short wave stations. As to the English Channel and the North Sea, the vessels have at their disposal the stations of Boulogne-sur-Mer, Ostende, Scheveningen and North Foreland; the largest part of the radiomedical traffic is handled by the latter station. The English service is distinguished by the fact that a vessel may request a maritime sanitary office from the shore on the condition that it comes to anchor at three miles from the coast ($5\frac{1}{2}$ kilometers).

Pulmonary Anthracosis

Dr. Courtois brings an important contribution to the question of anthracosis-silicosis-tuberculosis. Being the physician of a sanatorium, of an antituberculosis dispensary, and of a consultation clinic of the respiratory passages, situated in the middle of a mining region, the author had occasion to study the history of 136 miners suffering from pulmonary disorders. He describes the symptoms of the disease and then presents a number of cases of miners suffering from pulmonary diseases, with reproductions of the roentgenograms of the thorax. Among the 136 patients, twelve present disorders of no medical interest, thirty-three present so-called negative roentgenograms belonging to the "anteprimary" stage of the disease; ninety-one present so-called positive roentgenograms, of which thirty offer nodular opacities (primary stage), and sixty-one confluent opacities (secondary stage).

Courtois presents pathologic microscopic and macroscopic documents of great value and shows what he calls "the film of anthracosis." Anthracosis presents an anteprimary stage characterized by a slow and progressive invasion of the lungs by coal dust mixed with siliceous and other elements; the primary stage, besides roentgenologic signs, manifests itself by cardiopulmonary disturbances, and in the secondary stage the fibrosis, nodular in the beginning, becomes confluent. The second period is the time of the infectious complications, especially tuberculosis. In his statistics Courtois finds that more than one fourth, even two fifths, of the patients suffer from tuberculosis, and it is here that the conclusions of the author are unexpected and interesting because they do not agree with the ideas generally held on the subject of tuberculosis among miners.

Twenty-Sixth Congress of the Belgian Medical Federation

The twenty-sixth Congress of the Belgian Medical Federation has been held this year under the presidency of Dr. Mattelet and studied some interesting questions.

If a physician makes a discovery has he the right to reserve for himself the monopoly of it? The president, Dr. Mattelet, discussed this question following an inquiry instituted by the International Professional Association of Physicians. A study has been made through the intervention of the League of Nations, in order to elaborate a new international convention protecting the patent of invention and the scientific property. It is necessary that the medical profession make known its point of view so that it may be taken into account for any convention that might eventually be signed. The reporter thinks that in principle the medical patent can only harm the reputation of the medical profession, which in any case should keep intact its traditional virtues. Consequently, the physician should not take a patent for any discovery that may render service to humanity. It follows that an international action should be taken for the abolition of any patent of medical nature taken by a physician or a nonphysician. If under certain conditions and for certain uses it should be decided that a patent should be taken, it is desirable that such patents be dedicated, in other words, exploited by a governmental or scientific organization (the Order of Physicians, Academy, and so on), especially

the public interest being taken into account. The proceeds should for the largest part go to a foundation for scientific research and some part could be used to reward the author of the discovery proportionately to its importance and utility.

ROME

(From Our Regular Correspondent)

Oct. 22, 1934.

Functions of Subcutaneous Tissue

Dr. Casazza of Pavia recently reported to the Società Medico-chirurgica of Pavia on his investigation of the function of absorption of the subcutaneous tissue, especially from a dermatologic point of view. While some authors have investigated the function of absorption of the subcutaneous tissue in cardiac defects and in renal diseases to ascertain the influence of the latter on the former as a repercussion, the speaker's work is an attempt to verify the local phenomena that may have a direct influence on those functions. He performed Donath and Tanne's test of uranin injection, which permits a good estimation of the absorption, in 125 patients suffering with different dermatologic conditions. He concludes that each individual reacts to the test in a constant personal way, that grave local lesions of the tegument may have an influence on the absorption of the subcutaneous tissue, and that the characteristics of absorption are different for each individual.

Microbes in Bile

Dr. Sciuti of Catania recently reported his experiments performed to ascertain whether or not bacteria are present in the bile of the normal gallbladder. While some authors state that bile not only is sterile but possesses antiseptic properties, others state that only the bile of the intrahepatic ducts is sterile and that the bile of the gallbladder and of the middle third of the common bile duct is contaminated by bacteria. The speaker determined the bacterial contents in common and centrifugated bile from normal gallbladders of twelve dogs and thirty-four oxen. He concluded that bile from living animals, as well as that taken immediately after the animal has been killed, frequently is contaminated by either colon bacilli or staphylococci. A condition of latent microbism was found in the bile content of normal gallbladders in the majority of the animals. The anatomic conditions of the gallbladders from which the bile was obtained indicated that the latent microbism does not provoke, as a rule, noticeable pathogenic symptoms.

Cisternomalarial Therapy

Drs. Mariotti and Sciuti recently reported to the Academia delle Scienze Medico-Chirurgiche of Naples the results of their work on malarial therapy in dementia paralytica. Having in mind the good therapeutic results obtained from the injections of malarial blood into the spinal cavity, so as to have closer contact between the spirochetes in the neuraxis and the malarial virus, they injected malarial blood into the cisterna magna in sixteen patients with dementia paralytica, all in advanced stages of the disease. Obrega and Esckuchen's technic was followed. All patients, even those who had resisted other methods of malarial therapy, reacted, after a period of incubation that was shorter in those who received blood taken during the apyretic period of the malarial patient, with intense fever. The condition did not change in four patients; one died in about three months after the treatment, and the remaining patients were improved. They believe that cisternomalarial therapy is a new and efficient method for the treatment of dementia paralytica. They also believe that this method is better than that of Ducosté and his collaborators, who injected the malarial blood into the white substance of the frontal lobe and in the cerebral ventricles, with an immediate mortality of 9 per cent with the ventricular method.

Mechanism of Fever

Dr. Salmon recently reported to the Accademia Medico-fisica Fiorentina the results of his studies on the importance of the endocrine factors in the mechanism of fever. The nuclei of the tuber cinereum, either because of their vegetative nature or because of their close relation to the endocrine apparatus, have an action of regulation on the body temperature. The fact that the stimulation of the tuber cinereum provokes a hypersecretion of epinephrine (according to Houssay and Molinelli), and the close functional synergy between the tuber cinereum and the posterior lobe of the hypophysis, justify the hypothesis that the sudden reaction of the tuber cinereum by which fever is determined manifests itself with a suprarenal and pituitary hypersecretion. This hypothesis, which would clarify many febrile phenomena, such as chills, tachycardia and the retention of water, is confirmed by the fact that fever does not follow the puncture of the tuber cinereum in suprarenal-ectomized animals. Besides that, fever determines the temporary disappearance of diabetes insipidus, as a result of the hyperactive functions of the posterior lobe of the hypophysis.

BUCHAREST

(From Our Regular Correspondent)

Nov. 7, 1934.

A Study of Total Deafness

Some time ago, Dr. Novak of Prague, director of an institute for deaf and mute patients, published the results of experiments undertaken to establish whether there is absolute deafness or not. He concluded that there is no absolute loss of the hearing power. Similar experiments were carried on in Rumania by Dr. Koleszár, who, like Novak, chiefly used radio amplifiers. His experiments revealed that the majority of deaf people are still sensitive to several tones. The limit of oscillations to which the deaf are yet sensitive is between 128 and 1,024. It was also revealed that if deaf persons hear music or singing, with adequate amplifying, they are able to hear only pure tones. They clearly hear only the pure basal tones and those between certain limits. This explains why they are unable to distinguish between the tones of a violin and of a clarinet. When listening to a band, they feel as if only one instrument were playing. This is true in regard to speaking tones. If deaf persons hear something in a talk at all, they hear wholly different tones than a normal person. They hear better the deep tones. Soprano voices they do not notice at all. Certain consonants they do not hear at all. Thorough investigations show it possible exactly to know what hearing power remains. The greatest achievement of the investigation is establishment of the fact that there is no total human deafness toward every tone as long as the hearing organ is not fully destroyed.

Proposed Radical Changes in the Public Health Service

Costinescu, minister of public health, has proposed the adoption of a regulation intended to encourage young physicians to settle in villages where there is a great scarcity of able practitioners. The state would guarantee to such new physicians 2,000 lei (\$20) a month. The ministerial council has approved the idea but finds that the plan cannot be enforced by a regulation, so it has instructed the minister to draft a law, to be placed shortly before the national assembly.

The ministerial council wishes to alter this plan by a radical change in the public health service. According to its plan, every public health service, state or private, should be under the direction and control of the ministry of health. All county and municipal hospitals would come into the sphere of action of the ministry. Health institutes (social insurance, pay offices) would carry on their administration autonomically, but the medical staff would be under the control of the ministry.

Marriages

RALPH HAYES HOFER, P. A. S., Lieut., U. S. Navy, to Miss Emily Louise Lawrence of Portsmouth, Va., in San Diego, Calif., December 1.

ZELMA ROWENA MACKIN McMANUS, Tyro, Kan., to Mr. Ian Sinclair Mackillop of Detroit at Independence, recently.

CHARLES THOMAS BROWN, San Marcos, Texas, to Mrs. Katie Belle Le Wrage of San Antonio, December 8.

CHESTER B. THRIFT, Rapid River, Mich., to Miss Mildred Russell at Bay City, November 4.

FRANK E. WHITACRE, Chicago, to Miss Lillian Myers of Sylvania, Ohio, November 21.

HARLEY J. GUNDERSON to Mrs. Winifred Coe Dix, both of Los Angeles, November 25.

Deaths

Harmon Smith, New York; Bellevue Hospital Medical College, New York, 1897; member of the American Laryngological, Rhinological and Otolological Society; past president of the American Laryngological Association; fellow of the American College of Surgeons; formerly professor of clinical surgery (laryngology and rhinology), Cornell University Medical College; surgeon and director of the throat department, Manhattan Eye, Ear and Throat Hospital; consulting laryngologist to the Memorial Hospital and Babies' Hospital, New York; consulting throat surgeon to the Muhlenburg Hospital, Plainfield, N. J., and consulting otologist to the Monmouth Memorial Hospital, Long Branch, N. J.; aged 62; was found dead, December 11, of a wound in the chest, presumably self inflicted.

Andrew Buchanan Small, Dallas, Texas; Memphis (Tenn.) Hospital Medical College, 1888; member of the House of Delegates of the American Medical Association from 1915 to 1916; member and formerly councilor of the fourteenth district of the State Medical Association of Texas; fellow of the American College of Surgeons; professor of clinical surgery, Baylor University College of Medicine since 1915; professor of principles of surgery, Southern Methodist University Medical Department, 1909-1914; senior associate surgeon to the Baylor Hospital and Dispensary; aged 71; died, November 29, of coronary occlusion.

William Webster, Winnipeg, Manit., Canada; Manitoba Medical College, Winnipeg, 1895; associate professor of clinical surgery and anesthesia at his alma mater; member of the Associated Anesthetists of the United States and Canada; served during the World War; author of "Science and Art of Anesthesia" and "Anesthesia for Nurses"; aged 69; for many years anesthetist to the Winnipeg General Hospital, where he died, October 23, as a result of inhaling fumes while extinguishing a fire in his boat.

Herbert Henry Sharpe © Lieut. Colonel, M. C., U. S. Army, Manila, P. I.; Long Island College Hospital, Brooklyn, 1906; entered the medical corps of the U. S. Army as a first lieutenant in 1911 and rose through the various grades to that of lieutenant colonel in 1931; served during the World War; aged 51; for two years stationed at the Sternberg General Hospital, where he died, November 6, of coronary occlusion and arteriosclerosis.

Harvey Mitchell Righter © Philadelphia; Jefferson Medical College of Philadelphia, 1896; also a dentist; demonstrator of clinical surgery at his alma mater; served during the World War; aged 62; on the staff of the Philadelphia General Hospital and of the Jefferson Hospital, where he died, November 24, of pneumonia.

Leo Pecci Bell, Sacramento, Calif.; Harvard University Medical School, Boston, 1915; member of the California Medical Association; fellow of the American College of Surgeons; served during the World War; formerly on the staff of the Woodland (Calif.) Clinic Hospital; aged 43; died, October 4.

Henry S. Ward, Springfield, Vt.; University of Vermont College of Medicine, Burlington, 1887; member of the Vermont State Medical Society and the Associated Anesthetists of the United States and Canada; on the staff of the Springfield Hospital; aged 69; died, September 13, of coronary thrombosis.

John Aaron Kendrick, Greenville, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1894; member of the Medical Association of the State of Alabama; past presi-

dent of the Butler County Medical Society; on the staff of the Stabler Infirmary; aged 62; died in November.

Martin Otis Heckard © Chicago; Bellevue Hospital Medical College, New York, 1893; for many years registrar of the bureau of vital statistics, city health department; aged 71; died, November 23, in the Illinois Masonic Hospital, of myocarditis and hypertrophy of the prostate.

William Lee Stubbs, Dutton, Ala.; University of Alabama Medical Department, Mobile, 1899; member of the Medical Association of the State of Alabama; president of the Jackson County Medical Society; aged 61; was found dead, November 26, of angina pectoris.

George Clarence Parcher © Saugus, Mass.; College of Physicians and Surgeons, Baltimore, 1893; served during the World War; for many years on the staffs of the Union and Lynn hospitals, Lynn; aged 63; died, November 29, in the Palmer Memorial Hospital, Boston.

Solis-Cohen Bogh Hertzog © Reading, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; formerly superintendent of the Berks County Tuberculosis Sanatorium; aged 39; on the staff of St. Joseph's Hospital, where he died, November 6, of pneumonia.

J. Louis Simpson, Brooklyn; Fordham University School of Medicine, New York, 1918; member of the Medical Society of the State of New York; on the staffs of the Coney Island, Kings County and St. Mary's hospitals; aged 45; died suddenly, November 7, of heart disease.

Clarence Anson Neighbors, Anaheim, Calif.; Kansas City (Mo.) Medical College, 1905; member of the California Medical Association and the American Academy of Ophthalmology and Oto-Laryngology; aged 54; died, November 14, in St. Vincent's Hospital, Los Angeles.

Philip Leach © Medical Director, Captain, U. S. Navy, retired, New York; Rush Medical College, Chicago, 1881; entered the navy in 1891 and retired in 1919 on attaining the age of 64; fellow of the American College of Surgeons; aged 78; died, October 19.

Thomas L. Ryan, Saginaw, Mich.; Western University Faculty of Medicine, London, Ont., Canada, 1899; member of the Michigan State Medical Society; formerly on the staff of St. Mary's Hospital; aged 64; died suddenly, August 31, of angina pectoris.

Samuel Davenport Etkin, New York; Long Island College Hospital, Brooklyn, 1908; member of the Medical Society of the State of New York; on the staffs of the Harlem and Mount Sinai hospitals; aged 51; died, November 25, of acute coronary occlusion.

Edwin C. Taylor © Jackson, Mich.; University of Buffalo School of Medicine, 1879; member of the House of Delegates of the American Medical Association in 1923; aged 75; died, November 11, at his winter home in Howey-in-the-Hills, Fla.

John Thomas Rimer, Clarion, Pa.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Society of the State of Pennsylvania; past president and secretary of the Clarion County Medical Society; aged 79; died, October 29.

Hugh Mackay, Winnipeg, Manit., Canada; Manitoba Medical College, Winnipeg, 1895; formerly assistant professor of medicine and dermatology at his alma mater; on the staff of the Winnipeg General Hospital; aged 70; died, October 12.

William C. Nordholz © Oak Park, Ill.; Jenner Medical College, Chicago, 1911; served with the American Red Cross during the World War; on the staff of the Garfield Park Hospital; aged 49; died, December 7, of coronary thrombosis.

John Gilbert, Fall River, Mass.; University of Vermont College of Medicine, Burlington, 1886; member of the Massachusetts Medical Society; Civil War veteran; aged 87; died, November 2, of arteriosclerosis and chronic myocarditis.

Howell Lea Castleman © Sylacauga, Ala.; University of the South Medical Department, Sewanee, Tenn., 1901; past president of the Talladega County Medical Society; aged 63; died, November 24, of heart disease, following influenza.

William Zimmermann, Denver; University of Colorado School of Medicine, Denver, 1912; member of the Colorado State Medical Society; aged 56; died, October 5, in St. Luke's Hospital, of cerebral hemorrhage and arteriosclerosis.

Adam Wood Montague, Fort Worth, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1916; member of the State Medical Association of Texas aged 41; died, November 24, of coronary occlusion.

Burt B. Lamkin © Fresno, Calif.; College of Physicians and Surgeons of San Francisco, 1902; member of the Pacific Coast Oto-Ophthalmological Society; on the staff of the Sample Sanitarium; aged 58; died, October 22.

Albro Joseph Ames, Potter, Neb.; John A. Creighton Medical College, Omaha, 1901; aged 83; died, November 14, in a hospital at Kimball, S. D., of pneumonia resulting from injuries received in an automobile accident.

Cary Carpenter Bradford, Southbridge, Mass.; Harvard University Medical School, Boston, 1882; member of the Massachusetts Medical Society; aged 79; died, October 20, of chronic myocarditis and diabetes mellitus.

Charles Schmidli, Bonfield, Ill.; Reliance Medical College, Chicago, 1910; member of the Illinois State Medical Society; aged 63; died, October 19, in St. Mary's Hospital, Kankakee, of intestinal obstruction.

Charles Everett Carter Peyton, Pulaski, Va.; University of the City of New York Medical Department, 1877; member of the Medical Society of Virginia; aged 79; died, October 30, in a hospital at Roanoke.

Daniel Porter Mixson, Headland, Ala.; Atlanta College of Physicians and Surgeons, 1902; member of the Medical Association of the State of Alabama; aged 54; died, November 9, of cerebral hemorrhage.

William Luther Royster, Indianapolis; Kentucky University Medical Department, Louisville, 1906; served during the World War; aged 51; died, November 24, in the Methodist Hospital, of pneumonia.

William Brooks Turner, Florence, Ala.; University of Nashville Medical Department, 1904; member of the Medical Association of the State of Alabama; aged 56; died, November 28, of pneumonia.

Albert A. Dye, De Funiak Springs, Fla.; Rush Medical College, Chicago, 1871; Civil War veteran; formerly mayor of Madison, Wis.; aged 89; died, November 24, in Asheville, N. C., of carcinoma.

Emily Frances Murphy, Taunton, Mass.; College of Physicians and Surgeons, Boston, 1892; member of the Massachusetts Medical Society; aged 75; died, November 14, of injuries received in a fall.

Charles Edward Park, De Witt, Ark.; St. Louis University School of Medicine, 1903; member of the Arkansas Medical Society; aged 55; died, November 20, in the Baptist Hospital, Memphis, Tenn.

Bernhard F. Bellack, Columbus, Wis.; College of Physicians and Surgeons of Chicago, 1890; on the staff of St. Mary's Hospital; aged 72; died, November 22, of heart disease.

Charles Ober Kepler, Brookline, Mass.; Harvard University Medical School, Boston, 1899; member of the Massachusetts Medical Society; aged 66; died, November 1.

James Halbert Conoly Jr., Gloucester City, N. J.; Temple University School of Medicine, Philadelphia, 1925; aged 36; died, November 21, of pneumonia.

John George Hugo, New Haven, Conn.; College of Physicians and Surgeons, Baltimore, 1903; served during the World War; aged 54; died, November 11.

J. Bennett Millard, Bristol, Va.; Louisville (Ky.) and Hospital Medical College, 1908; aged 48; died, November 4, in a local hospital, of pneumonia.

Ernest Adolphus Sturge, San Mateo, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1880; aged 78; died, October 12.

Oren A. Chitwood, Fort Worth, Texas; College of Physicians and Surgeons, Baltimore, 1883; aged 77; died, November 6, of angina pectoris.

Francis James Albro Cochran, Toronto, Ont., Canada; Bellevue Hospital Medical College, New York, 1892; aged 69; died, October 23.

Joseph James McVety, Old Town, Maine; College of Physicians and Surgeons, Boston, 1912; aged 47; died, October 31.

Thomas Elbert Rushing, Ramer, Ala.; Medical College of Alabama, Mobile, 1890; aged 68; died, in October, in Eureka, Texas.

Milne Brownlee, Woodstock, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1886; died, October 8.

John Cabell Moseley, Henderson, Ky.; Kentucky School of Medicine, Louisville, 1896; aged 59; died, November 15.

Charles H. Matthews, Mount Orab, Ohio; Starling Medical College, Columbus, 1893; aged 72; died, November 8.

William H. Waller, Angola, Ind.; Detroit Medical College, 1874; aged 85; died, November 26, of cholangitis.

Stith T. Hurst, Los Angeles; Rush Medical College, Chicago, 1871; aged 90; died, October 24.

Wilbur N. Morell, Verdale, Minn. (licensed in Minnesota in 1883); aged 77; died, November 10.

Correspondence

THALLIUM NEURITIS

To the Editor:—It seems odd that Cobb and Coggeshall in their extensive and instructive article on neuritis (*THE JOURNAL*, November 24, p. 1608) in listing the chemical causes of neuritis should have overlooked or omitted thallium. This element has been used for the removal of hair in the treatment of tinea capitis, and although its use by dermatologists has been markedly restricted because of the danger of neuritis resulting in blindness or paralysis, the "patent" drug promoters fearlessly entered the field, as exemplified by Koremlu, which bankrupted its backers through numerous lawsuits.

Thallium is also used extensively as a rodenticide (Munch, J. C.; Ginsburg, H. M., and Nixon, C. E.: *The 1932 Thallotoxicosis Outbreak in California*, *THE JOURNAL*, April 29, 1933, p. 1315) and in nonfatal doses may also cause polyneuritis and optic atrophy.

FRANCIS A. ELLIS, M.D., Baltimore.

TRIORTHOCRESYL PHOSPHATE AND POLYNEURITIS

To the Editor:—In a paper on Neuritis by Cobb and Coggeshall in *THE JOURNAL*, November 24, the subject of triorthocresyl phosphate polyneuritis is discussed. The following references are cited by the authors for this type of neuritis on page 1615:

Vonderahe, A. R.: *Pathologic Changes in Paralysis Caused by Drinking Jamaica Ginger*, *Arch. Neurol. & Psychiat.* **25**: 29 (Jan.) 1931.

Merritt, H. H., and Moore, M.: *New England J. Med.* **203**: 4 (July) 1930.

Mella, Hugo: *A Preliminary Report on the Treatment of Paralysis Agitans*, *Arch. Neurol. & Psychiat.* **7**: 137 (Jan.) 1922.

Smith, M. I., and Elvove, Elias: *Pub. Health Rep.* **45**: 1703 (July 25) 1930.

The reference to Mella's paper is obviously an oversight or typographic error, for this report deals with arsenic and not triorthocresyl phosphate, which, so far as I have been able to ascertain, was not known to medical science until 1930.

Neither Vonderahe nor Merritt and Moore make any mention whatever of triorthocresyl phosphate as a possible etiologic factor in "ginger paralysis," and it is very improbable that they knew anything about it. Vonderahe described the pathologic changes in several cases of "ginger paralysis," suggesting a toxin that might reach the peripheral nerves through the circulation and thence travel into the central nervous system along the nerve fibers and anterior roots. The paper of Merritt and Moore merely reports on the clinical aspects of fifteen cases of "ginger paralysis." It is true they suggest some toxic substance, but all they say with regard to it is that "the exact nature of this toxic substance is not known."

The precise etiologic relationship of triorthocresyl phosphate to "ginger paralysis," and its pharmacology, biochemistry and pathology were published in the following series of papers:

Smith, M. I.; Elvove, Elias; Valaer, P. J., Jr.; Frazier, W. H., and Mallory, G. E.: *Pub. Health Rep.* **45**: 1703 (July 25) 1930.

Smith, M. I.; Elvove, Elias, and Frazier, W. H.: *Pub. Health Rep.* **45**: 2509 (Oct. 17) 1930.

Smith, M. I., and Lillie, R. D.: *Histopathology of Triorthocresyl Phosphate Poisoning*, *Arch. Neurol. & Psychiat.* **26**: 976 (Nov.) 1931.

Smith, M. I., and Elvove, Elias: *Pub. Health Rep.* **46**: 1227 (May 22) 1931.

Smith, Engel and Stohlman: *Bull. 160, Nat. Inst. of Health*, 1932.

Smith, M. I.; Lillie, R. D.; Elvove, Elias, and Stohlman, E. F.: *J. Pharmacol. & Exper. Therap.* **49**: 78 (Sept.) 1933.

Smith, M. I., and Stohlman, E. F.: *Pub. Health Rep.* **48**: 734 (June 23) 1933.

Smith, M. I., and Stohlman, E. F.: *J. Pharmacol. & Exper. Therap.* **51**: 217 (June) 1934.

The paper by Harmsma and van Esveld to which the authors refer in connection with "apiol neuritis," which by the way should have been van Itallie, Harmsma and van Esveld, pub-

lished in the *Archiv für experimentelle Pathologie und Pharmacologie* 165:84, 1932, merely confirms the work of the National Institute of Health, showing that a brand of apiol adulterated with triorthocresyl phosphate produced the same type of polyneuritis in several European countries in 1931 as did the ginger beverage similarly adulterated in the United States in 1930.

M. I. SMITH, M.D., Washington, D. C.

Principal Pharmacologist,
National Institute of Health.

FACTORS IN INFANT MORTALITY

To the Editor:—Dr. Levy, in his communication published in THE JOURNAL December 1, in criticism of the article by Drs. Grulee, Herron and myself, stated that "in the presence of such statistical errors, as I have indicated, the case cannot be considered proved." These statistical errors consist of two criticisms.

The first criticism is that we state that the mortality of the group reported was less than one-fourth that of the infant mortality of the same region. This, he says, is incorrect because our group does not contain deaths before 3 weeks of age, whereas the infant mortality of the same region includes all deaths from birth. The infant mortality quoted does not contain deaths occurring in the first two weeks of life. Our only reason in even mentioning these mortalities was to show that our babies were cared for as well as those in the same locality. We are not attempting to compare the results of our controlled group with any "city, state or nation as a whole." What we are trying to show is that, in 20,000 babies, 66 per cent of the total mortality was in 8.5 per cent of the group, which represented the artificially fed babies.

The second criticism is that our group of families contained too many Italian and Russian mothers, and that the infant mortality rate is always lower in babies of these nationalities. In this we heartily agree with Dr. Levy, as their infant mortality rate is lower because the majority of their babies are breast fed, which is exactly what we are trying to show.

HEYWORTH N. SANFORD, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ABDOMINAL PAIN IN CHILDREN

To the Editor:—When a small child complains slightly of indefinite abdominal pain, with a normal temperature, either no vomiting or possibly vomiting once and the bowels practically normal, with so little tenderness of the abdomen on pressure and so little rigidity of the muscles that they can be scarcely distinguished, what disease is he suffering from, especially when the blood count shows a leukocytosis of from 18,000 to 23,000, with the lymphocytes about 14 per cent and the polymorphonuclears at about 85 to 90 per cent with no urinary symptoms? I have seen several instances of this type and recovery has occurred without operation; but I still think that the condition was acute appendicitis. Are there any other diseases of this character that would give a blood picture like this? In some of these cases it is very difficult to make a diagnosis and I would like to know if there are others who have this difficulty.

J. A. POIRIER, M.D., Forest Lake, Minn.

ANSWER.—The chief symptoms of the small child described in this query are vague abdominal pain with or without vomiting. The chief physical observations are indefinite tenderness and muscular rigidity, and the laboratory examination reveals leukocytosis and increase of the polymorphonuclear elements in the blood. It is stated that there is a normal temperature and that urinary symptoms are absent, though it is not stated whether urinalysis has been done.

Acute appendicitis cannot be ruled out on the information given. In infants and young children the symptoms of appendicitis vary greatly from those which occur in older children

and adults. In infants and young children suffering from acute appendicitis the temperature may be high or it may be normal or even subnormal. Vomiting may or may not occur and, though constipation is the rule, diarrhea may accompany the disease in a certain number of instances. Pyuria may be associated with appendicitis. A polymorphonuclear leukocytosis usually exists. Tenderness over McBurney's point is of great diagnostic importance, if it can be elicited. In young children the appendix frequently lies so deep that the tenderness may be deflected toward the left or upward or it may be entirely absent. Rectal examination in doubtful cases is often extremely helpful, for when palpable resistance on the right side is encountered during this procedure the diagnosis of appendicitis should be strongly suspected. The diagnosis in infants and young children is often extremely difficult and may be confused with intussusception, intestinal obstruction, diffuse peritonitis, pleurisy, pneumonia, gastro-intestinal disturbances, and iliopsoas abscess. In fact, acute appendicitis at this age may be confused with nearly any of the diseases with which infants or young children may be afflicted, because at this age subjective pain is poorly localized and objective signs may be vague or absent. Pain from an earache or sore throat is often referred to the abdominal region by the child, and skill and practice in palpation are necessary to elicit tenderness and muscular rigidity. Any acute infection or infectious disease in a young child may be associated with indefinite abdominal pain and a polymorphonuclear leukocytosis, except those diseases characterized by leukopenia or a leukocytosis of a lymphocytic nature.

PREMATURE OSSEOUS UNION OF SKULL SUTURES

To the Editor:—I have a patient, a baby 10 weeks old, with premature osseous union of the sutures of the skull and of the fontanels. Can and will you give me data on this? Treatment, I suppose, there is none. The infant has the appearance of mental deficiency. The father has had a severe case of diabetes for ten years. M.D., California.

ANSWER.—The condition described is probably microcephalus. It has sometimes been regarded as due to defective bony growth or premature ossification of the skull, but in most cases the early ossification of the skull is usually a consequence of arrested growth of the brain, and not the reverse. A microgyria is present, with agencies of the cortex. The reasons for the developmental arrest of the brain are mostly unknown. If the circumference of the head is much below the average for the age and relatively much less than the measurements of the rest of the body, microcephalus is present. Normally throughout infancy the circumference of the head, chest and abdomen are nearly the same.

The symptoms of microcephalus are those of mental deficiency and often spastic paralysis existing in various combinations and severity. Convulsions often supervene.

As the essential condition in microcephalus is an arrested development of the brain, operative procedures are of no avail. There is no relationship to the parent's diabetes.

RIDGES OF FINGER NAILS

To the Editor:—Will you please tell me if there is any treatment for longitudinal ridges on the finger nails? Please omit name.

M.D., Pennsylvania.

ANSWER.—Longitudinal ridges on the finger nails are mentioned as occurring in gout, and some English physicians maintain that they are diagnostic. This, however, is probably no more true for longitudinal ridges than for transverse furrows or other malformations of the nail, which are caused by a great variety of general or local disorders.

Senility is also a well known cause of longitudinal ridges. Cases have been reported in association with alopecia areata. One observer saw the nail changes occur with two attacks of the scalp disorder, the nails having returned to normal between attacks.

Congenital dystrophy of the nails sometimes takes this form. Crocker mentions this (Crocker, H. R.: Disease of the Skin, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1903, p. 1255) in a boy, aged 12 years, with a central ridge with a parallel groove each side of it on each of his finger nails. The nails were rough, thin and soft. No etiologic factor was found except cold hands. The toenails were normal.

The patient should be thoroughly studied to discover any local or general cause for the nail changes. If this is found, it should be treated. If none is found, pushing the vitamins and protecting the nails against dryness by local applications of ointment of rose water may be tried. Alternating hot and cold baths to stimulate circulation might be of benefit, or even galvanic and faradic electrotherapy.

DIAGNOSIS OF SKIN SENSITIZATION AND
FUNGUS INFECTION

To the Editor:—My sister has had an intractable dermatitis. It began at 15 years of age with involvement of the left index finger. The eruption at that time consisted of exfoliation of the skin; there were no vesicles and no ulceration. The condition would entirely disappear under symptomatic treatment. The patient entered a hospital and trained for nursing at 18 years of age. During this time the condition became worse. The hands, fingers and wrists would scale, leaving small fissures and areas of ulceration, which would heal easily. Later vesiculation set in with intolerable itching and burning. While she was in training, the condition spread to both feet, localized mostly to the skin posterior to the ankle joints over the achilles tendon. She was treated at that time by several dermatologists and received ointments, two series of roentgen treatments, and ultraviolet irradiations with but little relief. Since graduation the condition has been gradually progressing for four years with intervals of quiescence. The patient has been nursing at intervals since graduation and was nursing when the present attack set in. In March 1934 she reported for duty at a hospital and was given one injection of typhoid vaccine, diphtheria inoculation and vaccination for smallpox, which was immediately followed, within three days, by a severe dermatitis, vesiculation followed by ulceration with secondary infection, marked swelling of the wrists and feet, severe itching and burning. The last attack occurred three months ago, followed by gradual improvement. At present the patient is 26 years of age and is married; there are no children. She complains of itching and burning of the hands and feet, loss of weight, sleeplessness and weakness. The husband is well. The family history is negative. The patient has had whooping cough, measles and hay fever. She weighs 109 pounds (49 Kg.) and is 5 feet 2 inches (157.5 cm.) in height. She is restless and depressed. There is a vesicular scaling eruption of the fingers, the wrists, and the posterior aspects of the lower extremity of the legs, the dorsum of the feet at the base of the toes, the plantar aspect of the right great toe and the lateral aspect of the left little toe. Some fissuring, small areas of ulceration, and infection with moderate thickening of the skin have occurred where healing is taking place. Pus has formed in small areas of the feet and about two fingernails. The skin of the remainder of the body is normal. The temperature is 98 F.; pulse, 80; systolic blood pressure, 106; diastolic, 60; hemoglobin, 75 per cent; red cells, 4,050,000; leukocytes, 6,600; small lymphocytes, 8 per cent; large lymphocytes, 12 per cent; polymorphonuclears, 79 per cent; eosinophils, 1 per cent. Blood chemistry reveals nonprotein nitrogen 30, creatinine 1.4, sugar 100. The urine is amber, with a specific gravity of 1.022; it is alkaline, negative for albumin and sugar, and shows a few pus cells microscopically. Treatment at present has consisted of a free diet, calcium chloride intravenously every third day, epinephrine 1 cc. daily, and ointments of oil of cade, procaine hydrochloride and hydrous wool fat. I would appreciate help as to diagnosis and treatment. Please omit name.

M.D., New York.

ANSWER.—Whether the original scaly eruption on the finger was an infection or a local sensitization it is impossible to say, but the case in its later development is evidently a sensitization to one, perhaps several, substances. The recent recurrence was precipitated perhaps by the reaction commonly occurring after injection of typhoid vaccine or the combination of other foreign proteins. A specific sensitization to some one of these foreign proteins may exist. This should be investigated; but the recurrence of the dermatitis can be explained without assuming specific sensitization.

The nature of the vesicles may give some information. If they are very small and easily ruptured, the likelihood of a complicating fungous or bacterial infection is slight. If, as seems probable from the description, they are several millimeters in diameter and rather tough roofed, it is possible that infection complicates the sensitization dermatitis. The roofs of several vesicles should be examined for fungi, and cultures should be made of the vesicle contents on plain and sugar mediums, preferably Sabouraud's maltose agar. To detect food sensitization, the nonallergic diet advised by Rowe may be used, adding one food at a time until, by exacerbation of the eruption, the offending food is found.

An effort must be made, by careful questioning of the patient, by scratch and patch tests with all contact substances, to discover the nature of the sensitization. If this can be done, recovery will be greatly facilitated. If not, general rules of treatment must be followed.

Whether or not a mixed infection is present, the local management may well be begun by painting the vesicular eruption once daily with 1 or 2 per cent potassium permanganate. Before this is begun, a small area should be tested with this medicament for a day to determine whether it irritates the sensitive skin. This rule should be followed with each new local application, particularly those applications which stimulate. If preferred, cool wet dressings of solution of aluminum acetate in from 5 to 20 per cent solution may be used, the dressings made thin so as to facilitate evaporation, and frequently wrung out of the cool solution.

If a fungous infection is present, the next application, after vesiculation has ceased, should be crude coal tar ointment, to which the skin is seldom sensitive. This is spread on thin, removed once a day with oil, and then renewed. A weak

Whitfield ointment may be used, or a lotion of 2 per cent salicylic acid and 2 per cent resorcinol in 50 per cent alcohol may be dabbed on frequently.

A bacterial infection may require the use of stronger bactericides such as ammoniated mercury; but the danger of irritation is much greater with these, and the use of potassium permanganate at the beginning of the treatment will probably eliminate such an infection. When the infection has been subdued, soothing ointments may be used—a thin application of zinc oxide paste or ointment, removed daily with oil, and then the ointment renewed. If the ointment alone does not control the itching, the antipruritics phenol, menthol, camphor or one of the tars may be used in addition to the soothing ointment. As needed, stimulants, the tars, bitumen sulphate, resorcinol or sulphur may be used with caution, after a preliminary test as suggested. As the eruption changes, a corresponding change in local application must be made.

Procaine hydrochloride should not be used. It has no value for external use and may add another to the list of sensitizations already present.

To raise the irritation threshold, the calcium chloride treatment is helpful; but if it has already been used for some time, it had better be discontinued, at least temporarily. If a sensitization to some particular kind of meat has been determined, that, of course, should be interdicted. Other meats should be allowed in moderation. Sodium chloride may well be restricted, particularly if the patient is nervous and requires bromides, which seldom cause skin eruption and are often of great value in the control of sensitization.

In chronic sensitization, even when arsenic or other metallic poisoning cannot be determined, intravenous injections of sodium thiosulphate sometimes are of great benefit. They should be employed, as for arspenamine dermatitis, every day for the small doses, every second or third day for the large doses. Whether they act by raising the threshold of irritation or as a mild shock therapy is not known.

Other forms of shock therapy, intramuscular injections of sterile milk or intravenous typhoid vaccine, should be employed with great caution, if at all, for the reactions are hard to control.

ICTERIC PRURITUS

To the Editor:—A man, aged 70, has a tumor of the right kidney and also one of the gallbladder. The latter is partially obstructing the common duct, causing a mild but intensely itchy jaundice, which has resisted treatment so far. Because of his age and poor cardiorespiratory function, surgeons deem operation inadvisable. However, the patient states that he feels fine except for the itching. Can you suggest any form of treatment, either external or internal? Could you give me any references on the symptomatic treatment of icteric pruritus? Kindly omit name.

M.D., Connecticut.

ANSWER.—General hygienic regulation is of great importance. The diet should be an easily digested one, from which alcohol in all forms and condiments should be excluded. Tobacco should be reduced as much as the comfort of the patient permits.

Hot baths, simple or with sodium bicarbonate, or hot wet compresses may be helpful; but measures should be taken to counteract the drying effect of hot baths. During the bath the skin should not be rubbed. When the patient emerges from the bath, the skin should be partially dried by patting with a towel, and then talcum powder or an ointment such as 10 per cent boric acid in ointment of rose water should be applied. No towel at all may be still better, the water being allowed to evaporate partly, and then the talcum powder applied.

Demulcent baths, if the skin is very dry, may be better. Such a bath is made by boiling two cupfuls of oatmeal in a gauze bag for five minutes, allowing the water to cool, then adding it and the bag to the bath, in which the sodium bicarbonate has already been dissolved. Squeezing the bag forces out the fine particles, which are of value. Soap, and that the mildest, should be used only on the hands, feet and hairy parts.

Locally, calamine lotion made with equal parts of lime water and rose water, or made still less drying by the addition of 5 per cent glycerin, may be used with 0.5 per cent each of menthol and phenol; if it causes chilling, the menthol may be omitted. Camphor chloral may be used in from 2 to 5 per cent strength. If the lotion is too drying, calamine liniment, so called, may be used. It is composed of equal parts of lime water and olive oil, to which calamine powder and zinc oxide are added, 12 per cent of each.

Coal tar solution or alkaline solution of tar may be used in an aqueous solution in 3 per cent strength as a lotion. Alcoholic lotions of 50 per cent strength may be used. They are more cooling but also more drying to the skin.

Though the etiologic factor is impossible to remove, the case is still in a more favorable position than many of the cases of

pruritus in which the etiology is entirely dark. The use of ergotamine tartrate in doses of 0.001 Gm. by mouth three times a day for a few days has given excellent results according to Lichtman (The Therapeutic Response to Ergotamine Tartrate in Pruritus of Hepatic and Renal Origin, *THE JOURNAL*, Nov. 14, 1931, p. 1463). The drug in this dosage seems to be without unpleasant reactions.

The use of hypertonic salt or sugar solution (osmotherapy of Stejskal) intravenously sometimes benefits pruritus by disturbance of the colloidal balance. In this case the sugar may benefit the liver. The urine should be examined for sugar after each injection and, if glycosuria appears, insulin may be given.

Insulin alone in small doses, from 10 to 20 units, is said by several authors to exert an excellent influence in pruritus (Sparks, R. A.: Insulin Therapy of Pruritus, *J. Missouri M. A.* 26:24 [Jan.] 1929).

Sodium thiosulphate intravenously often lessens itching. It may be combined with sugar solution, 1 Gm. dissolved in 10 cc. of sterile distilled water and added to 50 cc. of the 50 per cent sugar solution.

Calcium salts by mouth or intravenously and calcium gluconate by mouth, intramuscularly or intravenously may lessen itching by reducing the irritability of the skin, supposedly by causing thickening of the blood vessel walls.

Blood removed from the patient's vein and immediately re-injected in his gluteal muscles may be of benefit. From 5 to 20 cc. is to be given every fifth day.

Of the older remedies, pilocarpine is highly recommended, given hypodermically with caution in doses of from 0.005 to 0.02 Gm. (one-tenth to one-third grain) once or twice daily, depending on the duration of the effect. Just enough to moisten the skin should be given.

Tincture of cannabis may be tried, from 0.6 to 2 cc. (10 to 30 minims) well diluted after each meal.

EDEMA OF ANKLES

To the Editor—Mrs M. G., aged 36, was seen by me about two months ago, because of edema of the ankles and feet of three years' duration. The edema is worse at night and is entirely relieved if the patient remains in bed for a few days. The past history is negative. The patient had one abortion. She has not undergone any operations or had serious ailments. The husband and one child (18 years old) are both living and well. Menstruation occurs every twenty-eight days, is regular, and lasts for four days. There is no dysmenorrhea. Physical examination is essentially negative. The blood pressure is 120 systolic, 80 diastolic. The ankles and feet appear about one and one-half times the normal size, the edema is more marked on the left. A few superficial varicosities were noted on the legs. Deep veins are patent. Laboratory examination of the urine gave negative results on five tests. The Wassermann reaction was negative. Blood sugar was 100 mg. per hundred cubic centimeters; blood urea, 12 mg. Blood count gave normal results. Hemoglobin was 85 per cent, serum albumin, negative, serum globulin, negative. An electrocardiogram was negative. A roentgenogram of the ankles and feet was negative. Treatment consisted of injection of the superficial varicose veins with 5 per cent sodium morrhuate, resulting in obliteration. The patient was given doses of sodium bicarbonate and potassium citrate, about 600 grains (39 Gm.) of each daily with little improvement. Massage and digitals were also administered. The patient has seen many physicians without relief. Can you suggest a cause of this "idiopathic edema"? Please print initials only. M.D., New York.

ANSWER.—The causes of bilateral edema of the ankles are many. The correspondent seems to have ruled out cardiac and nephrotic edema by the customary tests. It is not obvious from the description whether the onset of the edema was sudden or gradual. Assuming that the deep veins are patent, the patient may still have short clots in the pelvic vessels, which are not infrequent and may manifest themselves in a mild venous insufficiency. The character and atypical course of the superficial varicosities may give a further hint in this direction. A mild lymphedema, as a result of a chronic obliterating lymphangitis, may be present. This edema is usually harder and produces more fibrosis than any other edema. Finally an increased capillary permeability must be considered, which permits the filtration of protein through the vessel wall. The extravascular protein in turn attracts more water and prevents adequate return on the venous side. In younger women, particularly during the summer, ankle edemas are not uncommon and have been explained on such a basis.

Treatment will naturally be based on the proper diagnosis, which may have to be made by a man who has had considerable experience with such edemas. Generally speaking, the patient should sleep with elevated legs at night and put on a light elastic stocking from the toes to the knees before getting up. Thrombophlebitis and lymphedema respond favorably to mild doses (100 roentgens) of x-rays. If a nephritis can be excluded, the treatment may well begin with daily doses of ammonium nitrate, 1 Gm. three times a day, followed on the third day by 1 cc. of salyrgan intravenously.

Protein-leaking capillaries can be reinforced by calcium, which must be given in large doses, preferably a gram of calcium gluconate intravenously and from 5 to 10 Gm. by mouth.

A return of the edema may be expected so long as the actual cause is unknown.

THERMIC SENSITIVENESS

To the Editor.—A man, aged 34, recently came under my care complaining of intense itching and burning of the skin, involving different areas, sometimes the entire body except the face. He has had this trouble since the age of 13, a period of twenty-one years, and has consulted a number of physicians, none of whom could give him any relief. The trouble is present only during hot weather, at which times it is worse when his body is covered with perspiration. Paradoxically, a bath with warm, cold or tepid water leaves his skin burning intensely for about twenty minutes, after which time he feels relieved. He says it is always more noticeable when the wind blows from the south, bringing cool air of high humidity; that a dry, hot north wind makes him feel more comfortable. A slap on the skin makes that part burn at any time. There has never been any eruption or breaking out that he knows of. The past history is essentially negative, there is no history of allergic diseases, and the trouble does not seem to be related to food. Physical examination reveals ringworm between the thighs, about healed, and a spot of ringworm over the sternum. The urine shows no abnormality, and the blood Wassermann reaction is negative. Can you give me any idea as to what this condition is and how it should be treated? Might it be a neurosis? Please omit name. M.D., Texas

ANSWER.—This is apparently a case of thermic sensitiveness.

The therapeutic approach in cases of this type must be varied. The history indicates that the patient is apparently suffering with a combined—hot and cold—sensitiveness. This type of case is extremely hard to manage, and it is necessary to know which tissues are sensitive to heat and which to cold. In some of these cases, heat in one locality may cause reaction and when applied to another may relieve it. The avoidance of undue effort, mental excitement and excessive wearing apparel and the use of fans may ward off an attack in heat sensitive cases. Wetting the hands is sometimes of benefit.

A change in geographic environment is also of benefit, for in this way not only are extremes in temperature avoided but also differences in humidity. Patients whose tissues react locally to heat usually do better in a dry atmosphere than a moist one. If this patient shows a tendency to have a markedly subnormal temperature, the use of desiccated thyroid, insulin or a nonspecific protein therapy may be considered. A higher general average of body temperature is often associated with improvement. The correction of any abnormal body conditions is essential, since these may act as contributory factors. It is remotely possible that the patches of ringworm in this case may be a contributory factor.

Cold sensitive cases usually respond more readily than heat sensitive cases. The use of either hot or cold baths, or their alternate use, may be of benefit. Epinephrine, ephedrine, atropine and sedatives are also of value during the attacks.

DANGERS OF CARBON BLACK

To the Editor.—I have a patient who has worked in the carbon black industry for sixteen months. During the past ten or twelve months he has lost 65 pounds (29.5 Kg.) and is down to his present weight of 135 pounds (61 Kg.). He is 33 years of age and 5 feet 10 inches (178 cm.) in height. I have tried to rule out focal infection and have roentgenographed his chest. The urine is normal. The liver is two fingerbreadths below the costal margin and slightly tender. He complains of general malaise and weakness and some soreness over the right costal margin. He has just come under my observation and doesn't have any fever now but tells me that it has been 101 F. on several occasions and 103 F. one time. He has continued at work until three days ago, when he began his vacation. Please inform me (1) of the hazards of the carbon black industry and the methods of diagnosis, and (2) how the Derrien test for dimethylenol is carried out.

JAMES F. McMURRY, M.D., Sentinel, Okla.

ANSWER.—1. Carbon black is made by burning natural gas in a limited supply of air. Two methods are in use, the channel process and the roller process. In the former the flames of burning gas are caused to impinge on inverted iron channels of various lengths, which move slowly forward and backward. In this process about 1,200 cubic feet of gas is burned to produce one pound of the black pigment. In the roller process the burning gas impinges on slowly revolving steel drums and the black pigment is scraped off as it accumulates. This method requires about 1,700 cubic feet of gas to produce one pound of black pigment. Very rarely carbon black is produced by the burning of artificial gas, producer gas, acetylene gas, and so on. Carbon black is almost 100 per cent pure amorphous carbon. Carbon black should not be confused with lamp black, which may be produced by burning coal tar distillates, kerosene, naphtha, fish and vegetable oils, and the like. In the burning of carbon black the possible health hazards are carbon

monoxide poisoning, carbon dioxide asphyxiation and asphyxiation by the natural gas itself, together with the remote possibility of poisoning by sulphur derivatives and by formaldehyde.

2. Derrien's test is performed as follows: To 10 cc. of the urine to be tested add 1 cc. of 10 per cent sulphuric acid and then 1 cc. of 0.5 per cent sodium nitrite solution. Shake and keep in the dark for five minutes. In another tube (of about 25 cc. capacity) place 2 cc. of freshly prepared 0.5 per cent betanaphthol in ammonia water (21.6 per cent NH_3). Pour treated urine into the betanaphthol solution. Shake and allow to stand for one minute or more. Then add 10 cc. of sulphuric ether. Shake well and cork the test tube, permitting the ethereal solution to separate. After separation, interpretation of the test may be made. If the color of the ether is violet, wine or orange red, the reaction is positive for dinitrophenol. If the ether stratum is colorless or yellow, the test is negative.

PNEUMOTHORAX AND THORACOPLASTY

To the Editor.—1. Have most men discontinued the use of pneumothorax after thoracoplasty? If not, on what grounds has it been given up by some? 2. Is puncture of the pleura at its apex a frequent accident when doing a thoracoplasty? Might it be a serious complication? 3. Would the escape of air, in toto, affect the closing of an apical cavity in which otherwise apparent collapse has been obtained? In other words, does moderate intrapleural tension inhibit coughing, further extensions, bronchial dilatation and bronchorrhea? 4. How soon in the average case will coughing and sputum subside after successful collapse? 5. And if the sputum is positive and a cavity visible, would you regard a thoracoplasty as having failed after a year in the face of improved nutrition and strength? 6. How much crippling and deformity are usually associated with operation on the upper five ribs? Please omit name.

M D., Missouri.

ANSWER.—1. As thoracoplasty is not undertaken in patients in whom artificial pneumothorax can control the condition, it has never been the custom to follow thoracoplasty with a pneumothorax.

2. In a carefully performed operation for artificial pneumothorax, the pleura, as a rule, is not injured. Once in a great while, however, this accident may occur even with the greatest of care. As a rule it is not a serious complication.

3. Moderate intrapleural tension, by which is meant collapse of the lung, might well inhibit coughing. This collapse of the lung, however, should be the result of the thoracoplasty and not of the pneumothorax induced after thoracoplasty. The removal of the intrapleural air is considered by most men an essential step in the operation of thoracoplasty on those patients who have recently had artificial pneumothorax.

4. The subsidence of coughing and sputum depends on so many factors that it is impossible to answer this question with any degree of accuracy.

5. No thoracoplasty can be considered as having resulted in a cure as long as the cavity remains and the sputum is still positive. There are many cases on record in which it has taken more than a year for the sputum to become negative.

6. There should be practically no crippling or deformity, especially when the patient is dressed, after a successful upper stage thoracoplasty.

ARTERIOSCLEROSIS WITH HEMORRHAGES

To the Editor.—Mrs. F. Z. in 1930 (aged 63 then) had an attack of abdominal and thoracic shingles from which she recovered. I saw her in 1930, when she gave a history of having stumbled down stairs some time previously. A few days later she had cloudy vision and tearing. She was confined to her home and to a chair, although she has been able to travel East once. She has high blood pressure, 260 systolic, which has fallen to 200. The urinary examination gave unimportant observations. She is overweight but looks well, eats and sleeps well and has to void urine at least once nightly. Her knees look large but are soft to the touch. Roentgen examination revealed nothing but mild arthritis. She has fallen arches. Neurologic examination by an expert gave negative results. The left tendons were slowed up on my first visit. There are scattered retinal hemorrhages and vision is reduced to 20/200 and unimproved by glasses. Despite all absence of paralysis she says she cannot walk, although she can manage to shuffle for some feet or walk the room, pushing a chair in front of her. She is mentally alert and has always impressed me as having a hardly noticeable scanning of speech. There are no cardiac murmurs, although her pulse is irregular on occasion. She never has had fresh retinal hemorrhages since 1931. What, in your opinion, may be the cause of her inability or unwillingness to walk? Please omit name.

M.D., California.

ANSWER.—It is evident that the patient is suffering from arteriosclerosis, and it seems probable that she has had hemorrhages not only in the retinas but also in the posterior root ganglia as a cause of the "shingles." Under these circumstances it is at least possible that there have been other minute hemorrhages. The fact that the patient can walk when pushing a chair suggests that the difficulty in walking is not due

to loss of muscular power but arises from some defect in equilibration. Nothing is said of dizziness or vertigo, but it seems probable that there is dizziness on assuming the erect posture. The loss of vision is sufficient to give an added sense of insecurity and thus to add an element of fear, which might be regarded as a functional feature. On the whole it seems most probable that there is a combination of disturbance in the vestibular apparatus, possibly the result of hemorrhages, with the element of fear and feeling of insecurity.

SCALENIOTOMY

To the Editor.—Will you kindly give me the technic of scalenotomy as used in the treatment of pulmonary tuberculosis? Please omit name.

M D., District of Columbia.

ANSWER.—Under local anesthesia an incision is made between the sternocleidomastoid and trapezius muscles in a skin crease from 2 to 4 cm above the clavicle, thus exposing the scalenus anticus and medius muscles, with the cervical roots of the brachial plexus between them. The prevertebral fascia is next incised and retracted. While the scalenus anticus muscle is being completely divided at approximately the upper border of the clavicle, the surgeon should carefully protect the subclavian artery, cervical nerve roots and other important structures lying close to the muscle. The cervical roots should then be gently retracted and the broad insertion of the scalenus medius separated from the first rib; the subjacent pleura and one of the roots of the long thoracic nerve, which passes through the substance of the muscle, must be protected. Finally, the surgeon should pass his index finger posteriorly along the first intercostal space and hook and isolate the slender scalenus posticus muscle; this may then be divided with scissors, which are guided by the sense of touch. A review of the anatomy of the field of operation will impress the surgeon with the possibility of accidental operative injury to many important structures during the complete division of the scalene muscles.

INDICATIONS FOR REMOVAL OF APPENDIX

To the Editor.—Will you please inform me as to the safest procedure in caring for a gangrenous appendix, when in the judgment or ability of the surgeon it is deemed wise to leave the appendix in situ. The point I am particularly interested in is, Is it better procedure simply to place a drain or is it wiser to ligate and sever the appendix before inserting the drain? In case the appendix is ligated and left in place, what is likely to happen to it? Does it act in a similar manner to a piece of bowel which is ligated at both ends after being separated from the main bowel?

M D., Chicago

ANSWER.—The gangrenous appendix that has perforated is best removed. The same applies to the ruptured gangrenous appendix if the infection is localized to the immediate vicinity of the appendix, if the appendix can be removed without too much manipulation of the intestine, and if the general condition of the patient permits. If a gangrenous appendix has perforated twelve hours or more before the surgeon sees the patient, and generalized peritonitis is present, it is frequently advisable to delay operation until the infection has localized into an abscess. Such an abscess then can be drained without opening the general peritoneal cavity, and the appendix can be removed six or eight weeks later. Obstruction of the lumen of the appendix, particularly if interference with circulation occurs in the region, usually results in perforation of the appendix.

TRANSILLUMINATION OF TESTICLE

To the Editor.—Kindly discuss the value of transillumination of the testicle as a diagnostic procedure in the determination of sterility. Is it of any value? Is it possible by transillumination to determine atrophy of the testicle? Is it possible in this way to determine the cause of the sterility; that is, whether it is due to mumps or to gonorrhea? Please do not publish my name.

M D., Louisiana.

ANSWER.—The only correct and accurate way to establish the fact of whether the patient is or is not sterile is to collect semen in a condom. This should be examined at once, preferably within thirty minutes after the emission. Transillumination of the testicle as a diagnostic procedure would not appear to have value in this type of case. Mumps is the most frequent cause of atrophy of the testicle. Gonorrhea per se does not affect or involve the testicle. Gonorrhea does involve the epididymis, and in about four out of ten cases occlusion results so that the patient is sterile on the side on which he has epididymitis. Naturally if the patient has had a bilateral attack of epididymitis he stands a four out of ten chance of being sterile. Here again the simple and most accurate way to establish this fact is to examine the ejaculate.

FURUNCULOSIS AMONG WORKERS IN
LEAD-SILVER MINE

To the Editor:—Fully 90 per cent of the employees of a lead-silver mine who work on the lower levels of the mine suffer from furunculosis. The temperature on the levels of the mine is moist and always above 100 F. The lower level is approximately at sea level, while the surface is about 3,500 feet above sea level. Most of these boils are small and seem to start in the hair follicles with or without an abrasion of the skin. Usually they are considered of a minor nature but frequently are completely disabling and constitute a disability of considerable economic importance. Treatment with the ingestion of yeast and the use of furunculosis vaccine has given no results. Changing from the lower levels, where sweating is excessive, to other parts of the mine or surface work shows a gradual amelioration of the condition. Can you suggest any treatment that will permit these men to continue their occupation? Please omit name.

M.D., Idaho.

ANSWER.—The correct treatment is to render the mine more hygienic by air conditioning. The men will be able to accomplish more and will be more healthy. Such an installation in the Robinson Deep Mine near Johannesburg, South Africa, is described in *Science News Letter*, Aug. 18, 1934.

BRONCHIECTASIS

To the Editor:—I have a patient, a man aged 50, suffering with an advanced bronchiectasis of the right lung. There is no sign of tuberculosis, pneumoconiosis, tumor or other conditions in the lungs. It seems to me that he has congenital syphilis, although the blood gave a doubtful Wassermann reaction. I would appreciate your suggestion as to the treatment of this case. Please omit name.

M.D., New York.

ANSWER.—There is really no satisfactory treatment for bronchiectasis. Syphilis and congenital cystic disease of the lung should be ruled out. Congenital syphilis at the age of 50 is extremely improbable.

Medication is of little use and climate is of only occasional value. Surgical treatment, such as collapse or phrenicectomy, is occasionally made use of but is of uncertain value in the ordinary case.

SANITATION OF GARBAGE

To the Editor:—Kindly furnish me with a list of the diseases that could come from the improper disposal of garbage and the dangers of allowing it to accumulate around the home. Please omit name.

M.D., Georgia.

ANSWER.—The accumulation of garbage around the home is objectionable for two reasons: The first is purely an esthetic one: the material is unsightly and will produce bad odors. The second is that garbage may serve as a breeding place for flies. As far as is known, no human diseases are transferred as a result of garbage accumulation. Flies may, of course, convey intestinal diseases such as typhoid when conditions are such that the flies have access to human excreta and to food.

INTRAVENOUS USE OF QUININE

To the Editor:—Can you tell me if there is any marked difference in the action of quinine urea hydrochloride when injected hypodermically than that of other salts of quinine? Does the anesthetic action that follows injection of quinine urea hydrochloride obtain with the other solutions?

WILLIAM A. HINCKLE, M.D., Peoria, Ill.

ANSWER.—There is no essential difference excepting in the degree of irritative action. Anesthesia as well as irritation and ultimate sclerosis follows injection of all the quinine salts.

STERILIZATION OF NEEDLES FOR PNEUMOTHORAX

To the Editor:—How long is it necessary to boil 16 to 18 gage needles to sterilize them for pneumothorax treatments and aspirations? Please omit name.

M.D., New York.

ANSWER.—Boiling 16 to 18 gage needles for ten minutes will safely sterilize them for any purpose.

SAFETY OF NORMAL DELIVERY AFTER
CESAREAN SECTION

To the Editor:—In Queries and Minor notes in *THE JOURNAL*, November 10, page 1470, there is an answer to a query as to the safety of normal delivery after cesarean section. The answer given, while covering many factors, omitted one factor that is probably as important as is the alleged superiority of the lower uterine segment operation; namely, the location of the placental site: if the placental site is anterior, the danger of pregnancy and labor is greater than otherwise.

W. F. HEWITT, M.D., Chicago.

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 7. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written (Group B candidates). The examination will be held in various cities throughout the country, April 29. Oral (Group A and Group B candidates). New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written (Group B candidates). The examination will be held in various cities of the United States and Canada, March 23. Final oral and clinical examination (Group A and Group B candidates). Atlantic City, N. J., June 10-11. Group B application lists close Feb. 23 and Group A application lists close May 10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 10. Application must be filed at least sixty days prior to date of examination. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Jan. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: Reciprocity. San Francisco, Jan. 16. Regular. Los Angeles, Feb. 4-7. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento.

COLORADO: Denver, Jan. 18. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: Basic Science. New Haven, Feb. 9. Prerequisite to license examination. Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Jan. 14-15. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

ILLINOIS: Chicago, Jan. 22-24. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Jan. 3-5. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Basic Science. Minneapolis, Jan. 2-3. Sec., Dr. J. Charney McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Medical. Minneapolis, Jan. 15-17. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. The examinations will be held in medical centers where there are five or more candidates, Feb. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Basic Science. Omaha, Jan. 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Reciprocity. Feb. 4. Sec., Dr. Edward E. Hauser, Carson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 28-31. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 1-4. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OREGON: Portland, Jan. 2-4. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-12. Dir., Bureau of Professional Licensing, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 3-4. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 15-16. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

VERMONT: BURLINGTON, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: Basic Science. Seattle, Jan. 10-11. Medical. Seattle, Jan. 14-16. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: Madison, Jan. 8-10. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse.

WYOMING: Cheyenne, Feb. 4. Sec., Dr. W. H. Hassel, Capitol Bldg., Cheyenne.

Rhode Island July Examination

Dr. Lester A. Round, director, Public Health Commission, reports the written and practical examination held in Providence, July 5-6, 1934. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Twelve candidates were examined, 11 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1933)		89.9
Harvard University Medical School.....	(1932)	88.5,	89.9
Tufts College Medical School.....	(1931)	88.5,	80.9
St. Louis University School of Medicine.....	(1934)		86.9*
Hahnemann Med. College and Hospital of Philadelphia.....	(1933)	89.7,	92.3
Jefferson Medical College of Philadelphia.....	(1934)		88.5*
McGill University Faculty of Medicine.....	(1933)		91.9
University of Montreal Faculty of Medicine.....	(1934)		80

School	FAILED	Year Grad.	Per Cent
Universidade de Lisboa Faculdade de Medicina, Portugal.....	(1932)		74.6

*License withheld pending completion of internship.

South Carolina June Examination

Dr. A. Earle Boozer, secretary, State Board of Medical Examiners, reports the written examination held in Columbia, June 26-28, 1934. The examination covered 17 subjects and included 70 questions. An average of 75 per cent was required to pass. Forty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1927)		82.4
University of Michigan Medical School.....	(1934)		90.3
University of Oklahoma School of Medicine.....	(1930)		80.5
Jefferson Medical College of Philadelphia.....	(1934)		83.1
Medical College of the State of South Carolina.....	(1933)		80.9,
(1934) 79.4, 80.5, 80.6, 80.6, 81.3, 81.4, 82.1,			
82.3, 82.4, 82.9, 83.3, 83.5, 84, 84.9, 85, 85, 85,			
85.4, 86.1, 86.3, 86.5, 86.6, 86.8, 87.1, 87.5			
Meharry Medical College.....	(1933)	75, 82.1,	(1934) 80.5
University of Tennessee College			83.9
Vanderbilt University School of "			86.1
Medical College of Virginia.....			84.4, 85.8

Five physicians were licensed by reciprocity from May 2 to July 10. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College.....	(1912)		Alabama
Emory University School of Medicine.....	(1923)		Georgia
University of Georgia Medical Department.....	(1900), (1932)		Georgia
Washington University School of Medicine.....	(1929)		N. Carolina

Virginia June Examination

Dr. J. W. Preston, secretary, Board of Medical Examiners, reports the written examination held in Richmond, June 20-22, 1934. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and twenty-five candidates were examined, 122 of whom passed and 3 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine.....	(1933)		1
Georgetown University School of Medicine.....	(1933)		1
Howard University College of Medicine.....	(1933, 4), (1934)		5
Emory University School of Medicine.....	(1934)		1
Eclectic Medical College, Ohio.....	(1927)		1
University of Pennsylvania School of Medicine.....	(1934)		1
Medical College of Virginia.....	(1933), (1934, 59)		60
Univ. of Virginia Dept. of Med.....	(1930), (1933), (1934, 48)		50
Osteopaths			2

School	FAILED	Year Grad.	Number Failed
Howard University College of Medicine.....	(1932), (1934)		2
Medical College of Virginia	(1934)		1

Eighteen physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 12 to August 15. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine.....	(1931) Dist. Colum.,		
(1932) Maryland			
Georgetown University School of Medicine..	(1928), (1931) Dist. Colum.,		
Rush Medical College	(1930)		Illinois
Tulane University of Louisiana Medical Department..	(1899)		Louisiana
Tulane University of Louisiana School of Medicine..	(1927)		N. Carolina
College of Physicians and Surgeons of Baltimore.....	(1912)		Maryland
Johns Hopkins University School of Medicine.....	(1932)		Maryland
University of Maryland School of Medicine and			
College of Physicians and Surgeons.....	(1926)		Maryland
Columbia Univ. College of Physicians and Surgeons..	(1925)		Tennessee
Hahnemann Medical College and Hosp. of Philadelphia	(1924)		Penna.,
(1932) Maryland			
University of Pennsylvania School of Medicine.....	(1931)		N. Carolina
Meharry Medical College.....	(1932)		Tennessee
University of Tennessee College of Medicine.....	(1931)		Tennessee
Medical College of Virginia.....	(1917)		N. Carolina
University of Toronto Faculty of Medicine.....	(1925)		Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine.....	(1918)		U. S. Navy

Tennessee March Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Memphis, March 26-27, 1934. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Howard University College of Medicine.....	(1931, 2)		2
Tulane University of Louisiana School of Medicine..	(1932)		1
Harvard University Medical School.....	(1929)		1
University of Tennessee College of Medicine.....	(1934, 20)		20

Book Notices

Electrocardiography. By Chauncey C. Maher, B.S., M.D., Assistant Professor of Medicine, Northwestern University and the Montgomery Ward Medical Clinics. Cloth. Price, \$4. Pp. 250, with 145 illustrations. Baltimore: William Wood & Company, 1934.

This is "a treatise on electrocardiography, for use by the general practitioner, the medical student, and the specialist exclusive of the cardiologist." There is only one reference to significant literature; "extensive bibliography may be readily found elsewhere." Certain statements are contrary to the experience of other clinicians and at variance with the commonly accepted views in this field of research. "Rheumatic mitral stenosis does not occur in the heart with syphilitic aortitis." "The rhythm" in paroxysmal auricular tachycardia "is strikingly regular . . . This point may successfully differentiate it from auricular flutter, simple sinus tachycardia, or ventricular flutter. Auricular flutter usually occurs as a paroxysm of tachycardia. . . . The chronic form is uncommon." Apparently the author does not consider circus movement the mechanism underlying auricular flutter and fibrillation of the auricles and ventricles. "The mechanism of auricular flutter is relatively simple. . . . The sino-auricular node has lost its rôle as pacemaker to a focus in the auricular musculature . . . This ectopic focus emits stimuli to contraction at a rate of 300 to 400 per minute. . . . In auricular fibrillation, the site of impulse initiation has left the sinus node and is replaced by multiple foci in the auricular musculature . . . Each single focus sends out stimuli at a rapid rate as in . . . auricular flutter. . . . These foci cause localized contraction waves of the auricular muscle which interfere with one another. . . . In auricular fibrillation, in the auricles, there are multiple foci, each rhythmically issuing stimuli constantly interfering with one another." Regarding the mechanism responsible for ventricular fibrillation, he states that "numerous ectopic foci in the ventricles emit stimuli." Ventricular flutter, according to Lewis, is "a condition at present undefined." According to the author, "this mechanism has been termed ventricular tachycardia, which is really a misnomer. . . . Ventricular tachycardia or more technically ventricular flutter . . . Ventricular flutter is essentially a regular succession of extrasystoles arising from an ectopic focus in the ventricular muscle." The diagram illustrating the condition is typical of graphs authoritatively accepted as representing paroxysmal ventricular tachycardia. The fact that the level in the auriculo-ventricular node from which impulses arise alters the relationship of the P wave to the QRS complex is not mentioned. Perhaps, as a result, a condition is described as "a permanent mechanism known as Ectopic Auricular Rhythm in contradistinction to the paroxysmal type, which is much faster." The figure and electrocardiogram presented represent a nodal rhythm arising from the upper portion of the auriculoventricular node; duplicates, so interpreted, have been published by Lewis. These and other questionable or loosely worded statements tend to confuse the beginner having access to other sources of information. This is unfortunate, since diagrams and electrocardiograms, well prepared and carefully selected as are most of these, serve as a valuable aid to the novice. Chapter 8, on axis deviation, is especially well presented. Perhaps this and chapter 12, on the routine interpretation of electrocardiograms, could have been introduced earlier in this presentation.

Problèmes actuels de pathologie médicale. Par A. Clerc, professeur à la Faculté de médecine de Paris, et autres. Troisième série. Cours complémentaire de la Faculté de médecine. Papier. Price, 45 francs. Pp. 339, with illustrations. Paris: Masson & Cie, 1934.

This is the third of the series dealing with pathologic changes in the various medical conditions. The series is edited by Professor Clerc with the assistance of eleven contributors. The subjects discussed are cardiac investigations during the course of diabetes mellitus; disturbed rhythm of the heart in acute infectious myocarditis; parotid sinus; polymorphism and changes produced by Trichocephalus and in Lambliia organisms; delayed hereditary syphilis; hematemesia of splenic origin; primary benign inflammatory purpuras; malignant forms of complete arrhythmias; gastric syphilis; cardiac rhythm with pulsus trigeminus; pulmonary complications in grip, and acute

hepatonephritis. The authors discuss these subjects from the pathologic-physiologic standpoints and interpret the clinical changes on these bases. All the subjects are of interest.

Paul Chevalier, who has written the chapter on purpura, has gotten away from the conventional classification and textbook description of this disease and bases the treatment of the subject on his clinical experience and evidence he has obtained from biopsy of purpuric lesions. He concedes that purpura may be a symptom or a disease. In either case the underlying basis for its causation is essentially vascular. He divides purpuras into the simple acute inflammatory purpuras and into the simple chronic types. Under the acute types, the rheumatoid type occupies most of the discussion. He takes up the various types of syndromes that may be seen under this heading; for example, the joint, abdominal, renal and cutaneous manifestations. He discusses the opinions of various authors in regard to the pathogenesis of purpura but concludes that their facts are inconclusive when attempting to explain clinical forms. Under the discussion of pathology of purpura he offers histologic proof for the inflammatory nature of the purpuric lesion. In both acute and chronic types he finds abundant perivascular infiltration. Under the heading of "chronic purpura" he describes hemogenia as an endothelial plasmatic dyscrasia; in other words, the association of a capillary fragility with a humoral disturbance without local perivascular inflammatory changes. This is undoubtedly comparable to essential thrombocytopenia (Werlhof's disease). He cautions that in many instances cases which really belong under the clinical inflammatory purpuras have been erroneously put into this group. While the author's discussion differs materially from the conventional treatment of the subject of purpura, it is stimulating and contains enough clinical evidence to justify serious consideration.

Mental Defect. By Lionel S. Penrose, M.A., M.D., Research Medical Officer, Royal Eastern Counties Institution, Colchester. Cloth. Price, \$2.50. Pp. 205, with 9 illustrations. New York: Farrar & Rinehart, Inc., 1934.

It has been several years since the publication of the previous good book on mental deficiency. Several monumental works have come out in new editions, but the present volume is the first work that incorporates many of the newer ideas on the subject. Its point of view is somewhat different from that of previous works in that it stresses the general considerations of feeble-mindedness rather than specific types, such as mongolism and cretinism. Its contents can be roughly divided into four parts. The first five chapters contain a short summary of the history of mental abnormality, and systematic investigation, such as the physical examination, physical measurements, laboratory observations and the psychologic examination. The next two chapters discuss the methods of collecting facts from the history and the methods of dealing with these facts. The eighth chapter is an excellent discussion of classification—a subject that is never in a static state. The author is willing to present the various classifications and give some discussion of the merits of each. With the exception of the last chapters, the remainder of the book deals with pathologic types. Mongolism, birth injury and cerebral inflammation are stressed. Although the subject of feeble-mindedness is one of great significance in criminology, the matter is passed over in a page. Two chapters on treatment are given, one of which is a summary of the results of the White House Conference on the Handicapped Child. Those who have had to work with the feeble-minded will have much to criticize in the individual chapters dealing with their special interests; for example, the chapter on psychologic tests is simply a schedule of a few available tests. The significance of the Binet scale is not stressed, yet it is probably the greatest single step investigators have made available for classifying, studying and treating defective cases. In the chapter on treatment in the United States, the book takes an entirely different point of view. The earlier parts emphasize particularly valuable recent researches, but this chapter is a mere summary of the reports made at the White House conference. This is unfortunate, for medical practitioners would be interested in therapy carried out in this country by Clark, Beaman, Svendsen and others rather than attitudes toward the social care of defectives. These attitudes are important but are given a place in their proper proportion in the general

chapter on treatment. Throughout the book the best authorities are cited and properly annotated. The most serious general criticism that can be made arises from the fact that it is too broad in its treatment of the subject for the amount of space allotted. Chapters dealing with important disease entities are short and offer only a modicum of the knowledge available on that subject. Too, the author must have been delayed in his publication, for in the last few years, particularly in America, many significant additions have been made to our knowledge of the subject of feeble-mindedness. The book can be recommended as an excellent general introduction to the field to which it is devoted, but much criticism will arise from experts on mental defects in America because of its scanty treatment of important subjects. It is insufficiently specific in dealing with pathology, symptomatology and treatment to be valuable as a medical textbook in feeble-mindedness. It must be remembered, too, that the medicolegal considerations are British rather than American.

Nutrition and Diet Therapy: A Textbook of Dietetics. By Fairfax T. Prouditt, Instructor in Nutrition and Diet Therapy, University of Tennessee, College of Medicine & College of Dentistry. Sixth edition. Fabrikoid, Price, \$2.75. Pp. 831, with illustrations. New York: Macmillan Company, 1934.

This completely revised edition, including several new chapters, presents latest methods of teaching the fundamental principles of nutrition in health and disease as approved by the American Dietetic Association and the American League of Nursing Education. The text follows the approved outline of courses in Dietetics for Nurses published by the American Dietetic Association (revised edition, 1933). Normal nutrition is stressed throughout. Pathologic conditions are so described as to give the student nurse a good understanding of the relationship between the physician's diet orders and the symptoms of the patient and laboratory reports on his condition. The revisions in this edition are chiefly the result of extended experience in teaching nutrition and diet in disease to nurses and students of dental hygiene, medicine and dentistry. The laboratory class work includes preliminary lessons on the foods to be prepared, their place in the diet, and substitutes for varying the menu. Part I of the book treats of normal nutrition or foods in health. Part II discusses the planning of hospital and family diets and methods of feeding in normal and abnormal conditions and presents pertinent information on the main classes of foods. Part III is devoted to the use of food in the nutrition of the sick, including physiologic information, symptoms and special diets. Part IV covers the preparation of foods. The appendix includes the usual tables on food composition. This is a valuable textbook and ready reference work for nurses and dietitians.

Clinical Toxicology: Modern Methods in the Diagnosis and Treatment of Poisoning. By Erich Lescchke, Professor of Internal Medicine in the University of Berlin. Incorporating Material on Industrial Poisoning by Franz Koelsch, Director of the Bavarian Institute for Industrial Medicine, and with two Appendices: I. The Prevention and Compensation of Industrial Poisoning. By Franz Koelsch. II. The Detection of Poisoning, Post Mortem. By Karl Melchner, Professor of Forensic Medicine, Innsbruck. Translated by C. P. Stewart, M.Sc., Ph.D., Lecturer in General Biochemistry, University of Edinburgh, and O. Dorrer, Ph.D., Research Assistant to Professor Wieland, Munich. The Gloucester Series. Cloth. Price, \$5. Pp. 346, with 25 illustrations. Baltimore: William Wood & Company, 1934.

Murrell's What to do in Cases of Poisoning. By P. Hamill, M.D., D.Sc., F.R.C.P., Lecturer on Pharmacology and Therapeutics, St. Bartholomew's Hospital Medical College. Fourteenth edition of "What to Do in Cases of Poisoning" by Dr. W. Murrell. Cloth. Price, \$1.50. Pp. 208. New York: Paul B. Hoeber, Inc., 1934.

The English translation of Erich Lescchke's book is welcome, for this work marks a new departure in toxicology. It and Ludwig Popper's "Klinik und Therapie akuter Vergiftungen," which was published about the same time last year, treat toxicology as a clinical subject, the result of experience at the bedside. This gives these books an entirely different aspect from the older textbooks on toxicology, of which Murrell's is a type, that have been written not by clinicians but by pharmacologists.

Murrell's little book, even though it aims at being highly practical, starting as it does with "If sent for to a case of poisoning go at once—the patient's life may depend on your prompt attendance," is yet largely theoretical. One has the feeling that the author has not seen or treated many cases of poisoning and that nearly all of what he has to say is second

hand knowledge, neatly arranged and systematized for the student's benefit and for ready reference in case one has the misfortune of being face to face with a case of poisoning, so that one may at least do no harm. It is written impersonally and leaves one cold.

Leschke's book breathes an entirely different spirit. One feels the throb of the real thing when one reads: "Whoever sat up, through the night, with a case of poisoning, whoever has experienced the excitement and care involved in bringing the patient back to life, whoever has busied himself for hours with artificial respiration, stomach pumps, and injections, whoever has felt the despair of the relatives and his own depression at failure if treatment failed or the joy and gratitude if it succeeded . . ." This book has been written "from the standpoint of the practicing physician for the benefit of the physician," just as Murrell's book has been written by a student for the benefit of the student.

Both books have their place and mission. However, one cannot help realizing that in the direction of "clinical toxicology" lies the road to real advance in the diagnosis and treatment of poisoning in man. It is to be hoped that in the future with such models as Leschke, poisoning will no longer be the "Cinderella in clinical teaching and in the further studies of qualified physicians." With this there will come not only an improvement in the diagnosis of poisoning cases, which according to Zangger is wrong in up to 80 per cent of cases, at least at the beginning, but also a greater efficiency in the therapy, which in all probability is not the best possible one in a still larger proportion of cases.

Franklin Palne Mall: The Story of a Mind. By Florence Rena Sablin. Cloth. Price, \$2.75. Pp. 342, with 8 illustrations. Baltimore: Johns Hopkins Press, 1934.

The writer of this volume worked for twenty years in association with the subject of the sketch. In the development of the biography Mrs. Mall and Dr. W. H. Welch helped greatly, as did also Drs. Simon Flexner and George L. Streeter. Medical men who studied their embryology with Mall at Johns Hopkins will find this book of special interest, but as a biography of a great teacher, written *con amore*, it will be attractive to all. In an appendix there are bibliographies and reproductions of correspondence referred to in the text. There are some minor errors in the names of persons and particularly the confusion of several middle initials which might easily have been avoided, for example, Frank S. Billings and James B. Angell.

The Inheritance of Resistance to Bacterial Infection in Animal Species: A Review of the Published Experimental Data. By A. Bradford Hill. Medical Research Council, Special Report Series, No. 196. Paper. Price, 1s. 3d. Pp. 71, with 2 illustrations. London: His Majesty's Stationery Office, 1934.

This report, prepared under the direction of the Statistical Committee of the Medical Research Council, consists of an able and critical review of the results of the experimental investigations dealing with the problems of inheritance of resistance or immunity to bacterial infection. The difficulties inherent in work of this kind are emphasized. The report will be of service in the planning of further investigations in its field.

Mental Deficiency Nursing (Simplified). By O. P. Napier Pearn. M.R.C.S., L.R.C.P., D.P.M., Deputy Medical Superintendent, Cane Hill Mental Hospital. Cloth. Price, \$2. Pp. 281, with 22 illustrations. Baltimore: William Wood & Company, 1934.

The problem of securing adequate attendants for the feeble-minded seems to be as great in Great Britain as it is in this country. In America a strong back and a weak mind seem in many cases to be adequate qualifications for an attendant for mental defectives. Little effort is made in many institutions to train such people, for it is felt that a few adequately trained supervisors will prevent serious consequences from the insufficient mental equipment of attendants. The present work indicates clearly that little more is expected in England in the way of cerebral equipment than is expected here. It is necessary that two-syllable words be divided by hyphens into their component parts in order that they may be intelligible to the English mental deficiency nurse. The book contains summaries of all of medicine, including nursing and hygiene, and a discussion of mental deficiency. Apparently the potential readers

are expected to give hypodermic injections and perform all the duties of a registered nurse, even though the style in which the book is written indicates their incompetence to do so. For the nurse who is otherwise adequate, several chapters (particularly those on mental deficiency) should be of value, because of the fact that the symptoms and characteristics of mental deficiency are carefully outlined and defined; but the curious mixture of intense simplification and highly technical knowledge which the author brought together makes one wonder for whom the book is really adequate—it is too simple for the real nurse and too technical for the stupid attendant. The chapter on nursing and training of mental defectives is not long and is really only an outline rather than a practical guide; yet it should be a guide if the title of the book is not a misnomer. Since it is the first book of its kind, it undoubtedly will serve the purpose of stimulation; but as far as America is concerned a different book for training attendants for the feeble-minded will need to be written. The chapters on how to study, and questions for review, are suggestive that this is a book for "cramming" rather than for education.

The Technique of Contraception: An Outline. By Eric M. Matsner, M.D. Foreword by Robert L. Dickinson, M.D. Introduction by Foster Kennedy, M.D. Published for the American Birth Control League, Inc. Second edition. Paper. Price, 50 cents. Pp. 38, with 32 illustrations. Baltimore: Williams & Wilkins Company, 1934.

This review of the technic of contraception will probably be in considerable demand, combining as it does, in the space of forty pages, a discussion of many different methods of birth control. The author divides them into practical methods, impractical methods, and methods requiring further experimental and developmental research. Diagrams accompany the article and greatly clarify the directions for the use of various contraceptive methods.

Community Hygiene: A Text Book in the Control of Communicable Diseases. By Laurence B. Chenoweth, A.B., M.D., Professor of Hygiene and Director of the Students' Health Service of the University of Cincinnati, and Whitelaw Reid Morrison, A.M., M.D., Professor of Hygiene and Physical Education, and Director of the Men's Gymnasium in Oberlin College. Cloth. Price, \$2.50. Pp. 317, with 112 illustrations. New York: F. S. Crofts & Company, 1934.

It would seem that there are enough textbooks on community hygiene without adding any more, and yet this volume makes an instant appeal because of the comprehensiveness of its scope, the clarity and conciseness with which the subtopics are handled, and the logical organization. The book is well and profusely illustrated and the chapter bibliographies are particular good. It has a good glossary and an adequate index.

Sex Education: Facts and Attitudes. By Various Contributors. Paper. Price, 25 cents. Pp. 59. New York: Child Study Association of America, 1934.

This pamphlet is a collection of articles by a number of different authors, reprinted from various magazines. It is described in the introduction as a pamphlet addressed to parents and designed to offer "not a ready-made philosophy of sex and sex education, but rather suggestions and guidance to the mature parent in search of his own philosophy." Written as these articles are by experienced specialists, they contain many important suggestions but, unfortunately, are couched in terms that will limit their usefulness to individuals familiar with the thought trends and the terminology of modern psychology and education. For the great mass of parents they will not be of much help, because they are written in terms which only the specialist will be likely to find comprehensible.

The Human Machine: Its Uses and Abuses. By Lorena M. Breed, M.D., F.A.C.P. Cloth. Price, \$1.50. Pp. 101. Boston: The Stratford Company, 1934.

Comparison of the human body with the machine has of late years been regarded by health educators not only as trite but not particularly apropos. The modern concept of the machine as a standardized mechanism with interchangeable, replaceable parts does not convey a happy picture of the human body, which is in no sense standardized, has no replaceable parts, and is subject to influences of a psychic and emotional character that have no place in a machine. However, for those who like the mechanistic conception, this book utilizes it probably to its

best advantage. With so many books available dealing with hygiene, it does not appear that this swift and superficial survey will contribute anything new or valuable. Greatest emphasis is placed on diet. Sanitarians and dietitians alike will deplore the author's apparent insistence on raw milk in preference to pasteurized. A misprint confuses vitamin C with vitamin D in one place, and this might confuse the superficial reader. In general, the hygienic advice given is perfectly sound and yet the book leaves the reader unsatisfied, because it has skimmed too lightly the surface of the subject.

Medicolegal

Autopsy: Consent of Surviving Spouse Bar to Suit by Child.—The defendant company issued two policies of insurance payable in case of the accidental death of Webber, one to his wife and one to his executors, administrators or assigns. Each policy contained a provision reading, in part, as follows:

The Company shall have the right and opportunity . . . to make an autopsy in case of death where it is not forbidden by law.

Webber died under circumstances that made it questionable whether his death was or was not accidental. About a month later, at the instance of an investigator for the defendant, the widow gave written consent to an autopsy of Webber's body. Thereafter the body was disinterred and an autopsy performed over the objection of the plaintiff, an adult daughter of Webber. Alleging that the defendant had no right to disinter the body of her father and to perform an autopsy on it without her consent, she sued the defendant in the United States district court, eastern district, Illinois. A judgment was given for the plaintiff, and the insurance company appealed to the circuit court of appeals, seventh circuit.

Since the policies authorized the insurance company to make an autopsy only "where it is not forbidden by law," the plaintiff contended that the autopsy was not within the terms of the policy because disinterment was unlawful. Smith-Hurd Illinois Revised Statutes, 1933, c. 38, sec. 354, she pointed out, makes it unlawful for anyone *willfully and without authority* to dig up, disinter, remove or convey away from the place of sepulture or interment any human body. This statute, said the circuit court of appeals, is directed against grave robbing or otherwise *willfully and without authority* disinterring a body. With the widow's consent to the autopsy, there was an entire absence of *willfulness* on the part of the insurance company. The court held also that there was "authority" for making the disinterment. While the statute does not indicate the nature of the necessary "authority," it seems to be recognized in Illinois that one may make testamentary disposition of his own body. If one may do this by will, the court could see no lawful objection to one's doing it by contract, as Webber had done. That such an agreement is consonant with public policy is manifested by the fact that such a provision is required by statute to be incorporated in accident policies issued in Illinois. Doubtless an insurance company, if it exercises its right to have an autopsy performed, should arrange for the autopsy within a reasonable time after death, but no question as to the seasonableness of the performance of the autopsy has been presented in this case.

In this case, continued the court, there was specific consent and authorization by the widow and beneficiary, given after the burial, to make the autopsy, which necessarily implied consent to the disinterment. The trend of the authorities is that, apart from testamentary disposition or of special circumstances which may dictate otherwise, a surviving spouse has full authority over the disposition of the deceased as against the next of kin. The court accordingly held that the right to consent to the disinterment and autopsy was vested wholly in the widow and to no extent in the plaintiff, and that the disinterment and autopsy without the consent of decedent's daughter, the plaintiff, gave her no cause of action. The judgment of the trial court in favor of the plaintiff was reversed.—*Aetna Life Ins. Co. v. Lindsay*, 69 F. (2d) 627.

Workmen's Compensation Acts: Perforation of Ulcer of the Stomach.—In the course of his employment, Almuist was required to "pull up and shake out" barberry bushes. Two or more bushes sometimes would be bunched together with a clump of dirt weighing up to 250 pounds, and the workman would then pull the bushes apart by hand or pry them apart with a spade. While so engaged, he collapsed, evidencing distress in the abdomen. His attending physician, on operating, discovered that an ulcer of the stomach had perforated and that the contents of the stomach had emptied into the abdominal cavity. The workman died about six weeks later from "an empyema" due to "pus forming after a complication of perforation" of an ulcer. His widow instituted proceedings under the workmen's compensation act of Iowa. She was denied compensation by a deputy industrial commissioner, whose action was affirmed by the industrial commissioner. On appeal, the district court of Page County reversed the decision of the industrial commissioner and awarded compensation. The employer and his insurance carrier then appealed to the Supreme Court of Iowa.

In denying compensation, the commissioner stated that "the record utterly fails to show . . . there was anything in the nature of accident or incident out of the ordinary." From this statement, said the Supreme Court, it is apparent that the commissioner held as a matter of law that the widow could not receive compensation unless she proved that the injury arose out of an accident or unusual incident. But the compensation act only requires, in effect, that the disability be due to a "personal injury." A "personal injury," continued the court, obviously means an "injury to the body, the impairment of health, or a disease, not excluded by the act, which comes about, not through the natural building up and tearing down of the human body, but because of a traumatic or other hurt or damage to the health or body of an employee. . . . The injury to the human body here contemplated must be something, whether an accident or not, that acts extraneously to the natural processes of nature, and thereby impairs the health, overcomes, injures, interrupts, or destroys some function of the body, or otherwise damages or injures a part or all of the body." In the present case, observed the court, the workman's employment was exceedingly heavy, requiring much lifting, pulling and prying, thereby causing a straining of the stomach. The workman's physician testified that there would have been no perforation had it not been for the strain of the work, and there was no evidence to the contrary. The death in this case, concluded the court, was due to a "personal injury" within the meaning of the compensation act.

However, the court reversed that part of the judgment of the district court which awarded \$318 for medical expenses. Section 1387, Iowa Code, 1931, provides in part as follows: "The employer, if so requested by the employee, or any one for him, or if so ordered by the court or industrial commissioner, shall furnish reasonable surgical, medical, and hospital services, and supplies therefor." Medical services, said the court, are to be paid for by the employer and his insurer only under the terms of the statute. If the terms of the statute have not been met, courts cannot order the payment. Here there was no showing that medical services had been requested of the employer, or that a court or the commissioner had ordered such services. To the extent that these medical expenses were allowed, the Supreme Court modified the judgment of the district court awarding compensation to the widow.—*Almuist v. Shenandoah Nurseries, Inc. (Iowa)*, 254 N. W. 35.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons, New York, Jan. 14-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.
- American Orthopsychiatric Association, New York, Feb. 21-23. Dr. Mary A. Claude, 41 East 57th Street, New York, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 18-19. Dr. William D. Cutter, 535 North Dearborn Street, Chicago, Secretary.
- Pacific Coast Surgical Association, Santa Barbara, Calif., Feb. 21-23. Dr. Edgar L. Gilcreest, 384 Post Street, San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

1: 537-608 (Oct.) 1934

- Histologic Study of Liver in Patients Affected with Peptic Ulcer. M. A. Schnitker and G. M. Hass, Boston.—p. 537.
- *Effects of Desiccated Hog's Stomach in Achlorhydria. L. Schiff and Toba Tahl, Cincinnati.—p. 543.
- Specificity of Complement Fixation Test for Amebiasis. E. Weiss and L. Arnold, Chicago.—p. 548.
- *Effects on Gastric Secretion in Dogs of Various Food Substances Employed in Treatment of Gastric Ulcer. Armine Alley, Montreal.—p. 555.
- Note on Role of Achlorhydria in Etiology of Subacute Combined Degeneration of Spinal Cord: Experimental Study in Gastrectomized Dog. A. C. Ivy, F. P. Cuthbert and A. Weil, Chicago.—p. 560.
- Clinical Types of Hyperinsulinism: Report of Cases. S. Harris, Birmingham, Ala.—p. 562.
- Diabetic Coma in Children. H. J. John, Cleveland.—p. 569.
- X-Ray Diagnosis of Activity and Cure of Duodenal Ulcer. Alice Ettinger and W. E. Davis, Boston.—p. 579.
- *New Type of Serum Therapy for Treatment of Nonspecific Ulcerative Colitis: Preliminary Report. G. Schwartzman and A. Winkelstein, New York.—p. 582.
- Carcinoma of Colon. R. R. Graham, Toronto.—p. 584.
- High Rectal Pain: Analysis of One Hundred Cases. L. A. Buie and J. C. M. Brust, Rochester, Minn.—p. 591.

Effects of Desiccated Hog's Stomach in Achlorhydria.—Schiff and Tahl state that the oral administration of single doses of desiccated hog's stomach stimulates the secretion of free hydrochloric acid in normal persons and in patients with hypochlorhydria and apparent achlorhydria. The degree of acid secreted may exceed that produced after the injection of histamine, although in the majority of cases the converse is true with dosages of from 5 to 10 Gm. In genuine achlorhydria and achylia gastrica, no secretion of free hydrochloric acid results. The prolonged administration of desiccated hog's stomach in cases of genuine achlorhydria or achylia gastrica may cause the disappearance of symptoms without the return of free hydrochloric acid. The administration of desiccated hog's stomach is beneficial in cases of achlorhydria and achylia gastrica. This suggests that a common factor is lacking in these two conditions, which factor probably is present in desiccated hog's stomach. Evidently this is not the antianemic factor. In some instances, small doses taken at intervals may be adequate to keep the patient free from symptoms. The authors' results obtained during a study of two years, seven cases of which are reported, indicate that the symptomatology associated with achlorhydria is due not to the achlorhydria alone but to the lack of an unknown substance present in desiccated hog's stomach.

Effect of Ulcer Diet on Dog's Gastric Secretion.—Alley investigated the effects on the gastric secretion in two pouch dogs, of some of the foods in the diets of Jarotski, Sippy and Smithies, with the following results: 1. Cream or milk fed repeatedly produced a continuous secretion, and that on cream was much more prolonged than that on milk, but the peptic power on milk was higher. Alkalis increased the volume and acidity. 2. The volumes of secretion on milk or cream were much greater when given repeatedly as compared to those in one feeding. 3. Egg white and butter produced comparatively small secretions. 4. Cream of wheat stimulated a small secretion of high peptic power and low acidity, which was inhibited entirely when given during the peak of butter secretion. Liquid cream of wheat has the power of neutralizing completely the free acidity and of reducing greatly the total acidity of sham feeding juice. 5. Differences of secretory behavior were noticed

between the glands of the greater curvature and lesser curvature regions in that the foods containing fat produced in the former a secretion greater in volume and longer in duration than in the latter.

Treatment of Nonspecific Ulcerative Colitis with Serum Therapy.—In the opinion of Schwartzman and Winkelstein the etiology of nonspecific ulcerative colitis is not established as yet. Nevertheless, whatever the primary, etiologic micro-organism may be, tissues rendered vulnerable by it may become receptive to the effect of natural bacterial inhabitants of the body. Among the micro-organisms of the stool, one particularly worthy of study along these lines is *Bacillus coli*. Serums were produced that were capable of neutralizing *B. coli* toxin in multiple proportions. Twenty-one patients affected with nonspecific colitis were treated with antitoxin, immune horse serums containing from 35 to 75 "phenomenon-neutralizing" units, from 800 to 1,600 agglutinating and from 8 to 16 precipitating units. Following a control period of two weeks, during which emetine and symptomatic therapy were given, conjunctival and intradermal sensitivity tests were performed. If negative, 0.5 cc., 2 cc. and 5 cc. of serum were administered intramuscularly at intervals of six hours during the first day. If these injections were not followed by severe reactions, intravenous medication was given during the next forty-eight hours. It seems important to give large quantities of the serum in a short space of time, otherwise the antitoxin leaves the blood stream quickly. Because of the possibility of dangerous shock, despite negative sensitivity tests, the following precautions were observed: (1) Epinephrine solution was administered even for slight reactions, (2) divided dosage was employed—from 25 cc. to 100 cc.—until 300 cc. was given, and (3) when the dose exceeded 25 cc. the drip method consuming at least one hour was used. In this group, chills and moderate rises in temperature were encountered only twice. Urticaria (mild to severe) was the rule in from two to nineteen days after exhibition of the serum therapy. In eighteen cases the results were good. In fifteen the improvement was evidenced by an abrupt drop in temperature, reduced number of stools and clinical well being of the patients within from two to six days. In these patients, the stools became formed and, sigmoidoscopically, the ulcerations had disappeared in from two to three weeks. In three other cases the improvement was noted in from one to three weeks. The remaining three cases were considered therapeutic failures. In one of these a perisigmoid abscess developed even though the mucosal ulcers healed. In another case the serum was administered early—on the tenth day of a septic course. A study of the toxin of this patient's *B. coli* revealed an absence of neutralization by the serum used. Ten cases have been followed for from six months to one year. In two of this group there were mild recurrences—one at seven months and one a year after treatment.

Anatomical Record, Philadelphia

60: 251-376 (Oct. 25) 1934

- Studies on Cell Structure by the Freezing-Drying Method: V. Chemical Basis of Organization of the Cell. R. R. Bensley and N. L. Hoerr, Chicago.—p. 251.
- Absorption of Estrogenic Substances of Pregnant Urine Administered Orally to Young Rats. C. B. Freudenberger and P. M. Howard, Salt Lake City.—p. 267.
- Significant Example of Pedunculated Postminimus. H. Cummins, New Orleans.—p. 273.
- Control of Reproductive Activity in Annual-Breeding Mammal (Citellus Tridecemlineatus). C. R. Moore, G. F. Simmons, L. J. Wells, M. Zalesky and W. O. Nelson, Chicago.—p. 279.
- Study of Seasonal Changes in Adrenal Gland of Thirteen-Lined Ground Squirrel (Citellus Tridecemlineatus), with Particular Reference to Its Sexual Cycle. M. Zalesky, Chicago.—p. 291.
- Further Studies on Influence of Suckling. H. Selye and T. McKeown, Montreal.—p. 323.
- *Prenatal Incidence, Structure and Development of Some Human Synovial Bursae. B. M. Black, San Francisco.—p. 333.
- Morphologic Studies on Anterior Pituitaries of Mature Female Rats Receiving Injections of Pregnancy Urine Extracts. J. M. Wolfe, E. T. Ellison and L. Rosenfeld, Nashville, Tenn.—p. 357.

Development of Synovial Bursae.—Black investigated the subacromial, the prepatellar and the subcutaneous olecranon bursae of 200 human fetuses by means of gross dissection and also in microscopic preparations. Since neither the subcutaneous olecranon bursa nor the subcutaneous prepatellar bursa was present in fetuses, he believes that it is probable that subcutaneous bursae do not develop before birth. Neither the subfascial

nor the subtendinous prepatellar bursae were present in the fetus, although the region in which the subfascial bursa is located was filled with loose tissue. The latter probably develops before the other prepatellar bursae. The subacromial bursa is present in the fetus. It develops early in the third month from a fairly definite anlage. The incidence of this bursa in the fetal period is not so high as in the adults. It was found to be 72.5 per cent before birth, when other factors may play a part in their formation. The structure and form of the subacromial bursa in the fetus differs from that in the adult. It is more rectangular and does not extend relatively as far either posteriorly or anteriorly.

Archives of Surgery, Chicago

29: 697-894 (Nov.) 1934

- Passive Vascular Exercises: Treatment of Peripheral Obliterative Arterial Diseases by Rhythmic Alternation of Environmental Pressure. L. G. Herrmann and M. R. Reid, Cincinnati.—p. 697.
- Thrombosis of Sigmoid or Lateral Sinus: Report of Thirty Cases. J. L. Dill, Detroit, and S. J. Crowe, Baltimore.—p. 705.
- Vesical Distention: II. Effects on Motor Mechanism of Upper Urinary Tract: Experimental Study. C. D. Creevy, Minneapolis.—p. 723.
- *III. Bacteriophages in Treatment of Colon Bacillus Septicemia. W. J. MacNeal, Frances C. Frisbee and Martha Applebaum, New York.—p. 741.
- *IV. Bacteriophages in Chronic Colitis of Undetermined Causation and in Intestinal Fistulas. W. J. MacNeal, Frances C. Frisbee and Martha Applebaum, New York.—p. 748.
- *Effect of Epinephrine on the Sympathectomized Human Extremity: Additional Cause of Failure of Operations for Raynaud's Disease. R. H. Smithwick, N. E. Freeman and J. C. White, Boston.—p. 759.
- *Struma Lymphomatosa (Hashimoto) Associated with Hyperthyroidism: Report of Case with Clinical and Histopathologic Study. D. Polowe, Paterson, N. J.—p. 768.
- Cartilaginous Exostosis of Scapula: Report of Two Cases. J. J. Du Mortier and B. Halpert, New Haven, Conn.—p. 778.
- Influence of Diet Rich in Casein on Strength of Bone and Healing of Fractures. E. L. Howes and R. M. McKown, New York.—p. 786.
- Treatment of Varicosities. Preliminary High Ligation of Internal Saphenous Vein with Injection of Sclerosing Solutions. H. H. Faxon, Boston.—p. 794.
- Avertin in Preanesthetic Medication: Survey of One Thousand Eight Hundred and Thirty-One Surgical Anesthetics. O. W. Barlow, G. L. Fife and A. C. Hodgins, Cleveland.—p. 810.
- Acute Intestinal Obstruction: Immediate and Late Results in a Hundred Consecutive Cases. C. B. Reentschler, Reading, Pa.—p. 828.
- Shock: Further Studies with Particular Reference to Effects of Hemorrhage. A. Blalock, Nashville, Tenn.—p. 837.
- Therapeutic Use of Concentrated Antistreptococcus Serum of New York State Department of Health. Adele E. Sheplar, Martha Jane Spence and W. J. MacNeal, New York.—p. 858.
- Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; J. Verbrugge, Antwerp, Belgium; A. B. Hepler, Seattle; R. Gutierrez, New York, and V. J. O'Connor, Chicago.—p. 866.

Bacteriophages in Treatment of Colon Bacillus Septicemia.—MacNeal and his co-workers urge the intravenous use of an asparagin preparation of colon bacteriophage in colon bacillus septicemia. In four of their cases the microbe present in the blood stream was found to be susceptible to lysis by their stock colon bacteriophage. In their fifth case the bacteriologic studies were carried out elsewhere and they did not have opportunity for adequate study of the infecting microbe. The observations suggest that organisms of this group virulent enough to produce septicemia are in general more likely to prove susceptible to bacteriophage than those found in the intestine or in the urinary tract. Whether there is an actual correlation between the virulence of the microbe and its susceptibility to bacteriophage cannot be decided from this evidence alone, but the suggestion is of some interest. It seems wise to begin treatment with a stock bacteriophage as soon as the specific nature of the organism in the blood culture has been recognized. At the same time, the testing of this culture against the bacteriophage and the preparation of a specific bacteriophage by filtration of lysed cultures of the specific microbic strain should be pushed as rapidly as possible in the laboratory, and as soon as such a specific preparation is ready it should be used in place of the stock bacteriophage.

Bacteriophages in Colitis and in Intestinal Fistulas.—MacNeal and his associates also find that the empirical use of preparations of bacteriophage potent against some of the intestinal microbes has been followed by favorable results in patients suffering from chronic colitis of undetermined causation. Because of the evident harmless nature of this therapy, it would appear worthy of trial in this sometimes baffling condition.

Postoperative intestinal fistulas infected with a mixture of intestinal bacteria have been, in two instances, influenced favorably by the use of bacteriophages active against the intestinal bacteria. The therapeutic results are not dramatic. The bacteriophages seem rather to exercise a merely beneficent influence on the course of the essentially chronic ailment.

Effect of Epinephrine on the Sympathectomized Extremity.—Smithwick and his associates show that human blood vessels innervated by the sympathetic nervous system become sensitized to circulating epinephrine following resection of sympathetic ganglions. Tests in a series of nine cases in man following complete sympathetic denervation of extremities have shown marked vasospasm in the presence of minute quantities of epinephrine in the circulating blood. The intravenous infusion of a 1:250,000 solution of epinephrine, an amount which causes little change in the normal extremity, is sufficient to lower the surface temperature of the denervated side as much as 15 degrees F. Similar changes take place when the patient's suprarenals are stimulated to secrete epinephrine by insulin hypoglycemia. Identical vasospastic phenomena, which occur in sympathectomized cats and rabbits in insulin hypoglycemia, are abolished by suprarenal denervation. This hypersensitization of the arteries to epinephrine takes place only on degeneration of the vasomotor nerves. It is not present after procaine hydrochloride block or during the first week after operation. It takes from seven to eight days for sensitization to appear. The authors believe that this hypersensitivity to the circulating hormone epinephrine, which develops in sympathectomized extremities, constitutes a heretofore unrecognized but important source of unsatisfactory results in Raynaud's disease.

Struma Lymphomatosa Associated with Hyperthyroidism.—Polowe reports a case of struma lymphomatosa associated with hyperthyroidism in a woman aged 26. It is shown that clinically the reconstructed sequence of events may be, first, a phase of hyperthyroidism; second, a phase of apparently normal thyroid activity, which may or may not be associated with symptoms referable to compression of the trachea and, third, a hypothyroid or myxedematous phase, which also may or may not be associated with symptoms referable to compression of the trachea. Because of its usually insidious course it is conceivable that struma lymphomatosa may go unnoticed in any of its phases during the life of the patient. It is too soon for the author to judge the efficacy of thyroidectomy during the early stage of struma lymphomatosa associated with hyperthyroidism. Thus far the patient is improved definitely. Thyroidectomy is contraindicated unless the pressure on the trachea interferes greatly with the patient's activities. Joll suggested the administration of dried thyroid as a postoperative therapeutic measure, with regular check ups on the basal metabolic rate as a guide.

Colorado Medicine, Denver

31: 369-424 (Nov.) 1934

- Heart Disease and the General Practitioner. W. L. Biering, Des Moines, Iowa.—p. 372.
- Moulage Process for Preservation of Surgical Specimens. N. Muney, Denver.—p. 377.

Southwestern Medicine, Phoenix, Arizona

18: 287-318 (Sept.) 1934

- Preoperative Preparation and Postoperative Care. E. C. Moore, Los Angeles.—p. 287.
- Pathology of Pulmonary Tuberculosis: Its Relation to Clinical Manifestations, Course and Therapeutics. F. T. Fahlen, Phoenix, Ariz.—p. 290.
- Proctoscopy as Aid to Diagnosis. W. R. Hewitt, Tucson, Ariz.—p. 294.
- Postpartum Hemorrhage. R. K. Smith, Tucson, Ariz.—p. 297.
- Acute Poliomyelitis. A. S. Lathrop, Santa Fe, N. M.—p. 299.
- Celiac Disease: Two Case Reports. B. P. Storts, Tucson, Ariz.—p. 302.
- Training of Midwives. G. Heusinkveld, Denver.—p. 303.
- Coccidioidal Granuloma: Report of Fatal Case. L. M. Smith and W. W. Waite, El Paso, Texas.—p. 305.

18: 319-358 (Oct.) 1934

- Concerning Surgical Treatment of Inflammatory Lesions of the Biliary Tract. I. Chavez, Guadalajara, Mexico.—p. 327.
- Tetany from Hysterical Hyperpnea. T. G. Reynolds, Esperanza, Mexico.—p. 331.
- Fractures, Especially of Long Bones. F. T. Hogeland, Cananea, Mexico.—p. 333.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

46: 399-456 (Oct.) 1934

- Gold and Bismuth in Treatment of Lupus Erythematosus. A. G. Smith.—p. 399.
Cat Scabies. H. MacCormac.—p. 411.
Recurrent Buccal and Vulval Ulcers with Associated Embolic Phenomena in Skin and Eye. G. P. B. Whitwell.—p. 414.

British Medical Journal, London

2: 707-754 (Oct. 20) 1934

- Inventions and the Outlook in Neurology. J. Collier.—p. 707.
Immunization in Prevention of Specific Fevers. R. A. O'Brien.—p. 712.
Irradiation Treatment of Malignant Intrathoracic Tumors. F. G. Chandler, N. S. Finzi and J. Maxwell.—p. 714.
Special Clinics for Diabetics: Organization and Experiences. L. Wislicki.—p. 717.
Anemias of Pregnancy: Note. G. D. Kersley and D. A. Mitchell.—p. 720.

2: 755-796 (Oct. 27) 1934

- Bad Surgical Risks. G. Gordon-Taylor.—p. 755.
Retroversion of Uterus. S. G. Luker.—p. 760.
Hemoptysis: Note on Pathology and Treatment. H. V. Morlock and A. J. S. Pinchin.—p. 762.
Observations on Therapeutic Malaria, with Especial Reference to Case of Hemoglobinuria. C. B. Bamford.—p. 764.
Prevention of Intracranial Injuries of the New-Born. R. H. Natrass.—p. 766.
Recurrent Vomiting Attacks in Childhood, with Especial Reference to Allergic Factors. K. H. Tallerman.—p. 767.
New Cases of War Blindness Due to Mustard Gas. R. E. Bickerton.—p. 769.

2: 797-844 (Nov. 3) 1934

- Cancer of Esophagus. H. S. Souttar.—p. 797.
Adolescent and Senile Kyphosis. C. Lambrinudi.—p. 800.
*Effect of Prolonged Administration of Acid Extract of Anterior Pituitary on Thyroid Gland of Guinea-Pigs. E. F. Scowen and A. W. Spence.—p. 805.
Roentgen-Ray Examination of Empyema Cavities: Note. D. Browne.—p. 807.
Left Subclavian Aneurysm in Association with Cervical Rib. T. G. Quinn and G. Davison.—p. 808.
*Blindness After Neoarsphenamine: Case. F. Juler.—p. 809.

Effect of Acid Extract of Anterior Pituitary on Thyroid.—Scowen and Spence produced thyroid hyperplasia, exophthalmos and suprarenal enlargement in guinea-pigs by the prolonged administration of acid extract of anterior pituitary substance. Although the majority of the thyroids had involuted to the colloid state during treatment, a certain proportion remained hyperplastic even after ninety-three days. The suprarenal enlargement was greatest in those animals whose thyroids had involuted. No evidence of thyroid exhaustion was observed. The production by Collip and Anderson of an antithyrotropic factor in the serum of an animal treated for a prolonged period with thyrotropic hormone has been confirmed. The mechanism responsible for the thyroid involution is discussed.

Blindness After Neoarsphenamine.—Juler reports the case of a woman, aged 46, having a positive Wassermann reaction who was given six doses of neoarsphenamine, commencing with 0.3 Gm. and concluding with 0.9 Gm. twenty-eight days later. She was also given a mixture of red mercuric iodide by mouth. A skin rash developed on the day after the last injection. Fifteen days later she became rapidly blind in both eyes; the left lost all perception of light and the right vision was reduced to hand movements. Two days later both disks were white, with slightly hazy outlines and the arteries were narrow, with white lines along them. The vision varied but little afterward and two years later she still had no perception of light in the left and bare perception of light in the right eye. The disks were white with hazy edges; some of the vessels were small and some of fair size. Her general condition remained fair at the time of the onset of blindness; she was in a somewhat toxic state, but there was no encephalitis and no meningitis. The rash had subsided. The cerebrospinal fluid was not examined. Glyceryl trinitrate was administered on the day after the onset of the blindness and a few days later sodium thiosulphate was given intravenously, but without benefit. The Wassermann reaction and the Kahn tests were still positive two months later.

Lancet, London

2: 909-968 (Oct. 27) 1934

- Hughlings Jackson and His Influence on Neurology. E. F. Buzzard.—p. 909.
*Thyrototoxic Hypertension. J. Parkinson and C. Hoyle.—p. 913.
*Gastric Lesion Produced by Extract of Pituitary Gland. E. C. Dodds, R. L. Noble and E. R. Smith.—p. 918.
Anemias and Their Treatment. L. J. Witts.—p. 919.
Investigation of Results of Splitting the Kidney. T. W. Mimpriess.—p. 921.
Auricular Flutter with Temporary Reversion to Normal Rhythm After Six Years. M. Campbell and S. S. Suzman.—p. 923.
Coarctation of Aorta with Infective Endocarditis. J. W. Brown.—p. 924.

Thyrototoxic Hypertension.—Parkinson and Hoyle investigated the common occurrence of thyroid toxemia in patients having essential hypertension (hyperpiesia). They find this association so prevalent and so influential on the course, prognosis and treatment that they submit the term thyrototoxic hypertension as applicable. Without adducing other evidence, the association is sufficiently common to suggest that long standing thyrototoxicosis may be one of the causes of essential hypertension. Such patients are to be separated from the general group of essential hypertension, if not etiologically, then in the sphere of diagnosis and treatment; for the clinical features, course and treatment are largely determined by the coexistent thyroid toxemia. The recognition of this factor must therefore become important in diagnosis. The condition is ten times more frequent in women than in men; it is rare before the age of 40, and most patients are between 50 and 60 years of age. Two thirds have had a chronic goiter for many years, and at least half of these have also manifested chronic thyrotoxicemia. There may be a history of exophthalmic goiter, supposedly cured or even operated on. Thyroid enlargement, usually slight, may be minimal or doubtful; the authors have seen a number of cases in which it has been impossible to demonstrate any enlargement, though the thyroid element could not be denied. In some cases enlargement of the thyroid has been present many years though disregarded or even denied. Yet the tachycardia, thinness or wasting, the thyroid temperament with its energy and restlessness, a fine tremor and other general evidence convinces one of thyroid dysfunction. Moreover, the character of the cardiac enlargement often shows the influence of the goiter in addition to that of hypertension. It determines auricular enlargement; for instance, by way of auricular fibrillation. Sometimes only two or three typical signs of thyrotoxicosis are present, and such cases fall into the group of "masked hyperthyroidism," but here involving hypertension. These combined features in patients with hypertension justify their separation into a clinical group with a distinctive prognosis and treatment. Recognition of the thyroid factor influences treatment. Rational therapy must be discriminating. The question of operation arises for the relief of symptoms and the prevention of auricular fibrillation and consequent cardiac failure. Subtotal thyroidectomy will often relieve symptoms and prevent or dispel auricular fibrillation, which so often determines a premature heart failure in hypertension.

Gastric Lesion Produced by Extract of Pituitary.—Dodds and his associates found that the posterior lobe of the pituitary contains a substance capable of inducing a severe lesion of the acid-bearing area of the stomach. This is efficacious when injected subcutaneously, and it is contained also in the standard British Pharmacopoeia extract of the posterior lobe. This extract is active by mouth. The oxytocic principle even in massive doses will not produce a lesion, while the pressor factor in similar doses has a definite action. Although it would appear that the gastrototoxic factor may be a substance differing from the other two hormones of the posterior lobe, a definite statement cannot be made until it has been further purified. The authors state that at present it is impossible to know whether the substance in smaller quantities plays a physiologic part, nor is it possible to state its mode of action. It seems that either the substance has a direct toxic action on the cells of the acid-secreting area of the stomach or perhaps it stimulates secretion of hydrochloric acid to a damaging extent. They are performing intensive investigations on the chemical nature and mode of action of the compound.

Archives des Maladies de l'Appareil Digestif, Paris

24: 785-904 (Oct.) 1934

Cholesterol of Foods. C. Achard, Jeanne Lévy and N. Georgiakakis.—p. 785.

Inflammatory Tumors of Stomach. R. Denis.—p. 794.

Body Typology of Megacolon Carriers. F. Turyn.—p. 819.

Rôle of Immunity and Anaphylaxis in Chronic Infectious Colitis. L. Berlin, O. Schmidt and B. Lewin.—p. 826.

*Bazzano Method in Treatment of Gastroduodenal Ulcer. F. Fernandez.—p. 836.

*New Procedure of Functional Examination of Liver: Deaminizing Power of Liver After Glycocol Injection. S. Caccuri and A. Chiariello.—p. 840.

Treatment of Gastroduodenal Ulcer.—Fernandez treated nine patients having duodenal ulcers with the Bazzano method. After examination and diagnosis they received daily intravenous injections of 2 cc. of a 25 per cent aqueous solution of sodium benzoate. At the same time they were kept at rest in bed and given a milk diet at first to which additions were made later. After a series of from twenty-five to thirty injections, treatment was suspended to observe the late effects. Some patients received two or three series. Except for slight arterial hypotension following the penetration of the medicament in the veins, no untoward incidents were observed. The pains, vomiting and epigastric tenderness receded rapidly. Burning, however, sometimes persisted and necessitated the addition of alkalis to the diet. The blood disappeared from the stools, there was a gain in weight, the general condition improved and often the roentgenologic signs disappeared. The author is nevertheless skeptical in attributing the improvement to sodium benzoate.

Functional Examination of Liver.—Caccuri and Chiariello attempted the examination of the functional capacity of the liver by means of the Bufano technic. This consists in the intravenous injection of 10 cc. of a 12 per cent solution of glycocol and measurement of the blood amino nitrogen before and fifteen, twenty, thirty and sixty minutes after the injection. Normally there is a decrease in the amino acid proportion after the injection. If there is a change in hepatic function, this proportion shows an increase, which may persist until after the end of the test, associated with variations depending on the functional state of the liver. After studying this method in normal persons, the authors studied the amino acid in the blood after the injection of glycocol in eighteen patients with hepatic lesions. These were divided as follows: One with common duct stones had icterus, five cirrhosis, one cirrhosis, malaria and syphilis simultaneously, one cancer of the liver, five cholecystitis, one hepatic syphilis, one hepatic abscess, one catarrhal jaundice, one colitis and mild liver enlargement, one a double mitral lesion and aortic insufficiency in a state of decompensation with liver enlargement, one sulphocarbonism, and one syphilis after arsenical treatment. In all these patients the amino acid curve showed the functional state of the liver. The same technic was followed in rabbits intoxicated by phosphorus, carbon bisulphide, trichloro-ethylene and thorium dioxide sol. In all, the amino acid curve gave pathologic results. Finally, in experimental studies on dogs, the amino acid curves following occlusion of the portal vein or bile duct were abnormal, revealing a functional decrease in the capacity of the liver.

Presse Médicale, Paris

42: 1593-1616 (Oct. 13) 1934

Organization of Vaccination Against Yellow Fever in France. J. Laigret.—p. 1593.

*Plasma Phosphatase in Different Conditions (Bone Diseases, Fractures, Icterus and so on). B. Austoni and G. Coggi.—p. 1594.

Influence of Skimming and of Addition of Various Glucides on Alimentary Value of Cow's Milk: Dietetic and Therapeutic Applications. R. Lecoq.—p. 1597.

Plasma Phosphatase.—Austoni and Coggi studied the phosphatase activity of the blood by the method of Kay in several different bone disorders. Its activity was not found markedly increased except in Paget's disease. In fractures the plasma phosphatase is slightly but inconstantly increased coincident with the solidification of the callus. A definite and constant increase in plasma phosphatase was determined in two cases of intestinal exclusion of bile and obstructive jaundice of ten and twenty days duration, respectively. Similar changes in phos-

phatase could not be determined in icterus of other types. Plasma phosphatase seems closely linked to the metabolism of calcium and phosphorus, and the hyperphosphatemia may be considered an early symptom of changes in the metabolism of these substances.

Schweizerische medizinische Wochenschrift, Basel

64: 977-1000 (Oct. 27) 1934. Partial Index

Foundations of Organization for Campaign Against Cancer. Gösta Forsell.—p. 977.

Cancer of Skin and Research on Cancer. G. Miescher.—p. 979.

Iodine Exchange and Thyroxine Content of Struma Nodosa. I. Abelin and N. E. Finkelstein.—p. 985.

Some Cases of Occupational Asthma with Allergy Against Simple Chemical Substances. A. Bergmann.—p. 987.

*Modification of Resorption and Elimination of Arsenic by Absorbents and Opiates. J. Leibowitz.—p. 989.

Electrocardiographic Studies in Scarlet Fever and Diphtheria. W. Berger and M. Olloz.—p. 992.

*New Etiology of Facial Eczema. H. Meister.—p. 993.

Resorption and Elimination of Arsenic.—Leibowitz studied arsenic poisoning in rabbits. He found that following the administration of one large dose (lethal or sublethal) approximately 40 per cent of the poison is eliminated with the urine and 15 per cent in the feces in the course of from five to seven days. The changes in the resorption and elimination of the arsenic that are produced by opiates, particularly by a preparation containing the total opium colloids in the form of soluble hydrochlorides, or by absorbents such as purified siliceous earth or medicinal carbon, are not of fundamental significance. Because of the prolonged contraction of the sphincter of the pyloric antrum resulting from the opium preparation, there is a considerable retardation in the passage of the poison from the stomach into the intestine, and resorption of the poison is thus retarded. Subsequent administration of the opium preparation, however, does not produce this effect. The resorption of the arsenic from the intestine is not inhibited by the opium preparation. On the contrary, because the intestinal peristalsis is retarded, the time during which the toxin can be absorbed is prolonged, and more arsenic can pass from the intestine into the blood stream. The arsenic elimination in the urine is slightly increased by the influence of the opiate, but in the feces it is slightly reduced. Purified siliceous earth is without influence on the mechanism of the gastric passage. In the intestine the siliceous earth more or less binds the arsenic, and thus the resorption is inhibited. The elimination in the urine is somewhat reduced under the influence of siliceous earth, but it is somewhat increased in the feces. The action exerted by the opiate on the resorption and elimination of arsenic is nullified by the simultaneous administration of siliceous earth, because the latter absorbs the active colloids of the opiate.

Facial Eczema.—Meister observed in recent months a peculiar facial disorder that became manifest in the form of conjunctivitis, periocular and perioral eczema and edema. He found that the disorder appeared following the use of beaked flutes that were made out of cocobolo wood. The disorder disappeared within about a week but recurred on renewed contact with the flutes. One of the patients, who was an instructor in flute playing, later developed also a hypersensitivity to another type of tropical wood from which beaked flutes are often made; namely, granadilla wood. He did not become completely free from the symptoms until he avoided contact with these woods. The author describes another case of his own observation and states that a third one was reported to him by another observer. He points out that the beaked flute is becoming more popular again and thinks that, if flutes are used that are made of these woods, facial eczema may become more frequent.

CORRECTION

Scarlet Fever Immunization by Nasal Route.—In the abstract of the paper by Friedman and his associates in THE JOURNAL, December 15, page 1889, the last sentence should read "For children less than 3 years of age they recommend, provisionally, a total of 115,000, and in those more than 3 [years of age], 202,000 skin test doses."

